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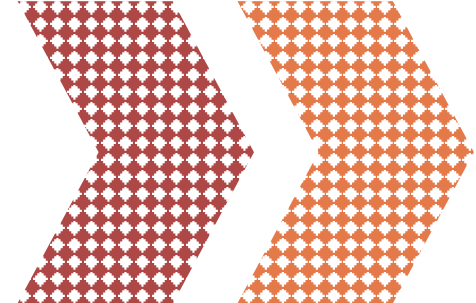
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PNACC
3

**FRANCE
ADAPTS** 
Living at + 4°C

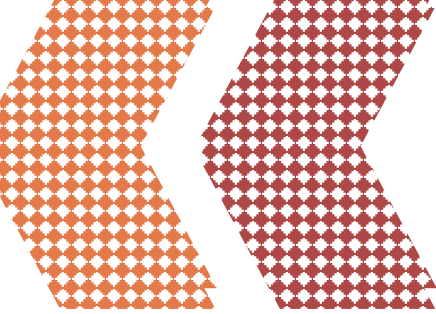






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Introduction

Rising average temperatures, more frequent and intense heat waves, extreme rainfall and droughts, rising sea levels, intensification of cyclones in the Overseas, changes in biodiversity: the impacts of climate change already have visible consequences on the daily lives of French people. According to a Harris Interactive survey, 7 out of 10 French people say they have personally seen the consequences of climate change where they live in recent years.

Despite global mitigation efforts, which remain a political priority, we are only at the beginning of these changes in our environment, health and lifestyles. The reference warming trajectory for adaptation to climate change so far anticipates an increase in the average temperature in mainland France of 4°C by the end of the century. This figure may seem abstract, but the consequences of this warming trajectory will be extremely concrete for our society. Some compelling data: if nothing is done, global warming could lead to a loss of potential wealth of 10 points of GDP for our country in 2100¹, at an estimated cost of around EUR 1 billion per year for our agriculture by 2050², up to 500 000 homes threatened by the phenomenon of coastline retreat by 2100³. And all this is only a fraction of the challenge that we will have to overcome collectively. This is a huge challenge that requires resolute action by public authorities and society as a whole. While the emissions reduction is global, the need to adapt is national. No one will act in our place.

This is the whole philosophy of this new National Climate Adaptation Plan (PNACC-3). It means, changing our approach to adaptation, building a systemic public strategy with the actors to put our country on the right track, make the right choices, avoid maladaptation that would have an unbearable cost for our society, taking into account

the diversity of territorial situations. If adaptation is everyone's concern, the State will set an example by acting on two powerful levers: financing, with the promise of no longer financing inappropriate or ill-adapted investments; public planning, with the commitment that, by 2030, all public policies (technical standards, development plans and programmes, sectoral policies and public support, etc.) will be brought into line with the +4°C warming trajectory by 2100.

After the adoption of the Water Plan in 2023, the first milestone in the construction of a major public strategy to adapt to climate change, this plan is the result of several months of work with all the vital forces of the Nation. It incorporates the feedback received from the public consultation held from 25 October to 27 December 2024, as well as the opinion of the National Council for the Ecological Transition of 28 January 2025. It contains measures necessary to protect the population, develop our territory, improve the resilience of our economy, ensure the continuity of our public services, guarantee the sustainability of our prosperity and our lifestyles. But this plan is not the end of the road, it is intended to be revised every five years according to the reality of the warming trajectory and the evolution of knowledge. It must stimulate a profound debate on the major choices that remain before us: what do we collectively want to protect, give up, change to adapt? It must also initiate a dynamic on the 'adaptation reflex', i.e. a culture of resilience that is more widespread in society, and organise the process that will allow us to take the right decisions at the right time. Finally, it must be assimilated by all stakeholders in French society in order to spread this simple message: adaptation is a necessity, let us make it an opportunity to live better together in a changing France.

¹ ADEME, *Les risques climatiques et leurs coûts pour la France, une évaluation macroéconomique* [Climate risks and their costs for France, a macroeconomic assessment], December 2023.

² CGAAER, *Évaluation du coût du changement climatique pour les filières agricoles et alimentaires* [Climate Change Cost Assessment for Agriculture and Food], April 2022.

³ CEREMA, *Projection du trait de côte et analyse des enjeux au niveau national – Horizons 2050 et 2100* [Coastline projection and analysis of challenges at national level – Horizons 2050 and 2100], April 2024.



**THE FACE OF
FRANCE AT
+4°C IN 2100**

REFERENCE WARMING TRAJECTORY FOR ADAPTATION TO CLIMATE CHANGE: THE COMPASS OF THE PNACC

The Paris Agreement sets the objective to limit global warming to well below 2°C compared to the pre-industrial era and to continue our efforts not to exceed 1.5°C. Due to the long lifetime of some greenhouse gases in the atmosphere and the current pace of transition to a carbon-neutral economy, climate change by 2050 is already broadly known. Beyond that date, it will be determined by future global greenhouse gas emissions and therefore involve some uncertainty related to the ambition and effectiveness of mitigation policies.

Globally, 2024 was the warmest year on record according to the World Meteorological Organization, with an average temperature 1.55°C higher than in the pre-industrial era. In its latest reports, the Intergovernmental Panel on Climate Change (IPCC) states that while the commitments made by States under the Paris Agreement should lead to a median global warming of 2.8°C in 2100, the global policies actually implemented today lead instead to a median global warming of 3.2°C in 2100.

For mainland France, which is warming faster than other territories in the world, the scenario taking into account existing commitments,

called trend scenario, implies an increase in average temperatures of 2°C in 2030, 2.7°C in 2050 and 4°C in 2100 compared to the pre-industrial era. This global warming scenario, based on scientific consensus, was submitted for public consultation from 23 May to 15 September 2023.

1,124 contributions were received, including 31 from public and private institutions (government departments and operators, business federations, etc.).

This trajectory has become the national reference trajectory for France's adaptation to climate change. It will be specified in 2025 to define warming trajectories for overseas territories.

For the first time, the National Climate Adaptation Plan is therefore based on a robust, concerted and declinable warming trajectory in all public policies by 2100. It is intended to be revised at regular intervals according to the level of global warming achieved and scientific projections in order to adjust, where necessary, the pace of adaptation.

Mitigation and adaptation: the two facets of France's climate action

Compliance with the Paris Agreement remains the target of global targets to limit global warming. However, in view of the risk of exceeding these objectives, it is necessary to prepare for global warming of +4°C at 2100. This is the ambition of this plan: adapt without giving up an ambitious mitigation policy. Acting on the cause of warming by limiting it makes it possible to control its pace and learn to cope with its impacts.

The French Energy and Climate Strategy aims at an integrated approach to mitigation and adaptation. The aim is to address these two imperatives in a complementary way through mutually beneficial measures, which also contribute to the protection of biodiversity. For example, the greening of urbanised spaces helps combat urban heat islands, increases carbon sinks and fosters biodiversity in cities.

Adaptation to climate change and mitigation of greenhouse gas emissions must therefore be the two necessary and interdependent components of any climate policy. On the first aspect, the reduction of greenhouse gas emissions by 5.8% in 2023⁴ compared to the previous year shows that green planning is paying off. The PNACC aims to build on this momentum by establishing adaptation measures that are complementary to mitigation actions and the green transition.

This new plan is based on the duality of mitigation, which allows action to be taken on the causes of climate change, and adaptation, which focuses on its effects.

ANTICIPATING THE EFFECTS OF CLIMATE CHANGE IN FRANCE AT +4°C

Behind the warming trajectory of France at +4°C in 2100 lie a number of realities that need to be taken into account in any forward-looking strategy.

On the one hand, this figure is an annual average and masks significant **seasonal disparities**: for an average temperature of +4°C, the temperature differences may be even greater. This will be particularly true in summer, with possible summer temperatures

well above the normal temperatures by the end of the century.

On the other hand, an increase in average temperatures of +4°C by 2100 will be reflected **in a differentiated manner throughout the national territory**. In this scenario, the Hauts-de-France region should undergo, for example, a change in its average annual temperatures from +1.9°C in 2030 to +3.6°C in 2100. In the south of France, which is already marked by

⁴<https://www.citepa.org/en/secten/>

high heat, the increase in temperatures is expected to be even stronger: In Occitania region, for example, temperatures will rise by 2°C in 2030 to reach +4.1°C by the end of the century.

This territorial disparity also applies between mainland France and the overseas territories. The island situation and the particularity of ecosystems (80% of French biodiversity on 22% of the national territory) in overseas regions place them at the forefront of the effects of climate change. Existing projections suggest an increase in temperatures that could be in the order of 1.9°C (in the South Pacific) and 3.5°C (in the Atlantic basin) by 2100, in the median value of climate simulations.

Finally, the impact of a 4°C warming is not limited to temperature variations. This warming **will affect all the natural balances** of our country and have environmental consequences, many of which are still unpredictable. The main impact of these changes in climate will be, for example, changes in the water cycle. By 2100, Brittany region is expected to experience an increase in rainfall in winter of the order of 15% and a decrease of the order of 25% in summer for the median value of climate simulations. In Occitania, a region already affected by drought in its current climate, the projected decrease in summer rainfall by 2100 would be of the order of 25% (median value). The year

2024 has powerfully illustrated these territorial paradoxes, which are set to multiply: when the Pas-de-Calais department was hit by exceptional floods, the Pyrénées-Orientales department was entering its second year of drought and water restrictions. Overseas, an intensification of cyclones, rainfall decreases correlated with more intense rains, as well as more pronounced drought episodes are generally expected: in all territories, these developments, combined with the specificities of the overseas territories (isolation and remoteness) can generate major crises – such as the water crisis in 2023 and Cyclone Chido in 2024 in Mayotte.

Anticipating climatic hazards on a territory-by-territory basis is therefore at the heart of the strategy for responding to the impacts of global warming. Coastal erosion accelerated by rising sea levels, the problems of shrinking and swelling clay soils, the increase in the frequency of wildfires, the intensity of flooding are all phenomena that are already beginning to have an effect on land use planning, the capacity of our insurance system, the safety of people or the way we cultivate and produce. In addition to the national strategy, **their deeply territorial dimension calls for responses that are adapted to local situations, both in terms of their purpose and the pace at which they are implemented.**



**PNACC-3: PREPARING
FRANCE TO +4°C, A
COLLECTIVE PROJECT
FOR A MORE RESILIENT
AND FAIRER SOCIETY**

A new adaptation plan built on the progress of climate knowledge and the achievements of the first two national adaptation plans

The third national climate change adaptation plan comes nineteen years after the first climate change adaptation strategy (2006) and two first adaptation plans, which form a basis for action: on the one hand, the acquisition of knowledge and capacities for modelling climate projections, and on the other hand, the organisational and cross-cutting foundations of climate change adaptation governance.

The first plan (PNACC-1 – 2011), resulting from the Grenelle Environment Forum, contributed to include adaptation both as a cross-cutting policy priority and as a cross-sectoral operational issue. This first national adaptation plan launched research work leading to accessible knowledge on the future impacts of climate change. Indeed, the portal *"DRIAS - The future of the climate"* proposes free and open access to regionalised data on climate projections, adjusted for France.

The PNACC-1 also aimed to take account of the effects of climate change in territorial planning tools (management and water management master plans, planning and urban planning documents, natural risk prevention plans and mountain range schemes) and to raise awareness of the economic world (energy, transport, forests, etc.).

Based on the knowledge acquired thanks to PNACC-1, the second plan (PNACC-2 - 2018), adopted at the end of COP21, ensured governance and strategic steering of adaptation at national level, both by setting a first reference trajectory (2°C

global temperature increase in 2050) and by setting up a specialised committee within the National Council for the Ecological Transition (CNTE), chaired by Senator Ronan Dantec, to give an annual opinion on the progress of the plan. This PNACC-2 has led civil society actors, local and regional authorities and state operators to genuinely take ownership of the issues at stake and of the training tools, as well as to step up support for the wood and agriculture sectors. But it also revealed a strong need for ownership by economic actors, both in terms of infrastructure (risks), supply chains (resources) and working conditions.

Lessons learned from previous planning exercises on adaptation, but also the national strategies on water ("Plan Eau") and biodiversity (National Biodiversity Strategy), and the territorialised approach of ecological planning carried out by the Government since 2022, have fed the construction of the new PNACC. As with any public strategy, they contributed to identify the strategic principles that form its backbone and to define its main objectives.

The 52 measures of this third plan took into account the results of the latest IPCC report which identified the main risks for human activities and economic life due to climate change for Europe:

- Health impacts of heat (increasing number of deaths and people exposed to heat stress, loss of thermal comfort during the summer months, particularly in Western Europe and urban areas);

- Heat impacts on marine and terrestrial ecosystems (irreversible ecosystem changes and reduction of suitable habitat areas);
- Impacts on agricultural production (combination of drought and rising temperatures);
- Water shortage;
- Floods, floods, marine submersions.

Due to the nature of the soils present in France, significant impacts are also expected on our territory related to the acceleration of soil erosion and the phenomenon of shrinking-swelling of clays, while our Overseas territories will face an increase in the frequency of intense cyclonic phenomena.

PNACC-3 re-examines our existing prevention and protection policy in the face of these

evolving risks in order to continue to protect the population and preserve assets.

The measures included in the plan also target the populations that are most sensitive to the expected impacts, in particular health risks due to heat, including children, the elderly, the sick and precarious populations.

Finally, the measures have been designed in an approach that takes into account the differences in situation across the various territories and stakeholders, with the aim of not increasing or creating inequalities, both social and territorial, by identifying the populations and territories the least able to cope, and therefore the most in need of support.

The main strategic principles of the new PNACC: anticipation, progressivity, prioritisation, co-benefits, mobilisation, differentiation

Anticipation: Measures built to prepare for a science-based warming trajectory

For the first time, the third plan is built around the compass of a reference warming trajectory for adaptation to climate change (TRACC): France at +2°C in 2030, +2.7°C in 2050 and +4°C at 2100. TRACC serves as a guideline for the plan, but must more broadly inform all public policies for a broad adaptation of our lifestyles in a France at +4°C. This ambition will

be reflected in the inclusion of TRACC in the environmental code and its inclusion in planning documents as they are renewed. Including adaptation now in public action and private strategies will allow a rapid development of a collective experience and identify the best possible adaptation solutions by 2050 and 2100.

Progressivity: Putting in place differentiated measures and ambitions by 2030, 2050 and 2100

The third climate change adaptation plan is not a 2100 strategy. It is a step-by-step planning, which contains concrete and immediate actions to prepare for 2030, identifies medium-term measures focusing on the next 30 years, and lays the groundwork for major options up to 2100, such as the choice of species for forest renewal. This incremental dimension fed the entire construction of the plan: for example, its resilience plans for large transport and energy companies by 2025 will

provide a clearer picture of the challenges for these essential services by 2050 and update the plan's recommendations accordingly. The PNACC is a living document, which will evolve in the light of possible changes in the scientific consensus on TRACC, the state of technological knowledge and innovation and the progress of the democratic debate on adaptation. It will be reviewed at least every five years.

Co-benefits: Prioritising measures that enable adaptation, mitigation, biodiversity protection and non-deterioration of ecosystems

This new adaptation plan is not a renunciation of the objective of limiting greenhouse gas emissions, but a complementary strategy. Adapting does not mean giving up, but rather preparing for the probable and anticipating the possible, in complementarity with actions to mitigate and protect biodiversity. It is also a necessity: the collective cost of inaction is much higher than an investment for resilience.

The plan also provides an integrated view of climate and biodiversity. It thus always favours options with co-benefits, i.e. those that promote adaptation while also being favourable to mitigation, biodiversity protection and non-deterioration of ecosystems, for example by choosing nature-based solutions.

Prioritisation: Selecting, by object and sector, the level of adaptation according to collective risks and costs

Any public strategy induces choices. This is even more true when it comes to adapting to climate change, given the scale of some projects and the costs they entail for our society. In addition to the main national options, many choices need to be made at local level: it will be necessary to calibrate the territorial cursors between over-investment (over-adaptation) and under-investment (non-adaptation) in order to optimise collective costs. In the short term, the PNACC favours

‘no regrets’ measures, in the long term its ambition is to avoid bad choices, the so-called ‘mal-adaptation’ in particular new construction or new projects. Its incremental design will make it possible to gradually refine collective options based on feedback from territories and economic actors. The monitoring indicators of the plan will make it possible to analyse the impacts of these choices.

Mobilisation: Creating an adaptation "reflex" in all parts of society

The national adaptation plan has been designed with an inclusive approach involving all stakeholders. Its measures were discussed in four working groups bringing together representatives of local and regional authorities, the State and its operators, trade unions, economic sectors and associations, meeting from July to December 2023. This co-construction continued with the public consultation, which enriched the document with contributions from citizens and private and public stakeholders. As a public strategy

but also a democratic object, it aims to spark a genuine national conversation around adaptation. Several of its measures also aim to generalise a culture of adaptation throughout society by training employees and public officials, raising awareness among businesses and communities, mobilising young people and our research institutions, etc. The generalisation of an adaptation ‘reflex’ is an objective in its own right of the plan and a desired legacy, at least as important as its technical measures.

Differentiation: Declining the national strategy at territorial level

While adaptation requires a national framework, its implementation is local by essence: the adaptation of mid-mountain territories to post-snow conditions has nothing in common with that of coastal municipalities to coastline retreat, or that of overseas territories characterised by their insularity (with the exception of French Guiana), or even their double insularity (communities in the Pacific) and their geographical remoteness. The national plan will therefore have to be

developed locally through adaptation strategies that are adapted to the environmental and socio-economic characteristics of the territories. The national plan natively integrates this local dimension by proposing the empowerment of local and regional authorities and the identification of pilot areas for adaptation in order to bring out the solutions on the ground to be generalised, in close connection with the associations of elected representatives.

The objectives of the new adaptation plan: protecting the population, ensuring the resilience of our territories, adapting our economy, preserving our heritage, mobilising society

The new PNACC includes 52 measures organised around 5 axes that aim to provide solutions to individuals, territories and communities, the economic world, and the living world.

Axis 1: Protecting the population

This first axis of the PNACC reinforces or introduces new action measures to protect the population from the already perceptible effects of climate change. Thus, actions are planned to maintain an affordable insurance system available on the territory, limit the risks related to the evolution of the water cycle, the gradual increase in exposure to natural risks and, in the very short term, the effects of high heat, whether in housing, work or urban environments, and map the risks of climate change on health. Other actions aim to deploy nature-based solutions so as to reduce the vulnerability of territories to the impacts of climate change. Specific measures are foreseen for the most vulnerable populations, in particular precarious people. Adaptation measures are also planned for overseas territories, in which climate change has different impacts from those observed in France and ask for specific measures.

Axis 2: Ensuring the resilience of territories, infrastructure and essential services

The second axis of the PNACC sets out the territorial dimension of the plan and is based on the construction of adaptation strategies that are specific to each local authority. It provides for measures to integrate adaptation issues into all public action in the regions, both in terms of project financing and territorial engineering and in terms of public planning strategy. This axis also includes several measures to adapt public services and major infrastructure networks to climate change, to ensure the continuity of education, the resilience of transport or critical energy infrastructure and electronic communication networks, and our water resources.

Axis 3: Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty of our country at +4°C

The third axis of the PNACC focuses on actions to ensure the resilience of the French economy, with actions affecting all economic sectors and other actions targeting in particular sectors already identified as most vulnerable to the effects of climate change: agriculture and the agri-

food industry, fisheries, tourism, and the timber industry. Economic sectors will be more or less impacted depending on the location of their infrastructure, their manufacturing processes, their supply chains and their outlets, including abroad. Economic sectors also play a key role in deploying adaptation solutions and innovating to meet this new challenge. A set of measures is planned to build and provide them with the tools to integrate the future climate into their structuring decisions.

Axis 4: Protecting our natural and cultural heritage

Climate change will impact our natural environments and our cultural heritage. In complementarity with the National Biodiversity Strategy (SNB), the Action Plan for a Resilient and Concerted Management of Water ('Water Plan') and the European Nature Restoration Regulation, the PNACC reinforces actions to adapt all natural environments so that our society continues to benefit from the ecosystem services they provide. These are actions of knowledge and progressive evolution of conservation actions, especially in protected areas, and ecosystem restoration taking into account the future climate. As regards cultural heritage, immediate action needs to be taken for fragile sites that will result in adaptation plans dedicated to the most vulnerable classified sites and UNESCO sites.

Axis 5: Mobilise the vital forces of the Nation to successfully adapt to climate change

The development and implementation of solutions for adaptation and the fight against maladaptation must rely on sound scientific studies, which require a strong mobilisation of research actors, particularly around major programmes. The issue of mobilisation and discussion with stakeholders, institutional and citizens, is also central to the success of the adaptation challenge at a time when a new impetus is being asserted, embodied in the PNACC. The objective behind the list of these measures is for each actor, each profession to adopt the adaptation reflex in their work and their daily lives. This mobilisation was made possible through the consultation process, which enriched the plan with new proposals from various stakeholders (private actors, local authorities). It is also a question of building the conditions for maintaining this mobilisation over the long run through representative and adapted governance arrangements, interdisciplinary expertise from the scientific community, training and awareness-raising, in particular for elected officials and public officials, and the provision of data to raise awareness among stakeholders and inform their decisions. The mobilisation of young people and more broadly of citizens is also crucial in the challenge of adaptation, with the mobilisation of the ecological civic service and the municipal reserves of civil security in missions dedicated to risk prevention.

Taking into account the specificity of our overseas territories in the face of the challenges of adaptation

Each measure of the PNACC includes a series of concrete actions to adapt society to the impacts of climate change in different timeframes. Some of the measures are particularly relevant overseas. While all these 52 measures are intended to apply to the overseas territories, priority will be given to some of them with regard to the specific challenges of these territories, in particular as regards the adaptation of housing to heat and the prevention of heat-related risks, natural risks, coastline retreat, water supply, the adaptation of agriculture, fisheries and tourism, the preservation of biodiversity and the acquisition of knowledge. These measures will be highlighted in the climate change

mitigation and adaptation strategies for each Overseas Territory, announced by the Overseas Interministerial Council of 18 July 2023.

In the overseas territories, the implementation of these priority measures will also be based on the deployment of synergies, exchanges and convergences with the other States in the regional area where each territory is located, both to promote the exchange of technologies (with the United States or Australia, for example for the Pacific and Atlantic overseas communities) and also from the point of view of capacity-building (with the other small island States).

Bringing the French adaptation method to Europe and internationally

While the measures in the Plan concern only the geographical perimeter of France, the challenges of adapting to climate change are global. Thus, the 7th IPCC reporting cycle, launched in January 2024, will focus on climate change adaptation with a series of publications, including on cities, planned between 2027 and 2029.

The adaptation method developed in the PNACC is the French contribution to a European climate change adaptation strategy that could be based on a European reference trajectory and sectoral policies that integrate adaptation challenges in a much more systematic way. EU funding for

resilience and innovation will be systematically sought.

Internationally, France will continue to meet its adaptation commitments, including those under the UNFCCC.

France must also be able to draw inspiration from all the best international and European practices on the subject, in terms of insurance, constructive solutions, public policies, etc.; this will be the subject of dedicated sectoral benchmarks.

Ambitious implementation of the new PNACC

Indicators: monitoring of implementation from measures to impacts

The 52 measures of the PNACC are equipped with monitoring indicators to make administrations and stakeholders accountable and to ensure precise monitoring of the implementation of the planned actions and compliance with the announced timetable.

Context indicators will be used to monitor the evolution of concrete manifestations of climate change in France.

The assessment of these indicators will be included in the annual report on the implementation of the PNACC presented to the National Council for the Ecological Transition (CNTE).

Pilotage: an interministerial and partnership approach with territories and stakeholders

The 52 measures of the PNACC include more than 200 actions requiring the mobilisation of all central administrations and state services in connection with the territories and private actors concerned.

For each action, state administrations or operators have been designated as pilots, the overall coordination of the plan being ensured by the Directorate-General for Energy and Climate (DGEC), which will prepare the annual implementation reports submitted to the CNTE. The reports will then be made public.

The PNACC follow-up meetings organised in the framework of the CNTE may involve the Economic, Social and Environmental Council (CESE) and other bodies in order to reinforce the links between adaptation to climate change and public policies.



**ZOOM ON
TRANSVERSAL
ISSUES**

Overseas

Overseas regions concentrate strong climate risks on territories that are already vulnerable. Geographical specificities, such as the relative isolation of these territories, call for the definition of a dedicated adaptation strategy per territory, the mobilisation of local and national resources and the establishment of a dedicated organisation.

Each adaptation strategy is defined locally. While the Overseas territories are exposed to a significant combination of hazards making them more vulnerable to climate change, they also benefit from remarkable resilience and know-how. Therefore, measure 63 of the Interministerial Committee for Overseas France (CIOM) of July 2023, and the approach of the territorial COPs for ecological planning, will allow everyone locally (public actors, economic and social actors) to identify the challenges the territory is exposed to, to set priorities and to determine the most effective actions to be implemented in an "Adaptation component" of the roadmap stemming from the French territorial COPs, in 2025. Specific national methodological, technical and scientific support will be provided to each territory during the COP process.

A number of cross-cutting priorities must also be taken into account in all local strategies:

- Coastline retreat (protection of populations and essential infrastructure, updating of major natural hazard prevention plans incorporating erosion requirements or development of local exposure maps)
- Protection of water resources, of which sanitation and consumption control

- Protection and restoration of non-artificialised and wooded areas
- Adaptation to rising temperatures (buildings, essential public infrastructure, including schools, urban context, professional activities, vulnerable people, vector control and control of new harmful species) and implementation of a dedicated heat system
- Adaptation of agricultural production and of the fisheries, aquaculture and tourism sectors
- Hardening of critical infrastructure in the face of more severe weather events
- Intensified and renewed communication with residents and businesses
- Knowledge acquisition and modelling of climate projections.

At European level, greater account should be taken of the specific characteristics of the outermost regions in the preparation and implementation of European rules on adaptation to climate change. In particular, the French authorities will propose to introduce an obligation to systematise, within any impact assessment of a legislative proposal, an 'outermost regions test', taking the form of an assessment of the effects and applicability of European standards in those territories, in accordance with Article 349 of the Treaty on the Functioning of the European Union (TFEU).

A specific monitoring mode will be set up annually, under the co-chairmanship of the ministry of the Interior and the ministry in charge of the ecological transition, with the support of the General Secretariat for Ecological Planning (SGPE), the prefects and presidents of the local authorities concerned

will participate in a national monitoring committee for local adaptation strategies for French overseas departments and regions and local authorities (DROM/COM). This meeting will be preceded, in each DROM/COM, by a

progress meeting, co-chaired by the prefect/president of Region-local authority, with the municipalities, Public Establishment for Intercommunal Cooperation (EPCI) and inter-municipal unions involved.

Research

Research feeds a large part of the proposed adaptation measures and it is well identified by all international recommendations (IPCC and IPBES in particular) that each adaptation option must be assessed with a systemic view in order to avoid any maladaptation. Thus, the major programmes of France 2030 such

as PEPR (high-priority research programmes and facilities) are explicitly mentioned in the PNACC to highlight their contribution to the planned adaptation measures. These programmes will be able to provide further knowledge so that measures can be adapted as closely as possible to current knowledge.

Europe and International

The European Adaptation Framework

The European Climate Law, adopted in 2021, establishes a European legislative framework on adaptation and requires Member States to implement and enforce adaptation strategies to increase resilience and reduce fragilities to the effects of climate change.

On 24 February 2021, the European Commission presented its latest strategy on adaptation to climate change, in line with the announcements of the Green Deal.

The aim of this strategy is to define a new framework for adaptation by 2050, based on improved knowledge of the impacts of climate change and the solutions to be provided, reinforce risk assessment and planning, and accelerate adaptation measures in order to increase the resilience of our societies.

The strategy focuses on developing solutions (including nature-based solutions) and

moving from planning to practical implementation. It has several objectives:

- Improve knowledge on the effects of climate change and adaptation solutions, in particular through research projects funded by Horizon Europe (the European Programme for Research and Innovation 2021-2027) and the launch of the Climate and Health Observatory;
- Plan adaptation by ensuring preparedness at local rather than national level and by increasing the number of local climate risk assessments;
- Deploy innovative adaptation measures, in particular through Horizon Europe's 'Climate Change Adaptation Mission';
- Actively participate in international consultation bodies and strengthen the European Union's (EU) international action through targeted funding, particularly in Africa and among small island States.

It also aims to develop cross-cutting tools to (1) take better account of the needs of regional authorities; (2) to put in place measures to protect the most vulnerable groups by improving the management of available natural resources, limiting forced population displacements due to land degradation and increasing the availability of supplies of basic goods and services within the EU.

Based on this strategy, Member States are required to develop and implement national adaptation strategies and plans, taking into account the particular vulnerability of the sectors concerned, including agriculture, water and food systems, as well as food security, and to promote nature-based solutions and ecosystem-based adaptation. It also includes a general obligation for the Union and the Member States to continuously improve their adaptive capacity, strengthen their resilience and reduce their vulnerability to climate change. In the first half of 2022, the European Commission published guidelines establishing common principles and practices for the identification, classification and prudential management of physical climate risks in the planning, development, execution and monitoring of projects and project programmes.

On 12 March 2024, the European Commission published its Communication on managing climate risks to protect people and prosperity. Building on the European Climate Risk Assessment published by the European Environment Agency on 11 March 2024, the Communication calls for action at all levels of government, as well as for the private sector and civil society, to anticipate risks and build resilience to climate change in the EU. It details the risks to which the sectors are exposed and stresses the urgent need for action.

Measures with a European aim

France wishes to accelerate the implementation of the climate change adaptation strategy and calls on the European Commission to integrate the topic of climate change adaptation into all EU sectoral policies and future initiatives.

At the Environment Council on 20 June 2023, France introduced an “other business” item on the agenda, to call for strengthening climate change adaptation policies and suggest, for the first time, the establishment of **a reference warming trajectory for Europe**. The definition of such a trajectory is under consideration in

the context of the first European adaptation plan project, announced for 2026.

The European reference warming trajectory could be inspired by the one adopted in France at the end of 2023. The reference warming levels would be: +1.5°C in 2030, +2°C in 2050 and +3°C in 2100 at global level, with different levels of warming to be applied to each Member State according to its geographical characteristics.

Some measures in the national plan are also intended to be taken at European level. This European dimension could have leverage effects and could trigger mobilisation and cooperation on these issues, which concern all the Member States:

- Continue works on options for pooling extreme risks at European level, as a corollary of promoting at European level the specific features and advantages of the French model for pooling natural disaster risks;
- Joint research efforts on knowledge: on nature-based solutions, monitoring of emerging pathogens, etc.;
- Support the "One Health" approach at European level;

- Coordination of emerging pathogens/diseases monitoring efforts ;
- Expansion of a network of adaptation experts in the territories to include partners from EU Member States;
- Support the reinforcement of European funds targeting adaptation (in particular their dedicated sub-programmes);
- Accompanying measures (capacity building, technical assistance and advice, flexibilities) for the territories and professionals most exposed to the impacts of climate change in the implementation of the obligations set at EU level, in particular in the context of the upcoming revisions of the CAP and the CFP and the establishment of the 2040 climate framework.

France will also pay attention to the implementation of the Liège Declaration on Adaptation to Climate Change, signed by 100 organisations and networks, which states that the cost of inaction will always be higher than the cost of action, and that adaptation cannot be separated from mitigation. The text recalls that adaptation policies cannot be carried out without taking into account precarious populations and that it is important to set up an insurance system that preserves equality between citizens and territories.

Mobilisation of European funding

In its Communication "Managing climate risks - protecting people and prosperity", the European Commission commits that all relevant European programmes will contribute to resilience to climate change.

Some of these programmes are under direct management (by the European Commission) and operate through calls for proposals. The other part, mainly cohesion policy

programmes, is under national managing authority (e.g. by regions).

The PNACC will encourage the mobilisation of these sources of funding by the actors involved (local authorities, operators of the State, etc.) in particular to participate in the financing of resilience studies and experiments. Some specific programmes have

already been identified as opportunities to be mobilised by stakeholders, including:

- The InvestEU programme (former European Fund for Strategic Investments or 'Juncker Plan'), bringing together the various financial instruments of the European Union;
- The Horizon Europe programme for research and innovation in all areas of public policy, of which €6.3 billion is dedicated to innovative and environmentally friendly transport technologies. By 2027, EUR 15.5 billion will be mobilised on cluster 5 'climate, energy and mobility' and EUR 8.9 billion on cluster 6 'food, bioeconomy, natural resources, agriculture and environment' of Pillar 2 of Horizon Europe;
- The LIFE programme, which supports the implementation of EU environmental

legislation and policies and also contributes to the financing of innovative experiments;

- For some natural disasters, the European Union Civil Protection Mechanism and the Solidarity Fund;
- The Connecting Europe Facility, which is dedicated to the digital, energy and transport sectors;
- The European Regional Development Fund (ERDF) also contribute to finance certain projects in the field of adaptation;
- The tools of the Common Agricultural Policy and the Common Fisheries Policy on the food aspect.

More broadly, the European Commission intends to launch a temporary think tank on mobilising adaptation funding to reflect on how to facilitate this funding.

Mobilisation at international level

The concept of global climate governance was formally recognised in 1992 in the United Nations Framework Convention on Climate Change (UNFCCC).

The 2015 Paris Agreement established a 'Global Goal On Adaptation' (GGA), which aims to put adaptation to climate change at the same level as mitigation, by developing an adaptation goal parallel to the mitigation goal of limiting the global temperature increase to 1.5°C above pre-industrial levels. The GGA aims to create a global framework, with specific objectives, to guide adaptation action around the world.

At COP28 in Dubai in 2023 and COP29 in Baku in 2024, Parties to the UNFCCC agreed on the GGA framework. According to the points

agreed in this context, the Parties must put in place:

- impact, vulnerability and risk assessments in 2030
- Multi-hazard early warning systems in 2027
- climate information services for risk reduction and systematic observation in 2027
- country-led, gender-sensitive, participatory and transparent national adaptation plans in 2030.

France will continue to meet its adaptation commitments, including those under the UNFCCC. As such, France's international adaptation strategy will maintain significant funding for adaptation (€2.8 billion in 2023, or one third of its contribution to public climate finance) and continue its efforts to strengthen

the capacities of its partners, in particular the most vulnerable countries. Emphasis is on promoting nature-based solutions.

France also contributes to multilateral funds that make adaptation to climate change a priority, such as the Adaptation Fund or the Green Climate Fund.

In addition, France actively supports several programmes and initiatives, for example:

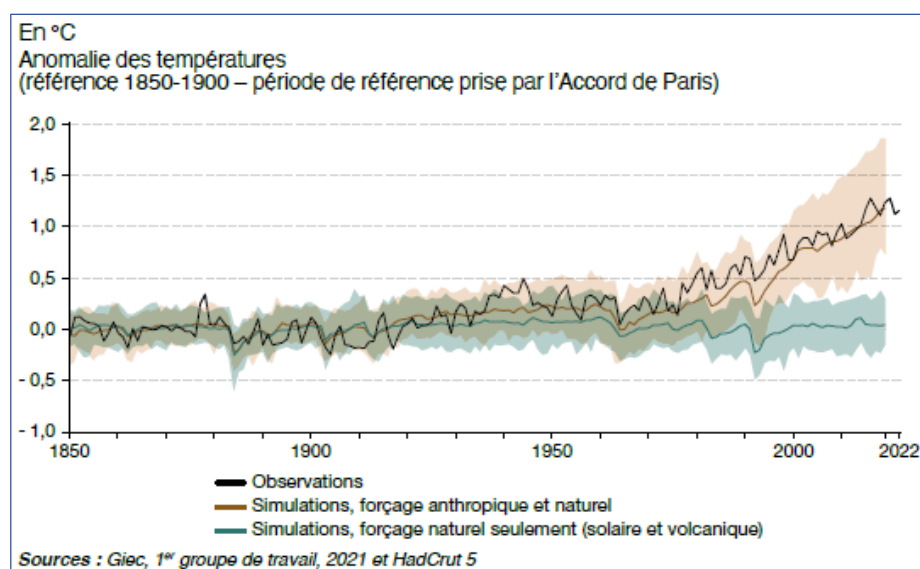
- The Adapt'Action Programme (led by the Agence Française de Développement - AFD - Group) to increase the resilience of populations and ecosystems by integrating all levels of governance into adaptation planning;
- The CREWS initiative, launched at COP21, to develop early warning systems in the most vulnerable countries (in 2022, it helped reinforce the protection of 111 million people in 15 different countries) and which implements the United Nations objective of ensuring universal protection by these systems by 2027;
- The Global Shield initiative, launched at COP27 by the G7 and the V20 Groupe of Vulnerable States, to support and develop climate-sensitive insurance and financing solutions, also addressing climate change-related losses and damage.



ANNEXES

Annex 1: a climate that has already changed

The increase in the global average temperature of land-surface air and ocean-surface water is very marked. The global warming of the last decade (2014-2023) is 1.2°C compared to the pre-industrial era.



Evolution of the global average annual temperature from 1850 to 2022

In France, this resulted in a five-fold increase in the number of days of heat waves between 1960 and 2020, from 2 to 10 days on average per year. In our territory, 2024 was one of the five warmest years since the beginning of the pre-industrial era, behind 2022 (warmest year), 2023 (second warmest year) and 2020 (third warmest year).

The frequency and intensity of extreme rain events have increased in recent years. More intense extreme rains are observed in several regions with increases of up to +20% in the Mediterranean, but also in Brittany, the Central region and the North-East of France.

Climate change is increasing the intensity and duration of soil droughts, which have doubled since the 1960s at national level and tripled in the south of the country.

The state of soil drought and the weather conditions encountered in recent years have led to forest fires on a scale unmatched in the 21st century: particularly in the South West. Their extension on the territory was also unprecedented, reaching Brittany region, the Northern Alps as well as the Jura.

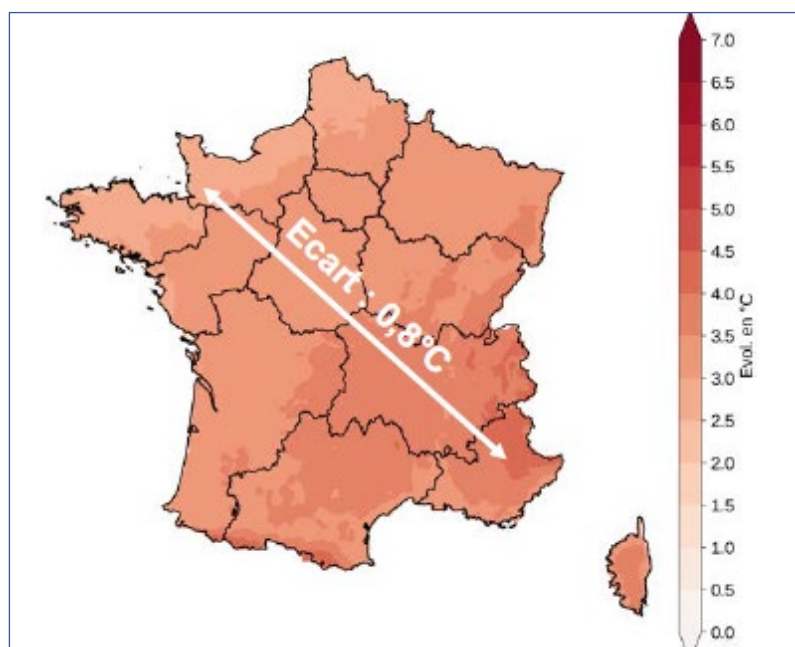
Annex 2: what climate in a France at +4°C?

By the end of 2025, the mapping documents will be supplemented by maps of the Overseas Territories, once Météo-France has completed its detailed climate projections for the main overseas territories and their exploitation in terms of TRACC warming levels.

The following results show the median changes obtained for an average warming of 4°C compared to the pre-industrial era (source: Météo-France, 17 'Explore2 – Adamant' projections for climate variables). For their full analysis, these median results should be associated with their different ranges of uncertainty and should not be interpreted in a purely probabilistic manner. Taking these uncertainties into account is necessary to design more robust adaptations to future changes.

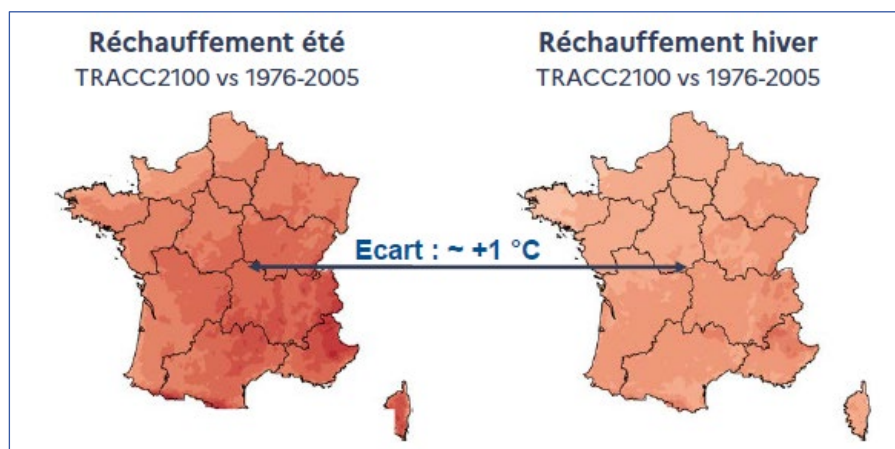
Increased temperatures

By the end of the century, the increase in average temperatures will not be the same from one territory to another. A gap of 0.8°C in the magnitude of the increase is projected between Normandy region and the South region by 2100. Warming will also be more pronounced in mountainous and urban areas. In overseas regions, the oceanic influence will slightly mitigate average global warming.

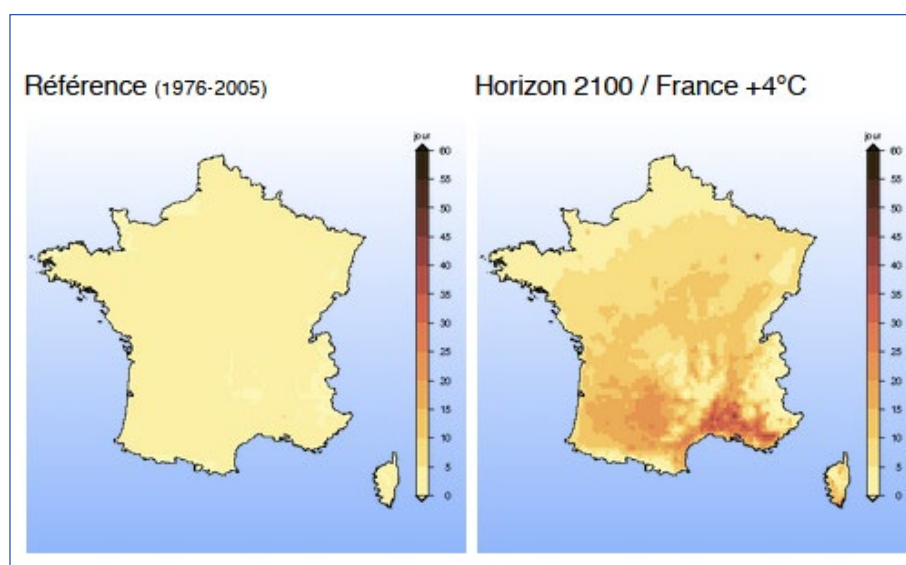


Annual temperature increase compared to 1976-2005

This warming will also be even more intense in summer, with around 1°C more than in winter by 2100.

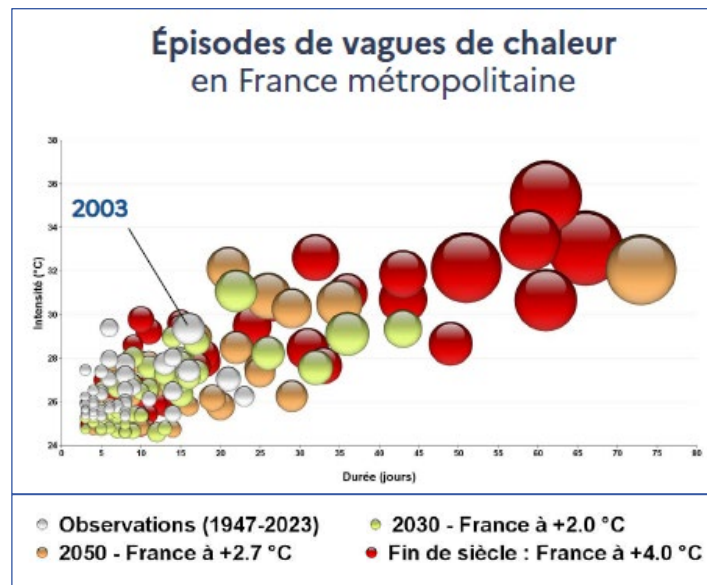


In that season, the number of days of high heat will increase sharply throughout the territory. This development will be exacerbated in the currently warmer regions, notably the Mediterranean arc, the Rhone corridor and the Garonne valley.



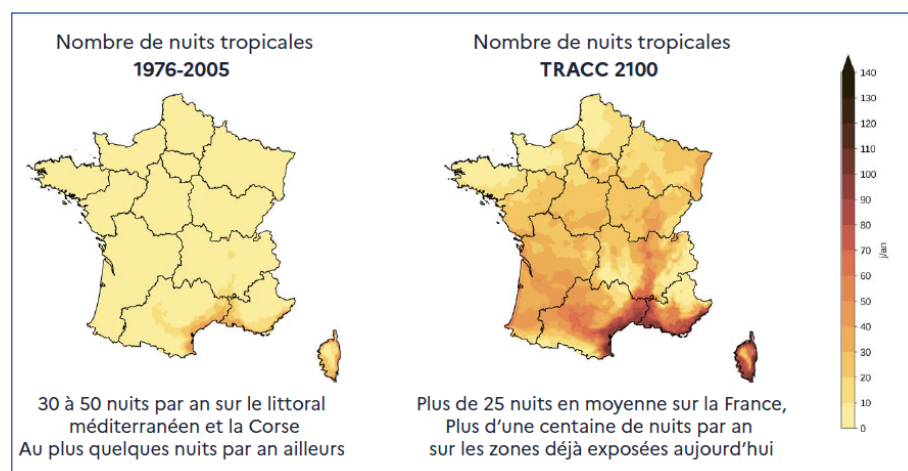
Number of days when the maximum temperature exceeds 35 °C

By the end of the century, peaks above 50°C are likely, while heat waves could spread over periods of more than two months in summer, with severity well above today's levels and an increasing intensity of 6°C.



Intensity and duration of observed/expected heat waves. The size of the bubbles indicates the severity of the heat wave: it is proportional to the cumulative heat during the episode.

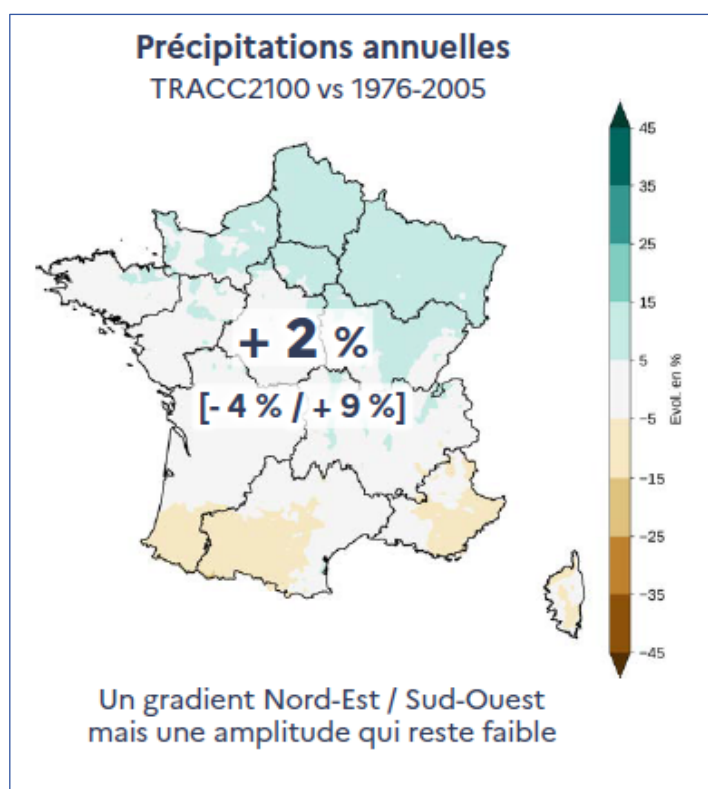
The whole of mainland France will be affected by a significant increase in the number of so-called tropical nights, i.e. nights when the temperature does not fall below 20°C. Only mountain areas, Brittany region and the Channel coastline will remain almost spared, while tropical nights could occur 40 to 50 nights per year in the northern half of France (as much as the maximum of the Mediterranean coastline today), and more than a hundred nights per year in the most exposed areas, especially around the Mediterranean, by 2100.



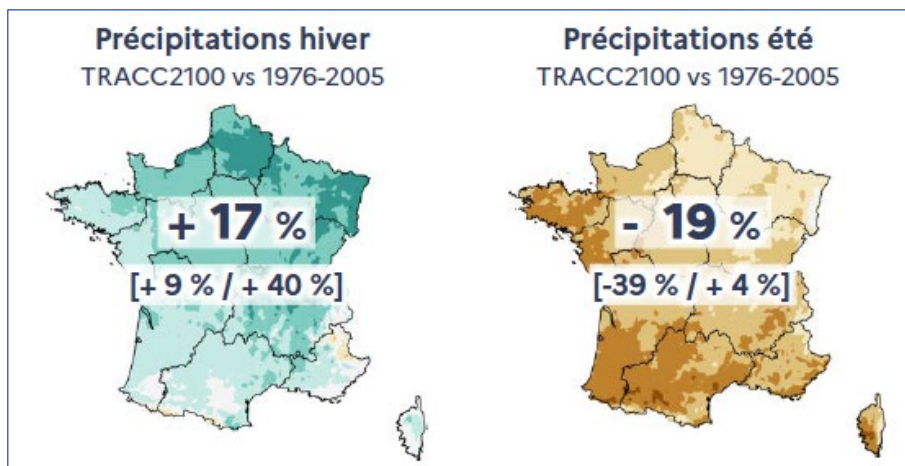
Without adaptation measures, buildings (housing, offices, schools and health facilities), transport services and infrastructure, energy, water and telecommunication networks will be weakened and may be unable to function during long periods of high heat, while the spatial distribution of species will be altered, with even the disappearance of the most vulnerable. Globally, the risk of species disappearing would be ten times higher in 2100, compared with 2030.

Precipitation and water cycle

As regards the annual cumulation of precipitation, a slight decrease in the southern half of France, accentuated around the Pyrenees, and a slight increase in the northern half, particularly towards the north-eastern borders, are expected by the end of the century. However, uncertainty remains high on the sign of the evolution of annual cumulation (decrease or increase in cumulation).



This near-stability of annual precipitation accumulation hides a more pronounced change in the annual cycle, with an overall increase in precipitation in winter, and a decrease in precipitation in summer.



Maximum daily rainfall could increase by 15% on average in France, while the 100-year risk of daily rainfall could increase by 20-30% or even 40% in some areas.

The increase in evapotranspiration due to the increase in temperature will contribute to a general decrease in available water (decrease equivalent to 1-2 months of rain). Drought periods will multiply (+40 days of moderate drought by the end of the century and 3 times more intense droughts), contributing to an increased risk of forest fire and vegetation (risk doubled in the South of France, i.e. up to 30 days of high risk per year).

For the islands of the Indian Ocean (La Réunion and Mayotte), the climate projections currently available show that the hydrological cycle will also change, with a decrease in rainfall at the heart of the dry season and a delay and shortening of the rainy season. In the Antilles, geographical contrasts are marked between the different islands. Overall, the rains are expected to decrease, with a delay and shortening of the rainy season. In the Pacific Overseas Territories, the evolution of precipitation is uncertain by 2100.

Annex 3: PNACC Action Pilots

No.	Measures	Pilots (co-pilots)
Axis 1. Protecting the population		
1	Reinforcing the Fund for the prevention of major natural hazards to speed up prevention efforts in the territories and better protect the population	DGPR
2	Keeping everyone insured against natural risks by modernising our insurance system	DGTrésor, DGPR, DGSCGC (DHUP, DB, DLF)
3	Protecting the population from floods by adapting risk prevention policy	DGPR, DGALN, DGSCGC, Météo-France (DGEC, DGE)
4	Protecting the population from the consequences of coastal retreat by rethinking the development of exposed areas	DEB, DHUP, DGALN, DGOM, (MASA)
5	Protecting the population from disorders on buildings related to the shrinkage-swelling of clays	DGPR, DHUP, DGSCGC, DGTrésor
6	Protecting the population from natural hazards in the mountains, including glacial hazards and periglacial	DGPR, DGSCGC
7	Preparing for the expected increase in fires forest and vegetation	DGPR, DGSCGC, DGPE
8	Preparing civil security for increased risks	DGSCGC
9	Adapting housing to the risk of high heat	DHUP, DGEC, DGE, Ademe, SPF, PBD, ANAH, MATD, MTEBFMP (DGS, DGT, DGPR, MENESR, CSTB, Cerema, Météo-France, GDOM, MC, DB)

10	Deploying renewable cooling technologies on a large scale	DGEC, DGE (MINEFI, Ademe, Cerema)
11	Adapting working conditions to climate change by strengthening employers' prevention obligations	DGT, DGEFP
12	An exemplary State to integrate adaptation to climate change into the daily work of public officials	DIE, MAPFPS
13	Renature cities to improve their resilience to climate change	DHUP, DGEC, Cerema, Water Agencies (DGE)
14	Protecting precarious populations from hot weather	DIHAL, DHUP
15	Protecting prison staff and detainees from hot weather	DAP
16	Developing the "One Health" approach for the prevention of health risks linked to climate change	DGPR, DGS (DGAL)
17	Improve monitoring and knowledge of the impacts of climate change on health	DGS
18	Maintaining outdoor air quality during heat waves	Pilots of the Ozone Working Group of the National Air Council, Prefect (DGEC, CNA, AASQA, INERIS, DREAL, ARS)
19	Integrating climate change adaptation challenges into the prevention of technological risks	DGPR
20	Deploy nature-based solutions for adaptation	DGS, DEB, CGDD, OFB (CNFPT)

Axis 2. Adapt territories and ensure the continuity of essential infrastructures and services		
21	Preserving water resources in the face of climate change: strengthen the Water Plan	DEB, DGPR, DGOM, DHUP, Min Intérieur, DGITM, VNF, DGCL, DGE, MTEBFMP, MSJVA, DGAMPA, DGS (MASA, DGEC, INRAE)
22	Make available local authorities information needed to adapt their territory to climate change	DGEC, Météo-France, DGS (Ademe, Cerema, DREAL, Santé Publique France)
23	Progressively integrate the TRACC into all public planning documents	DGEC, (DGALN, DGCL, Météo-France, Ademe, Cerema)
24	Integrating climate change adaptation issues into all technical standards	GCSD (DGEC, AFNOR)
25	Sustain the 'Adaptation Mission', a unified State engineering offer for adaptation for local authorities	CGDD, DGEC, Ademe, Cerema, ANCT, Min Intérieur (MétéoFrance, Agences de l'eau, OFB, ANAP, Banque des Territoires, GREC)
26	Better assessment of adaptation actions carried out across the territory	DGEC, CGDD, DGFIP
27	Taking greater account of adaptation to climate change into public funding for the ecological transition from 2024	CGDD, ANCT, DGALN
28	Ensuring continuity in school education and reception of young children in the context of global warming	DGALN, MENESR SG, DGESCO, Prefects
29	Accompanying the impact of climate change on our health care system	DGOS, DGCS, DGS, ARS (DGEC, Anap)
30	Ensuring the resilience of transport and mobility	DGITM, DGAC
31	Ensuring the resilience of the energy system	DGEC, RTE, DGPR, ASNR
32	Ensuring resilient electronic communications services	DGE (CCED, ANCT, Arcep)

Axis 3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty		
33	Mobilising all economic sectors: Integrating climate change adaptation into business strategies	DGEC, DGE, SHFDS, DGEFP, Ademe, CCI, CMA, DREETS/DEETS, SGPE, CGDD, BPIFrance, Chambres consulaires DGITM (DGPR, DREAL,)
34	Integrating adaptation challenges into business support schemes	DGTrésor, SGPI, DGEFP
35	Supporting the adaptation of tourism	DGE, ANCT, Cerema, DGCL, MC, IGAC, IGEDD (MTEBFMP, Ademe, DGOM, Min Intérieur, Atout-France)
36	Developing knowledge, training and anticipating the impacts of climate change in the agricultural and agri-food sectors	MASA, MTEBFMP, DGAMPA (DGER, DGPE)
37	Supporting farms and the agri-food industry in the face of climatic hazards and initiating the transition to resilient, low-carbon models	MASA, DEB, SGPI, MINEFI, CGDD, DGAMPA, Regions, DISAOM, DGAL, MTEBFMP, Water Agencies, MSAS (DGS)
38	Ensuring the resilience of forests, related services and the forest-based economic activities	DGPE, DEB, DGEC, DGER, INRAE, DGALN (DGE, CGDD, NFB, CSF, DGTrésor)
39	Supporting marine fisheries and aquaculture in the face of climate change	DGAMPA, DEB (Ifremer, IRD, MNHN, CNPMM, CNC, DGPE, DGAL, DIRM, DGPR)
40	Better assess adaptation actions implemented by companies	GCSD, DGTreasury (DGT)
41	Developing the tools and information that businesses need to adapt to climate change	DGTrésor, Banque de France, DGEC, Ademe, BPIFrance, DGE (Météo-France, Cerema, DGPR, DGITM, CGDD, DREETS, DDTM)
42	Mobilising financial actors for the private financing of climate change adaptation	DGTrésor, BPIFrance

Axis 4. Protecting our natural and cultural heritage		
43	Promoting the adaptation and resilience of natural environments and species to climate change	DEB, OFB, CGDD, DGAMPA (MTEBFMP, DREAL/DEAL, Ifremer)
44	Protecting our natural and cultural heritage from the impacts of climate change	DGPA, MC SG, DGMIC, DIE, DG2TDC, IGEDD, IGAC (DGPR, SDES, DGSCGC, IGN, BRGM, Météo-France, C2RMF, DGEC, CRC, LRMH, DHUP, DEB)
Axis 5. Mobilising the Nation's vital forces to successfully adapt to climate change		
45	Mobilising public procurement for climate change adaptation	AED, GCSD, DAJ-OECP
46	Mobilising research and scientific knowledge on climate change and adaptation solutions	GCSD, DGRI, GIP EPAU
47	Strengthening the governance of climate change adaptation	DGEC, CGDD
48	Engaging citizens in missions related to climate change adaptation and risk prevention	Civic Service Agency, DGSCGC, (MSJVA, CGDD, DGPR, DGEC)
49	Pursue and strengthen climate education in school and higher education curricula	DGESCO, DGESIP, SG MTEBFMP, CGDD, IGN, GIP EPAU
50	Train all public officials on adaptation issues and mobilise the competencies of the State	MTEBFMP SG (DGEC)
51	Mobilising artificial intelligence solutions for climate change adaptation	CGDD (National Coordination IA, Banque des territoires)
52	Mobilising the French people on the importance of adaptation and its benefits in the short and medium term	MTEBFMP DICOM, DGEC, GIP EPAU



MEASURES



GOUVERNEMENT

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PNACC

3 Third French National Adaptation Plan

MEASURE N°1

Reinforcing the Fund for the prevention of major natural hazards to speed up prevention efforts in the territories and better protect the population

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

Climate change requires stepping up our efforts to prevent natural risks.

Prevention has proven its worth. According to a study by the Central Reinsurance Fund (CCR), 1 euro invested by the Fund for the prevention of major natural hazards (known as the Barnier fund, which constitutes State support for prevention policies, since the Barnier Act of 1995) makes it possible to avoid 8 euros of damage.

The Barnier Fund will thus be strengthened in its support to the prevention measures of local authorities (in particular to protect entire city districts) and to better protect the population against the intensification of climatic events and risks, in particular those related to floods.

ACTIONS ALREADY UNDERTAKEN

Created in 1995, the Fund for the Prevention of Major Natural Hazards (FPRNM, known as the Barnier Fund) supports measures to prevent or protect people and property exposed to major natural hazards. As the backbone of France's prevention policy, the prevention measures carried out by the Barnier Fund have proved their worth: 1 € invested in prevention¹ avoids 8 € of damage during natural events occurring thereafter (study of the Central Reinsurance Fund – 2024).

¹ The 'overall' benefit of prevention (Barnier Fund and co-financing) is of the order of EUR 3 avoided for every EUR 1 invested. It varies according to the aided schemes: around EUR 2 for relocations up to more than EUR 10 for measures such as urban planning regulation or hydraulic works.

The Barnier Fund intervenes after a rigorous cost-benefit analysis, so as to encourage the most effective and virtuous approaches to control exposure to natural risks in our territory. It supports local authorities in their global prevention efforts. It also allows them to buy back buildings where populations are seriously threatened by a major natural risk.

The Barnier Fund also finances works carried out by individuals and small businesses to reduce the vulnerability of their homes or premises.

NEW ACTION

Strengthen the resources allocated to the Barnier Fund to multiply and accelerate prevention projects

Over the last decade, the Barnier fund has made it possible to co-finance many local prevention projects up to €2 billion in addition to the €2.5 billion mobilised by local authorities. This funding from the Barnier fund has created a real territorial dynamic in terms of prevention.

The Barnier Fund will have its resources strengthened by more than 30% and increased for the first time to EUR 300 million.

In consequence, many ambitious or pioneering projects in adapting to climate change will be financially supported: Basin of the Bassée upstream of Paris to reduce the floods of the Seine, works to protect the city of Nîmes against the Cevennes phenomena, relocation of the village of Miquelon now highly exposed to the risk of marine submersion, etc.

PILOTE	DGPR
BUDGET	Increase in the Barnier fund to €300 million/year
TIMETABLE	2025
INDICATORS	Operational support for prevention operations: credits consumed annually by hazard



GOVERNEMENT

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3 Third French National Adaptation Plan

MEASURE N°2

**Keeping everyone insured
against natural risks by
modernising our insurance
system**

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The objective of this measure is to put in place actions to preserve a broad pooling of climate risks with an affordable insurance offer available on the territory, including in areas marked by increasing disasters due to climate change.

Over the past two decades, the climate has changed and there has been a significant shift in disaster rates. The Central Reinsurance Fund (CCR) estimates that the increase in claims will continue and could be between 30% and 60% by 2050 solely because of climate change, for the perils covered by the "Cat Nat" scheme.

ACTIONS ALREADY UNDERTAKEN

A mission on the insurability of climate risks was entrusted, in May 2023, to three experts (Thierry Langrenay, president of the environmental association 'Workshops of the future', Gonéri Le Cozannet, expert at the BRGM and contributor to the IPCC's sixth assessment report and Myriam Merad, research director at the CNRS).

The public report, officially delivered on 2 April 2024 to the ministers responsible for the economy and the green transition, makes a number of recommendations aimed at increasing the State's knowledge of ongoing developments in insurers' segmentation policies and maintaining the pooling of risks among all policyholders. The actions presented below build on this work.

NEW ACTIONS

1. Set up an observatory for the insurance of natural disasters
2. Preserve the broad pooling of climate risks with an affordable insurance offer available throughout the country
3. Strengthen prevention efforts and raise awareness of adaptation to natural risks among the general public and all stakeholders by closely involving insurance stakeholders and setting up personalised information services on adaptation measures and available support

ACTION 1

Set up an observatory for the insurance of natural disasters

Knowledge of the materiality and, where appropriate, the extent of the reduction in insurance supply in certain territories is an essential prerequisite for designing adjustment measures targeting these actors. To date, the objectification of the phenomenon of demutualisation remains difficult in the absence of centralised data by public authorities on supply and insurance market shares by area.

The CCR is ideally positioned to carry out this exercise, as a reinsurer of approximately 95% of natural disaster risks in France, having access to insurers' data for its reinsurance coverage needs. It also has climate data and internal modelling tools to correlate insurance underwriting data with climate loss data, at a different scale according to each hazard.

In this context, the Government announced, in April 2024, its wish to increase transparency on the evolution of insurance practices at national level and in the most exposed areas by creating a 'climate risk insurance observatory', which will result in the yearly submission by the CCR of a report to the ministers responsible for the economy and the ecological transition in order to inform the public authorities on the evolution of insurance supply and market shares at national level and in exposed areas, in France's mainland and overseas territories.

The data used for the insurance observatory will have to be consistent with the new maps that will be produced to characterise areas of exposure to climate-sensitive hazards with current and future climate, according to the reference warming trajectory for adaptation to climate change (TRACC).

PILOTE	DG Trésor
BUDGET	No additional need
TIMETABLE	2024: Announcement of the measure and structuring of the governance of the observatory (associated contributors, scope of work, deliverables, deadlines, availability of data and methods of communication) 2025: Production of the first report prepared by the CCR for public decision-makers From 2025: Implementation of the results of the Natural Disaster Insurance Observatory

INDICATORS	- Establishment of working groups at technical level to define and frame the work of the observatory - Submission of an annual report - Production of a National Flood Map and update of the National Clay Removal Swelling Exposure Map

ACTION 2

Preserve the broad pooling of climate risks with an affordable insurance offer available throughout the country

Faced with the observation of a disengagement of insurers in areas highly exposed to climate risks, in particular in Overseas France where the phenomenon of non-insurance is particularly marked, this action aims to anticipate this phenomenon of demutualisation. Incentives for insurers to pooling risks are being developed or under consideration. By way of illustration, the commissioning mechanism of the CCR, which encourages insurers to remain present in territories exposed to climate risks, will enter into force in 2026.

The Central Pricing Office (BCT) has an important role to play in ensuring the insurability of any natural or legal person in the face of natural disasters. That administrative authority has the power to require an insurance undertaking, chosen by the insurance purchaser, to insure that purchaser under schemes expressly provided for by the Insurance Code, such as the risk of natural disasters. The BCT's actions in the field of natural disasters would benefit from greater emphasis, in particular by facilitating access arrangements, through the implementation of an electronic referral, or by communicating more widely on its competences.

PILOTE	DG Trésor with the support of DGPR, DHUP, DGSCGC, DB and DLF
BUDGET	No additional need
TIMETABLE	From 2025: Strengthening communication on the BCT's missions 2026: Implementation of the commissioning mechanism of the CCR
INDICATOR	Number of uninsured local authorities at national level

ACTION 3

Strengthen prevention efforts and raise awareness of adaptation to natural risks among the general public and all stakeholders by closely involving insurance stakeholders and setting up personalised information services on adaptation measures and available support

The 2021 mission on transparency, information and inclusiveness in the management of major, technological or natural risks confirmed the findings of a previous mission, conducted ten years earlier, that progress can be made for individuals and professionals in terms of risk culture and resilience.

The 'All Resilient to Risk' ministerial action plan of the ministry responsible for the ecological transition, set up in response to this observation, proposed the creation of a national day of

resilience (JNR). Established in 2022, it aims to promote actions to raise people's awareness of major risks throughout the national territory (mainland France and overseas). The JNR was enshrined in the legislation through the law of 10 July 2023 aimed at strengthening the prevention and fight against the intensification and extension of the fire risk.

The JNR must become the culmination of a continuous awareness-raising campaign on the need to adapt society as a whole to the effects of climate change. This means working with the civilian population, but also with all types of actors (public operators, elected officials, businesses, service providers, representatives of national research centres and the academic world, associations), to raise awareness and provide them with training on the actions to be taken in the face of climate change.

Since insurers are in contact with a large number of French people and because of the density of the local insurance network in France, they have a major role to play in this system, particularly as information relays. In addition to raising awareness, **insurers could contribute to setting up a platform, or to enriching an existing platform, to disseminate personalised information to individuals on public support and solutions for financing and managing prevention/remediation work.** In addition, for certain hazards such as flooding, they could **contribute to the development of diagnoses to reduce vulnerability** (with the aim, in particular, of financing maladaptive measures).

As key actors at local level, local and regional authorities must also be supported to develop their knowledge of natural risks and vulnerability reduction solutions. A departmental focal point for the management of the consequences of natural disasters and their compensation is responsible for promoting better information for communities by disseminating general information on the exposure of the territory concerned to natural risks. Insurance agents, like insurance experts, can also relay these awareness-raising actions to elected officials. The agreement recently signed with the professional federations Agéa and FSE and the State will lead these players to develop their own skills to step up their actions in this direction.

PILOTES	DGPR, DGSCGC and DG Trésor
BUDGET	To be defined with France Insurers and companies interested in this initiative
TIMETABLE	To be defined with France Insurers and companies interested in this initiative
INDICATORS	- Number of awareness-raising actions carried out in the territories at the initiative of insurers and assessment, each year, of their impact on all targets - Number of insurers and partner entities and financial and human resources mobilised by insurers for this purpose - Setting up personalised information systems on risks and support for the prevention of natural risks



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3 Third French National Adaptation Plan

MEASURE N° 3

Protecting the population from floods by adapting risk prevention policy

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The objective of this measure is to update the flood risk prevention policy, whether it involves marine submersion, water runoff or river overflow, in order to take into account the reference warming trajectory for climate change adaptation (TRACC).

Marine submersion is the temporary flooding of the coastal area by the sea during severe weather conditions (high depression and offshore wind) and sea conditions (swell). Marine submersion phenomena are therefore directly influenced by sea level rise. This ongoing increase, linked to climate change, will continue throughout the 21st century and beyond 2100, due to the inertia of the ocean. The average annual damage cost associated with marine submersions and permanent flooding of low-lying areas is around €0.2 billion in France. This cost is estimated at around €2 billion in 2050, and would be around €20 billion in 2100 in the absence of adaptation, according to a scenario close to TRACC (Vousdoukas *et al*, 2020), leading to a necessary evolution of the prevention policy.

Changes in cumulative rainfall could lead to more frequent and larger flooding from overflowing rivers. The foreseeable consequences for human life and damage to property require increased anticipation of these phenomena. Various events illustrate these developments, such as the four successive depressions that occurred between the arrival of storm Ciaran at the end of October 2023 and storm Frederico in mid-November 2023. These storms were accompanied by exceptional rainfall (the meteorological office Météo-France recorded 32 consecutive days of rain across the country, which is a record), leading to major flooding, especially in the Pas-de-Calais and the North

departements. The cost of covering flood-related damage is estimated at between €450 million and €600 million per year (JRC, 2022). However, some events could significantly exceed this average value, notably due to their more frequent occurrence. For example, the floods of May and June 2016 in the Paris metropolitan area cost €1.4 billion (Court of Auditors, 2022). According to a 2014 OECD assessment, a 100-year flood of the Seine would cause direct damage estimated at between €3 billion and €30 billion.

As a result of climate change, projections indicate a future increase in intense rainfall and, consequently, potentially destructive and dangerous large-scale runoff events. Météo-France has published results on annual *daily rainfall maxima*, which show a median increase of around 10 to 15 % for the southern half of France and around 20 % for the northern half. The increase in non-frequent rains (return periods of several decades) is expected to be higher. Météo-France is conducting a study dedicated to the French overseas territories, to be completed in 2025.

Runoff events can occur at various points in the national territory and cause significant material damage. According to simulations by the Central reinsurance fund (CCR), in France, an average of 175,000 inhabitants are affected by runoff flooding each year. Overall, runoff related risks would directly or indirectly affect around 13 million people, i.e. one fifth of the population (CCR, 2023). The cost of claims due to runoff represents half of the flood claims compensated under the 'natural disaster' procedure over the period 1982-2021, i.e. €12 billion (CCR, 2023).

ACTIONS ALREADY UNDERTAKEN

Flood prevention requires, among other things, forecasting and knowledge of the phenomena: knowing that a flood will occur in the coming hours or days allow us to inform crisis managers on the one hand and the general public on the other hand in order to protect homes, places open to the public, businesses, or to close in advance the transport infrastructure that could be impacted. Many actions have been taken, both to extend the network of state-monitored rivers and to make vigilance information accessible to as many people as possible.

Today, the *Vigicrues* system provides information on the risks of flooding in the next 24 hours on 23 000 km of rivers in France (i.e., with a few exceptions, all rivers over 50 km long). Its scope and tools have expanded in recent years. In 2020, Corsica and French Guyana, previously not covered, were included in *Vigicrues*. In addition, vigilance information has been enriched with dynamic mapping and maps of potential flood zones have begun to be made available to the public. A *Vigicrues* smartphone application was launched in 2022 and now allows users to receive personalised warnings directly on their mobile phone. The additional *Vigicrues Flash* service, an automated flash flood warning service for prefectures and local authorities, is also available in more than 11 000 municipalities.

The Watercourse Flood Risk Prevention Framework was supplemented with the 2019 PPRI (Flood Risk Prevention Plan) Decree. At the same time, the Ministry in charge of the ecological transition has been supporting for several years the work of various operators (notably the research institute on agriculture and environment INRAE) who are carrying out studies and projects aimed at improving scientific knowledge on the consequences of climate change on overflow flood risks (Explore project 2, specific studies, etc.).

In 2021 and then in 2023, the specifications for flood prevention action programmes (PAPI) led by local authorities were simplified in a logic of continuous improvement (total deconcentration of the labeling by the basin coordinating prefects, elimination of administrative acts, simplified management of amendments, increased financial support for assistance to project management).

In recent years, local authorities responsible for managing aquatic environments and flood prevention (GEMAPI) have initiated a process of reclassifying dikes used to protect against river floods and marine submersions as 'containment systems'. Each containment system is associated with a level of protection which is formalised by a maximum rating of the watercourse or a maximum flow rate up to which a precisely mapped territory is protected. This approach is already well advanced. In this context, Action 3 of this measure aims to better understand the effects of climate change on protection structures and, if this is the decision of the local authority, to strengthen protections.

Since 2011, the effects of climate change have been integrated into marine submersion risk prevention plans, considering a short-term reference hazard and a hazard over a hundred years, which allows to take into account the progressivity of the phenomenon. BRGM (the public institution for Earth science applications) is finalising a study to update the reference values for mean sea level rise in line with TRACC and to produce regionalised data, including Overseas, to identify areas where marine submersions are evolving homogeneously.

Several studies and projects are underway to improve scientific knowledge of the consequences of climate change on the risks associated with intense rainfall. In particular, Météo-France and INRAE will be completing studies in 2025 to assess the consequences of climate change on rainfall and floods used as reference for regional planning.

The adaptation of territories to natural risks, which will be accentuated by climate change, is a necessity that requires their inhabitants to have a better understanding of these phenomena and the behaviours to adopt. Since 2021, the 'All Resilient to Risks' action plan has triggered a national drive to raise awareness of major risks. Among the actions carried out:

- in 2022, the first edition of the national day 'All Resilient to Risks' was held throughout France. The Government and Parliament have decided to perpetuate and enshrine in law this National Resilience Day. More than 3 000 projects in 2023 and more than 11 000 in 2024 were labelled by the State;
- The [Georisques.gouv.fr](https://georisques.gouv.fr) website has been developed as the reference site for risk culture. After entering any address, users can discover all the risks in the vicinity and establish a statement of risks in view of the rental or sale of a property (Information Acquirer Tenant).

NEW ACTIONS

1. Strengthen support for local authorities in implementing aquatic environment management and flood prevention responsibilities (GEMAPI competence) taking into account adaptation to climate change.
2. Extend the *Vigicrues* service to cover the whole of mainland France by 2030.

3. Adapting natural hazard prevention guidelines to the foreseeable increase in flooding due to river overflows, the evolution of flooding due to runoff resulting from intense rainfall and the increase in the risk of marine submersion according to TRACC.
4. Promote flood prevention action programmes (PAPI) and territorial mountain risk prevention strategies (STePRiM) as tools for adapting to climate change, in order to increase the number of plans carried out and planned by local authorities.
5. Take climate change into account in the action programmes carried out by local authorities in line with the evolution of natural risk prevention guidelines.
6. Pay particular attention to low-lying areas located in the backshore sector.
7. Facilitate and promote the maintenance of rivers and canals, and the management of aquatic environments through nature-based solutions linked to flood prevention.
8. Develop a risk culture to prepare the French population to face the evolution of natural risks due to climate change.

ACTION 1

Strengthen support for local authorities in implementing aquatic environments management and flood prevention responsibilities (GEMAPI competence) taking into account adaptation to climate change

The GEMAPI competence is implemented by local authorities. In addition to support measures (PAPI, STePRiM) and co-financing by the State (Actions 4 and 5), the elected representatives of the "Gemapien" authorities will be supported in the implementation of this competence to integrate adaptation to climate change into the choice of their prevention and protection actions (dimensioning of structures, nature-based solutions, reducing vulnerability, informing residents, etc.).

Prevention and protection measures should therefore be stepped up in all areas by:

- supporting local and regional authorities in analysing their most exposed areas and defining the solutions to be deployed: consolidating or recalibrating the structures (containment systems, hydraulic systems, pumps, etc.) or changing the planning of the areas exposed, for example 'by giving water back its rightful place' (integrated water management in regional planning);
- supporting individuals, businesses and farmers in the face of flooding :
 - by strengthening business protection, with the dedicated Natech plan for the most dangerous industrial sites (to be launched in 2025 – see measure 19 of the PNACC),
 - by strengthening the resilience of networks (electricity, telecommunications, water and sanitation, etc.);
 - by supporting actions by the agricultural sector aimed at reducing flood risks;
- supporting Gemapien authorities in terms of crisis management.

Prevention actions will be strengthened around expertise and innovation, to enhance the skills of local authorities and the State, consultancies and actors carrying out vulnerability diagnoses, for example using the Agirisk tool developed by Cerema.

PILOTES	DGPR, DGALN and DGSCGC with the support of DGEC and DGE
BUDGET	To be defined

TIMETABLE	From 2025
INDICATOR	Number of persons/properties exposed to flood risk

ACTION 2

Extend the *Vigicrues* service to cover the whole of mainland France by 2030

The *Vigicrues* system, which has once again proved its worth during the recent exceptional floods, covers around half of the population living in flood-prone areas. This action plans to extend the vigilance system to all watercourses, so that all citizens living in flood zones benefit from it, starting in 2030 for France. For the Overseas Territories, an additional study is required to assess the capacity to achieve this objective, which will be set out in a specific timetable.

This project of "full coverage" of the territory by the flood vigilance system requires the development of operational forecasting tools on small rivers. This action requires the continued mobilisation of the national scientific and technical network.

Consideration will be given to linking the local warning systems implemented by certain local authorities with extended vigilance.

PILOTE	DGPR
BUDGET	To be defined
TIMETABLE	2024-2028: Development of models, forecasting tools, instrumentation of certain watercourses, <i>adaptation of the Vigicrues</i> site and the smartphone application 2029: Blank tests Horizon 2030: Opening of the service subject to operational validation of blank tests
INDICATORS	- Opening of the new <i>Vigicrues</i> service: by 2030 - Number of French people in flood zones covered by flood vigilance: 100% when the extended service is in place

ACTION 3

Adapting natural hazard prevention guidelines to the foreseeable increase in flooding due to river overflows, the evolution of flooding due to runoff resulting from intense rainfall and the increase in the risk of marine submersion according to TRACC

The action aims to integrate the effects of climate change in the determination of the hazard (phenomenon of submersion by water) taken into account to determine the dimensions of flood prevention policies, whether by river overflow, runoff or marine submersion, and in particular in natural risk prevention plans (PPRns) drawn up by the State.

The subject of the evolution of flooding by overflowing torrential rivers (torrents, torrential rivers), particularly in mountainous areas, is included in Measure 6 'Protecting the population

from natural risks in mountains areas, particularly glacial and periglacial risks', which is dedicated to these specific areas.

To date, the models have not been able to accurately determine the evolution of intense rainfall events likely to cause runoff flooding, nor the evolution of floods. The Ministry for Ecological Transition has entrusted Météo-France and INRAE with producing future projections of the intensity of intense rainfall events (100-year events) and 100-year floods, including for overseas territories (these studies require additional data and will initially focus on rainfall trends)..

For marine submersion, the aim is to incorporate the results of the BRGM study (see section 'Actions already undertaken). Methods of taking account of climate change when drawing up marine submersion hazard map in the overseas territories will also be defined on the basis of the studies available in the coming years. A Cerema study is underway to identify the territories that will be impacted by these developments.

PILOTE	DGPR
BUDGET	To be defined
TIMETABLE	For flooding caused by the overflow of watercourses: - 2025: Finalisation of INRAE's work to characterise these developments - 2025: Stakeholder consultations on regulatory developments taking into account these new scientific references - From 2025: Updating of the regulatory framework and gradual integration into the planning documents (in particular the flood risk prevention plans by the State, the SCoT and PLU(i) for local authorities) For runoff flooding: - 2024-2025: Work of Météo-France to characterise these developments - 2025: Stakeholder consultation on regulatory developments taking into account these new scientific references - From 2025: Gradual integration into planning documents (including state flood risk prevention plans, SCoT and PLU(i) for local authorities) For flooding by marine submersion: - 2025: Completion of the BRGM's work to characterise these developments - 1st half of 2025: Stakeholder consultation on regulatory developments taking into account these new scientific references - From 2025: Evolution of the regulatory framework and gradual integration into planning documents (in particular flood risk prevention plans by the State, SCoT and PLU for local and regional authorities)
INDICATORS	- Number of PPRI/Ls prescribed with the new reference system (development or revision) - Number of PPRI/Ls approved with the new reference system (development or revision)

ACTION 4

Promote flood prevention action programmes (PAPI) and territorial mountain risk prevention strategies (STePRiM) as tools for adapting to climate change in order to increase the number of plans carried out and planned by local authorities

Flood prevention action programmes (PAPI) and territorial mountain risk prevention strategies (STePRiM) are tools for local authorities to contract with the State for comprehensive flood management in order to reduce their harmful consequences on human health, property, economic activities and the environment. These tools are fully in line with climate change adaptation policy. Given the human and economic stakes potentially exposed to flooding, the State will encourage local authorities to roll out PAPIs and STePRiMs in order to accelerate the reduction in the vulnerability of these areas.

PILOTE	DGPR
BUDGET	To be defined
TIMETABLE	From 2025
INDICATORS	- Number of PAPIs including prevention actions integrating the consequences of climate change - Number of STePRiMs integrating prevention actions integrating the consequences of climate change

ACTION 5

Take climate change into account in the action programmes carried out by local authorities in line with the evolution of natural risk prevention guidelines

Socio-economic analyses to assist local authorities to decide on actions financed in the PAPIs and STePRiMs (e.g. protection works such as dikes) will integrate the evolution of hazard with regard to climate change.

The cost-benefit analyses (CBA) and multi-criteria analyses (MCAs) used in the context of the PAPI and STePRiM labelling aim to estimate the socio-economic profitability of projects by comparing all the damage avoided by prevention or protection work in relation to their cost, and thus highlight the optimal solution for the territory. The CBAs and MCAs will have to take into account the evolution of the hazard according to the TRACC – and therefore the protection provided to the territories – over the long term (the CBAs are generally established over 50 years). This provision will make it possible to concentrate the State's financial support, provided through the Major Natural Risk Prevention Fund (FPRNM, the 'Barrier Fund'), on measures integrating adaptation to climate change and to avoid any maladaptation of public investments.

PILOTE	DGPR
BUDGET	To be defined

TIMETABLE	By the first half of 2026: Adaptation of the CBA methodology by integrating knowledge on the evolution of reference flow rates according to TRACC (as risk prevention guidelines evolve)
INDICATOR	Updated national methodology

ACTION 6

Pay particular attention to low-lying areas located in the backshore sector

Particular attention will be paid to areas below sea level, particularly polders, located in backshore areas. Indeed, under the effect of rising sea levels, which will continue over several decades, these areas will have to cope with water inflows from the upstream sectors but also from the rise of seawater from the river mouth, making it increasingly difficult to evacuate water. This situation requires the implementation of appropriate measures by the Gemapian authorities, which are responsible for the adaptation of their territory. Thus, the State will support them, especially for sizing studies.

PILOTE	DGPR
BUDGET	To be defined
TIMETABLE	From 2026
INDICATOR	Evolution of the stakes in backshore low-lying areas

ACTION 7

Facilitate and promote the maintenance of rivers and canals, and the management of aquatic environments through nature-based solutions linked to flood prevention

*The state of the landscape and watercourses can be an aggravating factor in the formation and spread of floods. "De-waterproofing" actions, the installation of hedgerows and the **restoration of the natural functionalities of watercourses** should be promoted to regulate flooding.*

The deployment of these solutions at watershed level will help maintain flood expansion zones and wetlands, and the creation and maintenance of hedgerows, in line with the Hedgerow Pact, will help to slow down and reduce the impact of flooding.

The tools developed to support local authorities in implementing their GEMAPI competence (see Action 1) will contribute to the implementation of river management and maintenance plans.

In the overseas territories, it will be necessary to define which nature-based solutions are most suitable for the territories and to provide for a dedicated call for projects to facilitate and promote the maintenance of rivers and canals, for the purposes of flood prevention.

PILOTE	DGALN

BUDGET	Hedgerow Pact
TIMETABLE	To be defined
INDICATORS	- Net gain in linear hedgerows: + 50 km by 2030 (hedgerow plan) - Ecological planning indicator "Agroforestry hedgerows and storage practices"

ACTION 8

Develop a risk culture to prepare the French population to face the evolution of natural risks due to climate change

The aim is to strengthen the risk culture and set up communication actions throughout mainland France and the overseas territories to prepare the French population to cope with the evolution of natural risks due to climate change. These actions could be part of the National Resilience Day (NRD), by developing communication actions for all audiences, implemented by as many stakeholders as possible (local authorities, associations, companies, etc.). It would also be useful to broaden public participation initiatives so that they become actors of their own safety.

The information portals (Georisks, DRIAS^{the future of climate} and DRIAS^{the future of water}) will be enhanced to provide information on the consequences of climate change on events that can be read by everyone.

The national public communication campaign on intense rains in the Mediterranean arc and its variations in the overseas territories will be continued, highlighting good behaviour in the event of these phenomena occurring.

Particular attention will be paid to raising awareness of the risks in areas newly subject to flooding by marine submersion, runoff or overflowing rivers or which will be so on the TRACC time horizon.

PILOTES	DGPR, DGSCGC and Météo-France
BUDGET	To be defined
TIMETABLE	All year round
INDICATORS	- Number of projects submitted and awareness-raising actions carried out in mainland France and the overseas territories (target: more than 5,000 actions per year for all natural hazards) - Percentage of French people aware of the risks close to their homes (Statistical surveys)



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3 Third French National Adaptation Plan

MEASURE N° 4

**Protecting the population
from the consequences of
coastal retreat by rethinking
the development of exposed
areas**

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

Storm Xynthia in 2010 highlighted the vulnerability of coastal areas in France. It occurred ten years after Hurricane Martin, which temporarily reshaped some marine gulfs, without any link being made at that time with global warming. In the Antilles, in 2017, the two cyclones Irma and Maria, of the highest intensity (5) and occurring only ten days apart, Cyclone Belal in Réunion and Storm Ciaran in Normandy and Brittany in November 2023, all highlighted the possibility of exceptional climatic conditions and the increase in their recurrence.

Storms weaken the natural defences of the coastline: while they cause temporary submersions, they permanently affect the resistance of dunes such as cliffs, making recessed areas more vulnerable. With rising sea levels, climate change is accelerating the retreat of the coastline.

By disrupting the continental water cycle, global warming also affects the sedimentary transit of rivers, which, for example, disrupts the enrichment of dunes.

The sustainable development of coastal areas exposed to coastal retreat must contribute to both anticipating and organising the partial transformation of these areas. Some sectors must undergo long-term restructuring, without vitrifying the uses and activities they support.

In this context, the recomposition of territories to adapt to the retreating coastline must be considered as an overall development operation, requiring various types of action: territorial diagnostics, urban and spatial planning studies, real estate acquisitions, renaturation actions, as well as consultation

and communication actions. The reference tool is the partnership development project (PPA), which allows an inter-municipal authority to manage a complex development project within a contractual framework with the State and development operators, and guarantees the active participation of all decision-makers in a long-term process.

In view of the disappearance of certain properties, the economic models of traditional urban development operations and the associated financing vectors appear inadequate. Thus, in addition to the impetus provided by the Green Fund, a viable economic model commensurate with the challenges at stake must emerge to allow coastal areas to adapt to the accelerated retreat of the coastline.

ACTIONS ALREADY UNDERTAKEN

France has adopted a national strategy for the integrated management of the coastline, which is implemented through local or regional strategies. Support has been provided to coastal areas to encourage them to adapt their development policies to address coastline mobility, erosion and sea level rise.

Under the Climate and Resilience Act of 22 August 2021, several new tools have been put in place to encourage wider anticipation of the coastline retreat (decree-list of municipalities, local maps of exposure to coastline retreat over 30 and 100 years, deposit of a sum corresponding to the cost of demolition and restoration of land for any new construction located in the 30-100-year-old band, information for tenant purchasers) and to facilitate local authorities' projects aimed at recomposing the areas concerned and the backshore areas (right of pre-emption, mobilisation of public land establishments). Tools have also been put in place to take into account the temporary nature of the occupation of areas subject to the coastline retreat: temporary building permits with deposit of funds, real lease agreements for adaptation to coastal erosion. Current agricultural land management tools (structure control, land management, SAFER) can also be mobilised to deal with possible farmland losses linked to retreat of the coastline.

NEW ACTIONS

1. Restore or maintain coastal forest habitats, dune ecosystems, seagrass beds, coastal grasslands, mangroves, coastal marshes and coral reefs and further develop flexible coastal management through nature-based solutions (NBS) to limit coastline retreat and flooding and protect the coastal area.
2. Update the national strategy for the integrated management of the coastline and encourage its local implementation.
3. Support elected officials and their departments in the development of local coastline retreat exposure maps over a thirty and a one hundred-year horizons, ensuring that TRACC is taken into account in the methodology for developing local coastline retreat exposure maps
4. Identify in the PLU(i) the areas to be proposed for renaturation

5. Support the territories exposed - in particular the municipalities of the decree-list and the authorities involved in PPAs - in their overall strategy of spatial recomposition and relocation of their assets
6. Improve knowledge of exposed areas to guide decision-making
7. Determine the financing model for the sustainable development of coastal areas that are exposed to the increasing retreat of the coastline
8. Deploy a strategy adapted to the specificities of the Overseas Territories

ACTION 1

Restore or maintain coastal forest habitats, dune ecosystems, seagrass beds, coastal grasslands, mangroves, coastal marshes and coral reefs and further develop flexible coastal management through nature-based solutions (NBS) to limit coastline retreat and flooding and protect the coastal area

As part of the 2022-2026 action programme of IFRECOR (French Initiative for Coral Reefs), a decision support tool will be developed to define/select a coral restoration project according to the objectives set. The indicator of the health status of phanerogam seagrass beds (marine plants) will be deployed and monitoring of these seagrass beds will be improved. This could lead to the production of precise maps of these seagrass beds.

In the first half of 2024, a seminar on nature-based solutions in coastal areas was organised and a new call for projects was launched by the ministry in charge of the ecological transition to support territories in the implementation of their NBS projects.

The ministry in charge of the ecological transition will provide €2.5 million over five years to support the LIFE Adapto+ project, led by the Conservatoire du Littoral (coastal conservatory), which was selected in June 2024 by the European Union.

PILOTE	DEB
BUDGET	To be defined
TIMETABLE	2025: Financing of the LIFE Adapto+ project over five years (2024-2028) Initiation of a multi-criteria evaluation of the winning projects of the Ministry's call for projects 2024-2029
INDICATORS	- Number of coastal band management projects using nature-based solutions implemented in coastal areas - National Protected Areas Strategy (SNAP) indicator

ACTION 2

Update the national strategy for the integrated management of the coastline and encourage its local declination

The tools of the Climate and Resilience Act will be integrated into the National Integrated Coastline Strategy (SNGITC) and the decentralised State services will support local authorities in setting up local (SLGITC) or regional coastline management strategies (SRGITC). These

strategies will be articulated with local risk management strategies, planning documents and project mechanisms such as PPAs.

PILOTE	DEB
BUDGET	No additional need
TIMETABLE	2025: Publication by decree of the revised National Integrated Coastline Management Strategy 2026: Publication, in conjunction with decentralised services and State operators, of a guide to support local authorities in implementing SLGITCs
INDICATORS	- Publication of the National Integrated Coastline Management Strategy - Number of local strategies developed

ACTION 3

Accompany elected officials and their services in the development of local coastline retreat exposure maps over a thirty and a one hundred-year horizons, ensuring that TRACC is taken into account in the methodology for developing local coastline retreat exposure maps

In the municipalities identified (decree-list of municipalities resulting from the Climate and Resilience Act), elected officials and services will be supported in the development of local maps of exposure to coastal retreat over the next thirty and one hundred years. This support will consist of technical support by BRGM (the public institution for Earth science applications) and the public operator Cerema, and the animation of communities of actors at local and national level in order to inform the decision-making of local actors and residents (Information Acquirer Tenant).

The tools for implementing the provisions of the Climate and Resilience Act, in particular the [BRGM/Cerema guides](#), will be updated to incorporate the reference warming trajectory for adaptation to climate change (TRACC). The adaptation mission (see measure 25 of the PNACC) will accompany the elected representatives and the services concerned in this exercise.

PILOTE	DEB
BUDGET	Green fund for local maps and €70k to update the guide
TIMETABLE	2025: Publication of a third update of the Decree-List, after that of 10 June 2024, bringing the number of municipalities included in the scheme to 317 Update of the national recommendations document on the basis of feedback from the preparation of the first local maps and to incorporate TRACC

INDICATORS	- Number of municipalities that have mapped areas exposed to coastline retreat - Number of municipalities that have included the local coastline retreat exposure map in their urban planning document - Number of municipalities assisted in developing their maps - Update of the methodological guide

ACTION 4

Identify in the PLU and PLUi the areas to be proposed for renaturation

In coastal municipalities exposed to coastline retreat, local maps will be transposed into local urban planning plans (PLU) and local inter-municipal urban planning plans (PLUi), so that the districts or sectors at risk from flooding due to coastline retreat can be identified in the PLU(i) through OAPs and proposed for renaturation.

Indeed, the PLU(i) cannot impose either demolitions or constraints on the existing building and cannot be used to impose on landowners an effective renaturation of these areas, in the absence of a project. However, they can propose areas to be 'renatured' via the OAPs and benefit from the services of the Conservatoire du littoral as part of this reflection.

PILOTE	DHUP
BUDGET	No additional need
TIMETABLE	According to the schedule of revision or modification of the PLU, led by the communities (possible incentive by the prefects)
INDICATOR	Number of PLUs and PLUi having identified areas to be proposed for renaturation

ACTION 5

Support the territories exposed - in particular the municipalities of the decree-list and the authorities involved in PPAs - in their overall strategy of spatial recomposition and relocation of their assets

The municipalities included in the Decree-List, which have produced their local maps of exposure to coastal retreat and will have integrated them into their urban planning documents, whether or not they are part of a partnership development project (PPA), will be supported in mobilising the tools made available to them by the Climate and Resilience Act (coastline pre-emption right, real lease for adaptation to coastal retreat, property valuation method, etc.) in order to allow the spatial recomposition of territories in accordance with the provisions of the Coastal Law and the principles of Net Zero Artificialisation.

Territories engaged in PPA contracts will also be accompanied. PPAs, in their partnership dimension, aim to promote the implementation of recomposition projects from the pre-operational stages to their completion (spatial recomposition and development work in recomposition areas, assistance in the structuring of public land, acquisition of property threatened under certain conditions, etc.).

In addition to State support for project engineering in the context of PPAs, it is proposed that a State-operator advisory team (Bank of territories and subsidiaries, Grand Paris Aménagement, etc.) help each of the seven territories that have contracted a PPA to identify the operators that can be mobilised and the missing operators to design and carry out the recomposition projects. This team will provide advice on project engineering, with the support in particular of 'coastline project directors', and will identify the most relevant operators (public administrative or land establishments, local public companies, etc.) to ensure project management. The establishment of major urban planning operations (GOUs) could also be proposed to facilitate and accelerate the legal components of projects.

PILOTE	DHUP
BUDGET	Green Fund
TIMETABLE	Working with the seven PPAs
INDICATOR	Establishment of a national monitoring team and mobilisation of project directors to set up operational project governance for each of the seven pioneering PPAs

ACTION 6

Improve knowledge of exposed areas to guide decision-making

The work that has already been carried out in terms of coordination of the actors involved and data sharing can be further developed: inventory of threatened assets and their value, identification of protection structures, their condition and level of protection, knowledge of the inhabitants of these areas and their socio-economic profile, identification of public infrastructure and agricultural land concerned.

PILOTE	DEB with the support of MASA
BUDGET	To be defined
TIMETABLE	2025: Finalisation of work to develop a roadmap for operators involved in the implementation of National Integrated Coastline Management Strategy 2025: Expansion of the national database of protection structures and cost elements by Cerema, further revitalisation of the national network of coastline observatories (RNOTC), evolution of the Geolittoral portal to facilitate access to knowledge and data through the creation of visualisation tools
INDICATORS	- Finalisation of an operator roadmap - Evolution of the Geolittoral Portal - Number of observatories that are members of the RNOTC

ACTION 7

Determine the financing model for the sustainable development of coastal areas that are exposed to the increasing retreat of the coastline

The sustainable development of coastal areas, exposed to the increasing retreat of the coastline, requires action on exposed coastal areas (people, goods, activities, public facilities), on protected areas in the backshore and on infrastructures intended to fix the coastline or slow down its development. Depending on the local situation (particularly the local rhythm of coastline retreat), intervention on these three areas may be successive or must be simultaneous. At present, it does not fall within the exclusive competence of the State, local and regional authorities or individuals. Given the likely volumes involved, traditional economic profitability models and existing sources of financing appear largely inadequate. In addition to the impetus provided by the Green Fund, which finances local coastal retreat maps and part of the PPAs actions, a sustainable economic model that is commensurate with the challenge at stake remains to be developed to support the adaptation of coastal areas to the accelerated coastal retreat.

Also, in parallel with the steps already taken, the ministry responsible for the ecological transition installed, in spring 2023, the National Committee for the Coastal Line (CNTC), a specialised committee of the National Council for the Sea and Coastal Areas (CNML). In the first half of 2024, the CNTC examined various ways of financing the adaptation to the retreat of the coastline. This work will help determine the conditions and scope for the possible mobilisation of national solidarity.

In this context, and to support the CNTC, a joint mission has been entrusted to the Inspectorate-General for the Environment and Sustainable Development (IGEDD) and the Inspectorate-General for Administration (IGA) with the objective of defining the measures to implemented to finance the adaptation of coastal areas to coastline retreat.

Work should resume in 2025 with the objective of implementing by the end of the year a single support and financing scheme to protect coastal areas from marine submersion and coastline retreat.

PILOTE	DGALN
BUDGET	To be defined
TIMETABLE	2025: Continuation of the work of the CNTC
INDICATOR	Unique support and financing scheme to protect coastal areas from marine submersion and coastline retreat

ACTION 8

Deploy a strategy adapted to the specificities of the Overseas Territories

The aim is to take into account the specific characteristics of these territories, where most of the activities are concentrated in coastal areas, and where other hazards (seismic, volcanic, etc.) contribute to limiting the possibilities of relocating populations inland:

- Launch of a **complementary inspection mission** on the financing of the consequences of the coastline retreat of the overseas departments and regions, taking into account their specificities, but also their heterogeneity – this study will be complementary to the IGEDD

and IGA report of November 2023 focusing on mainland France. In particular, this report will provide a reliable inventory and assessment of the value of assets threatened in less than five years and in the medium term (by 2050) for each overseas region and department. The mission will have to identify the sources of financing to anticipate territorial withdrawal and possible legislative and regulatory adaptations. It will also help prioritise the areas to be protected, in particular by means of protective structures and NBSs. It will propose a method for synthesising maps relating to coastline retreat and marine submersion (PPRL, local exposure maps, etc.), particularly at inter-municipal level – only for overseas territories (by way of derogation);

- Production of **local exposure maps for the overseas municipalities listed in the 2022 Decree-List** within a maximum period of two years from the publication of the PNACC-3 implementing texts for the five municipalities most exposed to these risks in each territory, and then progressively, in order to achieve coverage of all overseas municipalities affected by these risks by 2030.

PILOTES	DGALN and DGOM
BUDGET	To be defined
TIMETABLE	2025: Submission of the IGA/IGEDD supplementary report on the consequences of the retreat of the coastline in Overseas France
INDICATOR	Number of local maps of exposure to coastal retreat produced by overseas municipalities



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3 Third French National Adaptation Plan

MEASURE N°5

Protecting the population from disorders on buildings related to the shrinkage- swelling of clays

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The objective of this measure is to anticipate the damage to individual buildings linked to the expected increase in clay shrinkage-swelling (RGA) phenomena due to climate change.

Clay soils may vary in volume as a result of a change in their water content due to weather conditions: they 'retract' during periods of drought ('withdrawal' phenomenon) and swell when the rains return when they are hydrated again ('swelling' phenomenon). These variations are slow, but they can reach a fairly large amplitude and damage the buildings located on these grounds.

Over the last decade, the observed increase in the frequency and intensity of drought episodes (particularly in summer) has led to an increase in RGA-related claims. The share of the IGS cost of RGA in the natural disaster compensation scheme was only 25-35% between 2010 and 2016. It reached 70% in the last five years (approximately €1.5 billion per year).

With the anticipated increase in droughts and high rainfall events related to climate change, an increase in the number of RGA claims is expected. Climate change could also lead, for some sites, to soil movements at greater depth than at present and many additional municipalities could thus be exposed to the risk of RGA.

The Central Reinsurance Fund (CCR) estimates that the average annual loss related to RGA by 2050, compared to the climate of 2023, could increase by 44% taking into account a scenario close to the reference warming trajectory for climate change adaptation (TRACC).

ACTIONS ALREADY UNDERTAKEN

To prevent these disorders, which can affect nearly 10 million detached houses located in the most exposed areas (medium or high), the Government acted in recent years on the two main levers:

- **For new buildings**, the regulation put in place by the ELAN law (Evolution of housing, land-planning and digitalisation) requires since October 2020 to implement appropriate constructive requirements in the most exposed areas. To this end, a map of the exposure of clay formations to the RGA phenomenon was drawn up, taking into account the nature and behaviour of the soil, both in receding and swelling;
- **For existing buildings**, the call for projects France 2030, in particular, aimed to strengthen preventive information has been and support research on preventive solutions. The compensation scheme for natural disasters has also been improved to better address the consequences of the disorders caused by RGA. This reform of the system, which entered into force gradually in January 2024, aims in particular to:
 - Better stick to the reality on the ground, in particular by taking better account of the slow and progressive nature of the RGA phenomenon;
 - Limit the guarantee to damage likely to affect the solidity of the building or hinder the normal use of the building;
 - Supervise and monitor the activity of insurance expertise.

Thus, the Government adapted the natural disaster guarantee scheme to the specific characteristics of the phenomenon of drought and soil rehydration by **Order No ECOT2300952R of 8 February 2023** and its implementing texts:

- **The implementing Decree No 2024-82 of 5 February 2024 regulates the compensation paid under the natural disaster guarantee and its use.** It lays down an obligation to allocate the insurance indemnity received in respect of a loss relating to the removal and swelling of clays to the actual realisation of repair work on the house that is performant and sustainable. However, by way of exception, in order not to require the insured person to reconstruct on the spot a property severely damaged by the phenomenon, that obligation does not apply where the amount of the repair work on the property exceeds its value before the disaster. In that case, the injured party may freely use the compensation received to relocate or rebuild on the spot. In addition, in order to better target compensation, the decree provides that compensation will now be concentrated on claims that may affect the soundness or hinder the normal use of the damaged building. Priority should be given to assisting victims who are faced with material damage to their homes and who are likely to cause serious damage to their homes in the long term if they are not treated early. 'Small claims', which are sometimes warning signs of future worsening of damage, are not excluded from the scope of compensation;
- **The criteria used in the procedure for recognition of the state of natural disaster** to characterise the intensity of drought and soil rehydration episodes **were also relaxed pursuant to the above-mentioned Order by a circular dated 29 April 2024.** Thus, the return period taken into account to characterise an abnormal annual drought has been reduced from 25 years to 10 years and two new criteria have been adopted in order to take account of the effects of an abnormal succession of significant annual drought episodes and to better analyse the situation of municipalities bordering recognised municipalities. The cumulative implementation of the new criteria takes place for drought events after 1st January 2024;
- For municipalities recognised as being in a state of natural disaster, since 1st January 2025, **Decree No 2024-1101 of 3 December 2024 provides a framework for insurance expertise activities carried out in the context of the disorders resulting from the RGA.** This decree defines the list of competences expected from experts and specifies their obligations of independence and impartiality. It provides for the establishment of a system for the professional qualification of the expert companies. It also regulates the procedures for carrying out the expert's report, in particular the

content of the expert's report, the time limits for carrying out the expert's report and the organisation of the monitoring of their performance by the State. The arrangements for the professional qualification of expert firms, the model expert report and the list of documents to be sent to the expert by the insured person are set out in three specific decrees. The decree defining the model expert report to be used by the insurance expert and the decree specifying the list of all the elements to be transmitted by the insured person to the insurance expert are published and applicable since 10 February 2025.

NEW ACTIONS

1. Improve knowledge
2. Act on the buildings to be built
3. Act on existing buildings
4. Further adapt the natural disaster compensation scheme to the specificities of RGA
5. Strengthen the information of elected representatives and citizens on this phenomenon as well as of the entire professional sector involved in purchases / sales-rentals
6. Develop a risk culture to prepare the French population to face the evolution of natural risks due to climate change

ACTION 1

Improve knowledge

1.1 Update the exposure map with data from the 2022 drought disaster and then update it pragmatically after each major drought event.

1.2 Create a network bringing together all the actors (State, operators, private actors), with the aim of structuring the actions carried out on this subject. The work carried out by this network will focus in particular on:

- knowledge of the phenomenon: understanding of the phenomenon, improving knowledge of the phenomenon in Overseas France, clay recognition methods, hazard analysis and mapping, in particular mapping of the phenomenon in Overseas France;
- the impacts of climate change;
- reducing vulnerability: identification of levers for reducing vulnerability, experimentation with innovative technical solutions for reducing the vulnerability of old buildings, etc.

This network will be able to draw on the 'RGA' roadmap for State operators set up by the ministry responsible for the ecological transition, and its work will have to be linked to inter-ministerial governance.

PILOTES	DGPR and DHUP, with the support of DGSCGC and DG Trésor
BUDGET	No additional need
TIMETABLE	1.1 2025: Update of the exposure map with the 2022 drought loss data (then updated based on data available after major droughts) 1.2 From 2025: Updating the "RGA roadmap" to integrate new players

INDICATORS	- Updating the exposure map - Updating the "RGA Roadmap"

ACTION 2

Act on the buildings to be built

2.1 Monitor the implementation of the new system of certification of compliance with the regulations at the completion of the works for detached houses located in areas of medium or high hazard. This certificate is drawn up by the builders for single-family homes: technical controller or approved consultancy firms. A digital platform collecting data from certificates produced in the field will be set up to improve knowledge of constructions and adapt public policies and constructive practices.

2.2 Conduct a feedback from 2025 onwards on the constructive provisions required for new homes in order to study the proper respect of these constructive practices on the ground and their technical relevance in the context of global warming. Several consultation meetings with stakeholders, including manufacturers, geotechnical experts, insurers, consumer representatives or key experts in the field, will be organized.

PILOTE	DHUP with the support of DGPR, DGSCGC and DG Trésor
BUDGET	No additional need
TIMETABLE	2.1 2024: Implementation of the certificate upon completion of the works End of 2025: Implementation of a first version of the digital platform 2.2 2025: Organisation of feedback meetings
INDICATORS	2.1 Number of certificates issued (from 2026 for quantitative and from 2027 for qualitative) 2.2 Date of feedback meetings

ACTION 3

Act on existing buildings

Today, the policy implemented by the State to prevent the phenomenon of RGA is based on three main levers:

- (i) Support for research and experimentation to better understand the phenomenon;*
- (ii) Prevention by informing purchasers and tenants about property that has been compensated;*
- (iii) Take-back measures on the structural work.*

This policy has so far proved insufficient to prevent this phenomenon because measures to take the building back under construction are not systematically adapted, can be very expensive and are invasive for the occupants. Given the increase in the number of claims and related costs (on average €1.4 billion per year of claims over the period 2018-2022, and more than €3.5 billion in 2022 alone), the development of a public policy to prevent this phenomenon in existing buildings could avoid future compensation costs borne by the CatNat scheme, which is based on an unlimited State guarantee.

The Finance Law 2025 thus provides for steps to be taken to prevent the phenomenon of shrinkage-swelling of clays.

3.1 Evaluate and confirm the effectiveness of so-called "horizontal" prevention solutions (anti-root screen, waterproofing membrane, peripheral drainage, etc.) in terms of their costs, based in particular on existing studies. Support for the testing of so-called 'horizontal' prevention solutions is based on public and private funding:

- Call for projects "Prevention and Remediation of building disorders due to the phenomenon of shrinkage-swelling of clays" funded under the "France 2030" funding programme (see 2.2);
- "Drought Initiative" launched by France Assureurs, the Central Reinsurance Fund and the Natural Hazards Mission, which aims to test prevention and remediation solutions on 300 homes;
- TERRASOL/AFB study financed by the JRC (June 2022).

On this basis and in consultation with experts in the field, solutions to prevent and remediate the RGA phenomenon will be assessed (cost, efficiency, area of relevance, sustainability) as part of an overview of these solutions. A comprehensive economic study, complementary to those already carried out, will assess the effectiveness of the various prevention and remediation measures.

3.2 Where appropriate, promote the dissemination of horizontal prevention solutions on the ground. A **general public guide on the prevention of RGA** will be produced. Existing work (mentioned above) can already contribute to the development of this guide, which can involve the various actors and experts in the field. The desirability of a broad or targeted communication campaign (experts and construction companies) will be explored.

Initial steps can be supported on a larger scale, in 2025, thanks to the measure provided for in the 2025 Finance Law.

3.3 Initiate exploratory work to set up a voluntary label to improve information for individuals on the quality of individual homes with regard to the RGA phenomenon. The framework and modalities of a possible voluntary label will be discussed in consultations with RGA experts and key stakeholders in the sector.

PILOTES	DHUP and DGPR, with the support of DGSCGC and DG Trésor
BUDGET	To be defined
TIMETABLE	3.1 2024: Production of a panorama on prevention and remediation solutions 3.2 2025: Development of a general public guide to recommendations on prevention and remediation solutions From 2025: Subject to the conclusions of the guide, organisation of a communication campaign 3.3 2025: Launch of exploratory work
INDICATORS	- Production of a communication brochure on prevention solutions - Publication of the general public guide for local authorities and individuals - Number of households owning a house concerned by the RGA risk that have benefited from an aid decision

ACTION 4

Further adapt the natural disaster compensation scheme to the specificities of the RGA

In 2024, the following improvements were made to the natural disaster compensation scheme, in continuation of the legislative measures taken with the Order of 8 February 2023:

- The revision of the 'Cat Nat' surcharge, provided for by an order published in December 2023 and which entered into force in January 2025, increases the resources available to ensure the financial balance of the 'Cat Nat' scheme in a context of increased loss-making (in particular linked to the RGA risk);
- Pursuant to Order No. ECOT2300952R of 8 February 2023, Decree No. 2024-1101 to better supervise and control the activity of experts commissioned by insurance companies in connection with damage to buildings related to RGA was published on 3 December 2024 (see actions already initiated above). This text contributes in particular to strengthening the independence and competence of professionals involved in the drafting of expert reports (individual experts and employees of expert firms), but also to harmonising the content, deadlines and procedures for drawing up such reports.

In 2025, this work on adapting the scheme will continue: new measures (legislative and/or regulatory) may be defined in the light, in particular, of the recommendations made in the context of recent reports submitted to the government (report by MEP Vincent Ledoux; climate risk insurability report).

PILOTES	DGSCGC, DHUP and DG Trésor, with the support of DGPR
BUDGET	To be defined
TIMETABLE	Monitoring of the implementation of decrees
INDICATORS	4.1 Indicators to measure the effects of the new CatNat drought criteria: - Number of municipalities currently recognised in relation to the total number of municipalities during future annual droughts - Evolution of the cost to the CatNat scheme of compensation paid by insurers for the drought and soil rehydration phenomenon 4.2 Indicator measuring the effects of the provisions laid down in the decrees on the eligibility of damage and the supervision of expert reports: number of expert firms that have obtained the professional qualification

ACTION 5

Strengthen the information of elected representatives and citizens on this phenomenon, better manage the victims, as well as the entire professional sector involved in purchases / sales-rentals

5.1 Better inform: Reinforce the information on RGA in the Buyers and Tenants Information System (IAL), which is now limited to property that has been compensated under the natural disaster regime. This measure will greatly extend the dissemination of information on the RGA phenomenon to future purchasers/tenants upstream of the purchase or lease of a property. It will be necessary to amend Article L. 125-5 of the Environmental Code on information for

purchasers and tenants in order to make the IAL mandatory for any transfer/lease of a property located in a medium or high exposure zone.

5.2 Better inform: as part of planning permissions, issue an information note (or 'RGA and landscaping on the outskirts of a building' sheet) on the risks and prevention of clay shrinkage and swelling to developers (reference to ARGIC guides). This information will include measures to be taken at the level of landscaping that may have an impact on the behaviour of the building.

Subject to the inclusion of the RGA in the IAL, this information note (or 'RGA and landscaping on the outskirts of a building' sheet) may usefully be attached to the notarial deed sent to the purchaser (IAL) during the real estate transaction of a property located in a risk area.

5.3 Raising awareness: improve the dissemination and promotion of existing guides on this phenomenon, particularly among local elected officials and construction workers (information). The State and its operators produce documentation on this subject, which appears insufficiently valued. This action aims to enhance the knowledge of this documentation through better communication, in particular to meet the needs of elected representatives to have better information on the RGA.

5.4 Implement a component on RGA in the training of the renovation sector and construction craftsmen.

PILOTES	DGPR and DHUP
BUDGET	To be defined
TIMETABLE	5.1 Depending on the availability of a legislative vehicle 5.2 2025 5.3 From 2025: Promotion of existing guides 5.4 From 2026: Implementation of a training module on RGA for renovation professionals and construction craftsmen
INDICATORS	5.1 Implementation of the legislative amendment 5.2 Publication of the sheet 5.3 Communication of existing guides 5.4 Date of availability of a training module on RGA

ACTION 6

Develop a risk culture to prepare the French population to face the evolution of natural risks due to climate change

The aim is to strengthen the risk culture and to put in place communication actions throughout France and the overseas territories to prepare the French population to cope with the evolution of natural risks due to climate change. These actions may be part of the National Resilience Day (JNR). It also seems useful to broaden the procedures for public participation so that people becomes actors of their own safety.

Particular attention will be paid to raising awareness of the RGA phenomenon for areas newly subject to this phenomenon or which will be on the horizon of the TRACC.

PILOTES	DGPR and DGSCGC

BUDGET	To be defined
TIMETABLE	All year round
INDICATOR	Number of projects submitted and awareness-raising actions carried out in metropolitan France and the overseas territories under the JNR



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3 Third French National Adaptation Plan

MEASURE N°6

**Protecting the population from
natural hazards in the mountains,
including glacial hazards
and periglacial**

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The objective of this measure is to improve knowledge of the impacts of climate change on natural risks in mountain areas and to update risk prevention policies accordingly.

Natural mountain hazards include various phenomena, such as torrential flooding, landslides, blockfalls, avalanches, as well as so-called risks of glacial and periglacial origins (such as ice avalanches, ruptures of proglacial lakes or rockfalls linked to the melting of permafrost, etc.).

In the mountains, these phenomena can interact and overlap in the same area generating cascading phenomena, which can significantly aggravate the risk and make forecasting more difficult. In addition, warming is faster in mountain areas, particularly in the Alps, where it reaches 2°C above pre-industrial levels (compared to 1.7 °C in France).

The consequences of climate change on these phenomena vary according to the massifs and their characteristics (altitude, geology, exposures, etc.) making their assessment and quantification particularly complex. As these effects can have major consequences for mountain areas, it is important to develop precise knowledge on the impact of climate change on these risks, on a sufficiently detailed scale to integrate this expertise into prevention and land use planning policies.

As regards high mountains, France has an ice-covered surface area of approximately 200 km² (glaciers, etc.), the vast majority of which will have disappeared by the end of the century, according to the reference warming trajectory for adaptation to climate change (TRACC) scenario. The 2023 report by the Inspectorate-General for the Environment and Sustainable Development

(IGEDD), the Inspectorate-General for Administration (IGA) and the Inspectorate-General for Education, Sport and Research (IGÉSR) considers that in France the risks of glacial and periglacial origin (ROGP) are localised in a relatively small number of large massifs, and that a small proportion of glacial and periglacial events have a physical scale and location that lead to major risks in the valley. In the Alpine massif, the analysis carried out by the National Forestry Office (ONF) has enabled to identify seventy particularly sensitive glacial risk basins that could require the establishment of monitoring systems or preventive actions. To date, four sites are already subject to a specific programme.

ACTIONS ALREADY UNDERTAKEN

The prevention of natural risks in the mountains is based on the same main principles as in the plains, with some specific features that must be taken into account:

- **knowledge of phenomena, hazards and risks**, fuelled by knowledge of historical events (several databases list the significant events that have occurred in mountain areas), studies and research work, which provide a better understanding of phenomena and their future evolution, as well as technical studies to establish maps of the extension and intensity of phenomena or to assess the occurrence of certain hazards;
- **preventive information and the development of a risk culture**, targeting both the resident population and tourists;
- **taking risks into account in urban planning and development**: Risks must be integrated, especially in the most exposed areas, through risk prevention plans (PPRn), which are often multirisk in the mountains. The aim is to control exposure to risk and the vulnerability of people and property;
- **monitoring and forecasting**, with rapid phenomena that can be difficult to predict in the mountains;
- **risk reduction**, which involves mitigating the phenomena (in the mountains, this is based in particular on collective protection structures or slowing down dynamic) and adapting the stakes in order to limit damage to people, property and activities in the event of an incident;
- **crisis preparedness and management**, which are essential given the speed of mountain phenomena;
- **post-crisis management and experience feedback**, in order to better understand the phenomena that have occurred and learn from them to improve knowledge on risks and prevention.

The State financially provides financial support to the actions of communities exposed to natural risks in mountain areas for studies and prevention and/or protection work (with the fund for the prevention of major natural risks - known as the Barnier Fund - and, since 2023, with the Green Fund).

Specifically in high mountains, natural risks are linked, on the one hand, to glaciers (risk of collapse of the glacier itself, risk of rupture of a water pocket under a glacier or a proglacial lake, risks created by the melting of the glacier), and on the other hand, to areas affected by the thawing of permanently frozen ground (permafrost), leading to phenomena such as falling blocks, wall collapse, etc. The Government has been acting for several years to take into account these risks of glacial and periglacial origins (ROGP), in particular by developing scientific knowledge: the Ministry for the Ecological Transition has stepped up its financial

support to scientific stakeholders (since 2021, almost EUR 4 million have been used to improve knowledge of risks from glacial and periglacial sources).

In order to clarify the issues related to these risks and define the necessary preventive actions, the ministers responsible for the environment, interior and research entrusted their respective general inspectorates with a joint mission. The report, published in 2023, confirmed the effectiveness and relevance of the current management policy and made several recommendations.

It is on this basis that the [interministerial action plan](#) for the prevention and management of risks from glacial and periglacial origin, published in November 2024, was drawn up. This plan, which involves local and regional authorities, aims primarily to strengthen support for scientific work to improve knowledge of phenomena, monitoring tools (instrumentation) and prevention techniques (identification of source areas, improved understanding of the evolution of sites - for example, the thermal regime of glaciers - and knowledge of propagation methods). The objective is thus, by 2028, to gain a better understanding of these risks, to prioritise public action, and to implement appropriate monitoring and/or prevention actions.

NEW ACTIONS

1. Improve knowledge and characterisation of natural mountain hazards
2. In the high mountains, launch a systematic "removal of doubts" approach to identify sites presenting risks of glacial and periglacial origin
3. For the "medium" mountain, update risk prevention guidelines in the mountains in connection with the new knowledge acquired
4. Support local authorities in setting up monitoring systems or preventive actions against natural risks in the mountains
5. Develop a risk culture to prepare the population to cope with changing natural risks due to climate change

ACTION 1

Improve knowledge and characterisation of natural mountain hazards

Mountain areas are particularly vulnerable to climate change, especially due to warming and melting of ice-covered areas. In high mountains, these phenomena lead not only to an increase in existing risks, but also to the emergence of new phenomena in previously unexposed areas, thus endangering downstream inhabited areas. The effects of climate change have also been perceptible in recent years in 'medium' mountains (< 2500-3000 m altitude) where they affect natural hazards such as torrential flooding, landslides, debris flows and avalanches.

That's why, for several years, the Ministry responsible for the ecological transition has been commissioning State public establishments with studies to improve scientific knowledge on the evolution of mountain hazards linked to climate change.

However, to date, knowledge on the impact of climate change remains insufficient, which justifies the need to accelerate research efforts. This first action therefore provides for a strengthening of actions aimed at better understanding the consequences of climate change on natural hazards in the mountain areas.

In addition, the actions carried out in this context will be linked to the work conducted under measure 43 of the PNACC 'Promoting the adaptation and resilience of natural environments

and species to climate change' and its action 8 'Improving scientific knowledge on the evolution of the biological and geological diversity of glacial, periglacial and post-glacial ecosystems and more generally of the cryosphere, and their role in the adaptation of mountain areas to climate change'.

1.1 In the high mountains, on the risks of glacial and periglacial origin

As part of the interministerial action plan for the prevention and management of risks from glacial and periglacial origin (ROGP), the Government is stepping up support for research to better understand these phenomena. With funding from the ministry responsible for the ecological transition, a white paper will describe the state of knowledge on risks of glacial and periglacial origin in order to identify scientific obstacles, prioritise research and, as a result, take better account of the resulting risks.

In addition, the Ministry responsible for research will include the ROGP theme in the description of the generic call for projects of the National Research Agency (ANR) to strengthen its identification and will encourage the creation of a 'ROGP observatory' to build an operational community on these risks bringing together scientists and risk managers.

PILOTE	DGPR
BUDGET	On the order of €4 million by 2028 to improve scientific knowledge on this subject by supporting several research actions
TIMETABLE	- Improving scientific knowledge: ongoing and until the end of 2028 - Publication of the White Paper: 2025
INDICATORS	- Publication of the White Paper - Number of glacial and periglacial risk projects supported by the ANR generic call for projects

1.2 In "medium" mountains (other mountain hazards, excluding ROGP)

Unlike the high mountains, where the thawing of periglacial environments and associated phenomena can be directly linked to rising temperatures, the evolution of phenomena in 'medium' mountains (< 2500-3000 m altitude) is largely influenced by changes in precipitation patterns, the trends of which remain more difficult to characterise (particularly spatially).

It is therefore necessary to increase knowledge on the evolution of climate precursors and natural phenomena linked to climate change.

The first step is to bring together the scientific and technical community involved in studying the consequences of climate change on 'medium' mountain hazards, in particular through scientific and technical events bringing together experts and managers of these risks.

In addition, knowledge of past historical events is particularly important: support for research and public establishments will be continued (or strengthened if possible) for the collection of field data (in particular the 'event' databases of the Mountain Land Restoration Service (RTM) of the National Forestry Office), the Permanent Avalanche Survey (EPA), the Avalanche Phenomena Location Map (CLPA), Georisks, etc.), their analysis and applied research actions, which will be essential for the prevention and management of these risks.

PILOTE	DGPR
BUDGET	Work already committed in the order of €1 million (by 2028)

TIMETABLE	- Actions to develop knowledge: ongoing - Organisation of a first scientific event: 2025
INDICATORS	- Inventory of available data - Budgetary support for knowledge-enhancing actions - Date of first scientific event (and subsequent ones)

ACTION 2

In the high mountains, launch a systematic "removal of doubts" approach to identify sites presenting risks of glacial and periglacial origins

As part of the interministerial plan, the Ministry responsible for the ecological transition entrusted the Mountain Land Restoration Service (RTM) of the National Forestry Office with the task of examining sites likely to face risks of glacial and periglacial origin (ROGP), i.e. around 350 sites. The aim is to identify those requiring more precise studies and preventive actions to preserve human lives. The technical opinions delivered will be communicated, annually, to the local authorities concerned by the State services or immediately in the event of a proven emergency.

PILOTE	DGPR
BUDGET	Reinforcement of the resources of the mountain terrain restoration service of the National Forestry Office (ONF) both human (+ 3 FTE in 2024) and financial, i.e. an additional cost of around €300k/year compared to 2023
TIMETABLE	- Procedure for dispelling doubts: ongoing and until the end of 2025
INDICATORS	- ROGP Risk Basin Rates Analysed - Rates of high-sensitivity ROGT risk pools <u>analysed</u>

ACTION 3

For the "medium" mountain, update risk prevention guidelines in the mountains in connection with the new knowledge acquired

The aim is to identify the actions required to adapt natural risk prevention guidelines in 'medium' mountain areas, based on the knowledge acquired on the impact of climate change on the natural phenomena (Action 1.2).

Depending on the results of this work, it may be necessary to develop new operational tools to integrate climate change into the prevention and management of these risks. This includes updating (or even creating) technical guides as well as studying the possibility of updating regulatory prevention documents, particularly those relating to protection works and the dissemination of information to the general public (see Action 5).

Particular attention will be paid to supporting local and regional authorities in the deployment of any tools developed and new elements of doctrine resulting from this work.

PILOTE	DGPR

BUDGET	To be defined (via the Major Natural Hazards Prevention Fund)
TIMETABLE	To be launched in 2025
INDICATOR	Provision of new guidelines

ACTION 4

Support local authorities in setting up monitoring systems or preventive actions against natural risks in the mountains

Local authorities exposed to natural risks in the mountain areas will, depending on the case, have to set up a monitoring system or preventive actions (installation of protection structures against torrential phenomena, preventive emptying of a glacial lake, or purge of a starting area of blocks, etc.). Nature-based solutions can be mobilised for their relevance and effectiveness in relation to the prevention or protection objective sought.

Local authorities will benefit from the technical advances and tools developed as part of the work carried out at national level (e.g. the inter-ministerial action plan on ROGP) and will be accompanied by the State, which will provide its technical expertise and co-financing of prevention measures.

Territorial mountain risk prevention strategies (STePRiM) aim to provide an integrated approach to risks in mountain areas: local authorities are encouraged to deploy this system, which enables them to work on a coherent risk basin, to improve the resilience and adaptation of their territory.

PILOTE	DGPR
BUDGET	Supporting local authorities through the Major Natural Hazards Prevention Fund and the Green Fund
TIMETABLE	Ongoing
INDICATORS	- For ROGP, rate of sites subject to monitoring, prevention/protection or crisis management preparedness action (in relation to the number of sites identified at risk) (<i>sliding target: 100% for sites identified as being at risk for more than one year</i>) - Number of STePRiM including prevention actions that take climate change into account: 100% of STePRiM labelled from 2025 onwards

ACTION 5

Develop a risk culture to prepare the population to cope with changing natural risks due to climate change

The aim is to strengthen the risk culture dynamic and communication actions in all mountain areas in order to prepare the population to cope with the evolution of natural risks due to climate change. This system can usefully be enhanced as part of the National Resilience Day (JNR), which will be strengthened.

In addition, as regards risks from glacial and periglacial origin, a technical event and a seminar will be organised alternately each year to foster a community of exchanges and work, and to share the state of available knowledge with operational actors. The next seminar scheduled for 2025 will bring together, as in 2023, decentralised services, operators, laboratories, mountain local authorities, as well as, for the first time, mountain stakeholders (guides, shelter guards, etc.). This widened participation will strengthen links with mountain professionals, who are both observers of the environment and vectors of information to users, and share knowledge on the risks of glacial and periglacial origins. The aim is to collectively define the right behaviours to adopt and the instructions to follow, and to promote the extension of participative approaches so that people become an actor of their own safety.

With regard to natural risks in "medium" mountains, a study will be undertaken to identifying ways of raising awareness of these risks among the resident and tourist population, via mountain professionals, as well as through the provision of knowledge and communication actions available to the general public.

PILOTES	DGPR and DGSCGC
BUDGET	To be defined
TIMETABLE	All year round, renewable every year
INDICATORS	- Number of projects submitted as part of the JNR and awareness-raising actions carried out on the subject of natural risks (particularly in mountain areas) - Organisation of seminars and technical events on ROGP, with the number of participants - Share of population aware of the risk



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MEASURE N°7

Preparing for the expected increase in fires forest and vegetation

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

Faced with the evolving risk of forest and vegetation fires, the actions in this sheet seek to prevent the phenomenon, build resilience and limit damage in case of occurrence. the objectives are the following:

- improve forest fire protection;
- Prevent risks and protect areas at the interface between planted massifs and built-up areas (where many fires start);
- support local authorities to better protect people and property against forest and vegetation fires;
- Prepare State services in departments historically less exposed to forest fires than in southern France.

The 2023 mission report of the General Inspectorates (IGEDD, CGAEER, IGA) on forest fire prevention and control policy in the context of the extension and intensification of the risk due to climate change, concludes that there is a significant increase in the foreseeable risk of fire with climate change, both from a spatial point of view (extension to the West and North) and from a temporal point of view (doubling of days of very high sensitivity to fires) or in terms of frequencies (very sensitive areas could cover more than 35% of the area covered by vegetation of the territory by the end of the century). The report identifies three areas of change in the risk of forest fires in France:

- The historically exposed area in which the risk, already known, will intensify and extend over a longer time range;
- The 'new territories of fire';
- Territories of future risk extension that do not now face it.

In addition, nine out of ten fires today are man-made, which is why prevention must be a priority. This includes controlling urbanisation, implementing legal clearing obligations and developing a risk culture.

ACTIONS ALREADY UNDERTAKEN

Following the fires of summer 2022, which led to the destruction of 70 000 hectares of forest and vegetation, the President of the Republic announced a three-pronged action plan: reforestation, strengthening fire-fighting capacity and strengthening prevention.

With regard to improving preventive information and risk culture, the Government conducted for the first time in 2023, an information campaign on legal clearing obligations and reinforced the summer fire prevention campaign (which has been in place since 2018). A new system for the general public, the '[forest weather](#)', has been created by Météo-France with the support of the Office national des forêts (ONF – National Forestry Office) to inform the population about the right reflexes to adopt to prevent and protect against fires depending on the foreseeable danger. The mainstream media has also been sensitised to forest and vegetation fire prevention.

With regard to forest fire protection (DFCI), local authorities were made aware of forest fire risk management and legal clearing obligations (OLD). The areas where the OLD regulation applies have been posted on the IGN [Geoportal](#) and on the [Georisks](#) website, allowing individuals to geolocate their land and thus find out whether they are concerned by this obligation. The resources allocated to the ONF for the defence of forests against fires, including the control of OLD, and the implementation of actions, particularly in the Mediterranean and in New Aquitaine areas, have also been increased.

With regard to forest fire prevention, various tools have been produced for local and regional authorities, government departments and economic operators: study on the possibilities of setting up photovoltaic energy production facilities in or near wooded areas and the related safety rules, model regulations on a plan for the prevention of foreseeable natural risks of forest fires (PPRIF) to facilitate and accelerate their implementation, national mapping characterising sensitivity to forest and vegetation fires, information for mayors via department prefects on the danger of forest and vegetation fires (porter-à-connaissance), distribution of a guide to good practices for campsite safety. The 'fire weather', an operational support for prefects and crisis managers, has gradually been extended beyond the departments of the Mediterranean arc (thirty-five departments in 2023 and fifty-five in 2024).

Law No 2023-580 of 10 July 2023 to strengthen the prevention and fight against the intensification and extension of fire risk has also introduced provision to increase the prevention and fight against the intensification of the risk of forest and vegetation fires and its extension due to climate change:

- Establishment of an interministerial strategy for forest fire protection;
- Simplification and strengthening of the legal framework on clearing obligations;
- Establishment of a network of DFCI advisors within the National Centre of Forest Property (CNPFP);
- Better consideration of fire risk in planning documents and sustainable forest management documents;
- Establishment of a right of pre-emption for local authorities in order to better protect sensitive unmanaged parcels;
- Implementation of massif plans in line with departmental plans for the protection of forests against fire;
- Establishment of an agricultural and pastoral development contract allowing the creation of agricultural interruptions for DFCI purposes;
- Extension to 1st January 2025 of the obligation to inform purchasers and tenants of the existence of legal clearing obligations;
- Establishing National Resilience Day in the face of natural and technological risks;

- Simplification and reinforcement of tools to integrate knowledge of the danger of forest fires and vegetation into urban planning and development.

NEW ACTIONS

1. Integrate the effect of climate change in the knowledge and mapping of fire risk and update the reference frameworks of forest fire risk prevention plans or danger zones defined by the prefects
2. Develop the National Strategy to Defend Forests and Non-Forested Areas from Fire
3. Revise in the departments the list of massifs subject to legal clearing obligations
4. Respond to the growing need for investment in fire-fighting equipment (DFCI) and prepare the stakeholders in areas not historically affected by forest fires
5. Support local authorities in better preparing their areas and protecting people and property against forest and vegetation fires
6. Develop a culture of risk to prepare the population to cope with changing natural risks due to climate change
7. Support elected officials so that they make their fellow citizens aware of the risk of fire and in the implementation of regulations to limit their effects

ACTION 1

Integrate the effect of climate change in the knowledge and mapping of fire risk and update the reference frameworks of forest fire risk prevention plans or the danger zones defined by the prefects

There are operational forest fire risk maps, both for forest management and spatial planning or for fire-fighting planning, but they do not integrate the future climate.

Work is underway to define the methods that will enable such maps to be constructed with sufficient precision for operational and coherent uses to meet the needs of different public policies. Depending on the results of this work, the forest fire risk maps will be enriched to include information on the evolution of the risk with climate change (horizons 2050 and 2100) and, if technically robust, by integrating the evolution of vegetation linked to climate change. The national map of sensitivity to the foreseeable danger of forest and vegetation fires (introduced by the law of 10 July 2023) will also be updated to take into account the reference warming trajectory for adaptation to climate change (TRACC). On the basis of this map, the prefects will define danger zones (public utility servitude) and update or develop forest fire risk prevention plans (PPRIF).

In order to facilitate the work of architects, design offices and construction companies, the sectors will be able to organise the capitalisation of technical solutions meeting the objectives of forest fire risk prevention in the context of 'Constructive provisions' technical notes, which can then be relayed on the Ministry's website and on Georisks.

PILOTE	DGPR with the support of DGPE, DHUP and DGSCGC
BUDGET	No additional need

TIMETABLE	The timetable will be specified at the end of the first methodological work to be carried out in the course of 2025.
INDICATORS	- Coherent, improved maps to include the effects of climate change - Evolution of the number of municipalities with a PPRIF or affected by a danger zone in the most exposed areas - Publication of the technical notes "Constructive provisions"

ACTION 2

Develop the National Strategy to Defend Forests and Non-Forested Areas from Fire

The strategy will be drawn up pursuant to Article 1 of the Law of July 2023, in interministerial cooperation and in consultation with various stakeholders such as the National Forestry Office (ONF), the National Forest Property Centre (CNPF), representatives of local and local authorities and their groups, approved associations for the protection of the environment, etc.

The national strategy will take into account the other functionalities of forest massifs by integrating good forest management practices to ensure a balance between all ecosystem roles of the forest.

In order to better characterise the effectiveness of prevention and preparation of territories to cope with forest fires, an indicator (or several) will be established based on the number of fires, the surface area burned, taking into account the conditions of vulnerability (meteorological conditions and dryness of vegetation).

PILOTE	DGSCGC with the support of DGPE and DGPR
BUDGET	No additional need
TIMETABLE	2025: Publication of the national strategy
INDICATORS	- Publication of the National Strategy for defending Forests and Non-Wooded Areas against Fire - Creation of one (or more) indicator of the effectiveness of prevention and preparedness of territories, followed by monitoring of the indicator - Establishment of a coordinated DFCI policy: Number of departments with valid and applied PDPFCI

ACTION 3

Revise in the departments the list of massifs subject to legal clearing obligations

Pursuant to Article 2 of Law 2023-580 of 10 July 2023, the list of departments subject to the legal clearing obligations (OLD) will be revised.

PILOTE	DGPE with the support of DGSCGC and DGPR

BUDGET	No additional need
TIMETABLE	2024: Interministerial Order identifying forest fire risk massifs subject to legal clearing obligations From 2025: Update, if necessary, of the interministerial order in line with requests, in particular from the Prefects.
INDICATORS	- Number of departments with massifs classified as fire risk zones - Number of municipalities subject to OLD

ACTION 4

Respond to the growing need for investment in fire-fighting equipment (DFCI) and prepare the stakeholders in area not historically affected by forest fires

The actions to be implemented under this action concern the development of forest massifs as field equipment to make them more defensible (tracks, water points, brush clearing, etc.) and their active monitoring during periods of risk (vigies, detection devices and surveillance patrols), primarily in the departments historically concerned, in agreement with their Regional Council. In addition, for the new areas at risk, this action involves identifying massifs at risk and classifying their level of risk. Active surveillance could then be set up during risk periods to be determined territorially.

All departments that have classified massifs at risk of fire must have a forest fire protection plan (PPFCI), pursuant to Article 4 of the Law of 10 July 2023.

PILOTES	DGPE and DGSCGC
BUDGET	€80 million in 2024
TIMETABLE	For the implementation of DFCI policies in new territories subject to fire risk, collection of funding applications from 2024 onwards. If necessary in 2024 or later, launch a call for projects to boost this action.
INDICATORS	- Number of projects supported by DFCI lines and total associated amount - Number of departments with valid and applied PDPFCI (implementation of a coordinated DFCI policy)

ACTION 5

Support local authorities in better preparing their areas and protecting people and property against forest and vegetation fires

Local authorities will be supported through the Forest and Vegetation Fire Prevention measure of the Green Fund, which makes it possible to finance measures targeting urbanised areas at the interface between forest and housing.

This action also includes the development of fire-fighting resources (particularly in their spatial organisation), as well as the extension of operational support to the Western Defence Zone in 2024, in particular by producing an expertised map twice a day, as is done in areas historically subject to forest fires (South and South-West areas).

PILOTE	DGPR with the support of DGPE and DGSCGC (DGALN budget steering)
BUDGET	Green Fund for Community Support
TIMETABLE	2024-2027
INDICATORS	For support to local authorities: Number of projects supported by the Green Fund's forest and vegetation fire prevention measure and total associated amount

ACTION 6

Develop a culture of risk to prepare the population to cope with the evolution of natural risks due to climate change.

The aim is to strengthen culture of risk and set up communication actions throughout France to prepare the French population to cope with the evolution of natural risks due to climate change. These actions may be part of the National Resilience Day (JNR). It also seems useful to broaden the procedures for public participation so that people become actors of their own safety.

Particular attention will be paid to raising awareness of the risks in areas that are newly exposed or will be exposed to the reference warming trajectory for adaptation to climate change. The communication kit for the next prevention campaigns on forest and vegetation fires and those on legal clearing obligations will aim to better integrate the specificities of the new fire territories.

PILOTE	DGPR with the support of DGPE and DGSCGC
BUDGET	To be defined
TIMETABLE	Arrangements (campaigns and forest weather) implemented annually
INDICATORS	- Number of projects submitted as part of the JNR and awareness-raising actions carried out - Share of the public who think that communication campaigns encourage the adoption of the right reflexes (target: 85%) - Share of population reporting awareness of risk

ACTION 7

Support elected officials so that they make their fellow citizens aware of the risk of fire and in the implementation of regulations to limit their effects

Local authorities, in particular forest municipalities, play an important role in preventing the risk of fire on their areas: there is a need to raise awareness of forest fire risks and of the importance of implementing regulations (including legal clearing obligations).

In addition to communication campaigns (governmental or local), the National Federation of Forest Communities (FNCOFOR) will be supported to carry out training actions aimed at mayors and elected representatives, given their predominant role, to (i) inform them of recent regulatory developments and their operational role through training sessions and (ii) provide them with appropriate tools for the implementation of legal clearing obligations in their municipalities.

PILOTE	DGPE with the support of DGPR
BUDGET	No additional need
TIMETABLE	Annual agreement with FNCOFOR, adapted to current regulatory developments
INDICATORS	- Number of elected representatives trained or informed - Number of departments and communes involved in FNCOFOR support



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3 Third French National Adaptation Plan

MEASURE N°8

Preparing civil security for increased risks

CATEGORY OF THE MEASURE

1 - Protecting the population

BACKGROUND

The purpose of this measure is to strengthen the means of action of Civil Security to cope with the expected increase in the frequency and intensity of risks with climate change.

With regard to the risk of forest and vegetation fires, the scientific work concludes that there is a significant increase in the foreseeable risk of fire because of climate change, whether from a spatial point of view (extension to the west and north), from a temporal point of view (doubling of days of very high sensitivity to fires) or in terms of frequency (very sensitive areas could cover more than 35% of the country area covered by vegetation by the end of the century).

Climate projections also indicate a likely increase in intense rainfall, and as a result, potentially destructive and dangerous large-scale runoff events. The national meteorological office, Météo-France, has published results for annual maximum daily rainfall that show a median increase of between 0 and 15% for the southern half of France and between 15 and 30% for the northern half.

The overseas territories, which are highly exposed to major natural risks, are at the forefront of the already tangible impacts of climate change, particularly in the intertropical belt and in coastal areas, which often concentrate activities and populations: intensification of extreme weather events (cyclones, intense rains, droughts), sea level rise, coastline retreat, etc. Their vulnerability is reinforced by their remoteness from the mainland and, for the majority of them, their geographical isolation, but also by the possible combination of several natural hazards, which are sometimes extreme. All face a context of certain human and economic vulnerability, with a population that is more vulnerable and poorer than elsewhere. Some territories are also in a situation of double insularity.

Climate change will permanently change the mapping of the risks facing France, both mainland and ultramarine. As they are responsible for the protection and relief to the population, civil security actors are at the forefront of these changes. They must therefore prepare and anticipate them.

ACTIONS ALREADY UNDERTAKEN

The Ministry of the Interior has taken an innovative, forward-looking approach in order to put in place a strategy for adapting the civil security response by 2050. Ten working groups were set up involving all the departments of the Directorate-General for Civil Security and Crisis Management, specialists from Météo-France, fire and rescue services, multiple State operators or recognised specialists on the subject.

The working method consisted, as a first step, of an analysis of the evolution of risks based on the most current state of knowledge. The climate projections and their impact on the evolution of hazards were intended to give an accurate overview of the evolution of the various climatic hazards of interest to Civil Security. Secondly, those changes, if they were sufficiently tangible, were confronted with the operational approach in order to deduce the work to be carried out in terms of risk knowledge, organisation, doctrine, strategy and resources.

All the risks affecting the work of Civil Security were studied at thematic level and, first and foremost, the directly climate-dependent risks, be they floods, wildfires, health risks such as heatwaves or epidemics. But emerging risks have also been integrated into reflections such as glacial and periglacial risks. The same applies to indirect effects such as the consequences of climate change on sensitive infrastructure, industrial and technological risks and nuclear risk. In order to ensure a complete view, a transversal approach on overseas territories, European and international effects, as well as the effect of new technologies, innovations and communication was put in place.

In addition, the Minister of the Interior launched, in 2024, the work of the *Beauvau de la sécurité civile*, which brought together all stakeholders to reflect on the civil security of tomorrow. Its conclusions and proposals are expected in 2025 to allow the Minister of the Interior to have the first basic elements for a draft law, particularly in terms of governance, scope of tasks and funding.

NEW ACTIONS

1. Strengthen Civil Security's capacity to respond to the expected increase in the frequency and/or intensity of risks associated with climate change.
2. Widespread adoption of Municipal Safeguard Plans (PCSs) and use of this strategic tool

ACTION 1

Strengthen civil security capacity to address the expected increase in the frequency and/or intensity of risks with climate change

The foresight study conducted with Météo-France led to the development of a roadmap to 2050. The following complex risks are considered as priorities:

- Flood risk;
- The risk associated with storms or cyclones;

- The risk related to gravity movements (earthquake, collapses...)
- The risk of fires in forest and natural areas.

The implementation of the roadmap is accompanied by an increase in the operational capacity of the fire and rescue services (SIS) within the framework of the capability pacts (co-financing by the State and local authorities).

Faced with major climatic events and the associated risks, the response can be classified into four families of means:

- Means of pumping and rescue (flood risk);
- Detachment of Delayed Intervention (DIR) (risk of fires in forests and natural areas);
- Rescue and search equipment such as USAR (Rescue and Research Unit) (risk linked to storms, cyclones or gravity movements);
- Means of command and support (all risks).

PILOTE	DGSCGC
BUDGET	Capability pacts
TIMETABLE	To be defined
INDICATORS	- Number of firefighting/rescue and detection assets acquired by SIS under forest fire capability pacts - Number of fire-fighting/relief measures to cover complex and emerging risks: - Flood risk: number of high-capacity pumping modules, number of flood cradles (reconnaissance and rescue boats), cradle doors, etc. - CBRN risk - CAPINAV risk (vessels) - Industrial risk (special fires)

ACTION 2

Widespread adoption of Municipal Safeguard Plans (CSPs) and use of this strategic tool

Developed under the responsibility of the mayor, the municipal safeguard plan is a document aimed at organising existing municipal means to deal with emergency situations.

Law No 2021-1520 of 25 November 2021 aimed at consolidating our civil security model and enhancing the volunteering of firefighters and professional firefighters, known as the "MATRAS law", reinforces the system of municipal safeguard plans (PCS) and inter-municipal safeguard plans (PICS).

The PCS is compulsory for each municipality which:

- has a natural hazard prevention plan (prescribed or approved);
- is included in the scope of a particular intervention plan;
- is included in one of the areas at significant risk of flooding provided for in Article L. 566-5 of the Environment Code;
- is included in a seismicity zone defined by regulation;

- hosts a forest classified under Article L. 132-1 of the Forest Code or is deemed to be particularly exposed;
- is recognised, by regulation, as exposed to volcanic risk.

The objective is to generalise the PCS or the PICS throughout the territory in order to set up an organisation ensuring the protection and support of the populations. The decentralised State services will make available to local authorities all the support needed to draw up the PCSs.

PILOTE	DGSCGC
BUDGET	At the expense of the municipalities, variable cost
TIMETABLE	To be defined
INDICATORS	- Number of PCS (mandatory and "optional") - Number of PICSs (mandatory and "optional")



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3 Third French National Adaptation Plan

MEASURE n°9

Adapting housing to the risk of high heat

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

With climate change, heat waves will become more intense, frequent and long. In the Overseas Territories, where temperatures are - in most territories - already high throughout the year, they are also expected to increase. It is therefore essential to ensure that housing, whether new or old, is adapted to climate change so that it remains comfortable during heatwaves.

ACTIONS ALREADY UNDERTAKEN

For new buildings, in mainland France, regulation (RE2020) makes it possible to continue and intensify the efforts to insulate buildings – a prerequisite for both winter and summer comfort. In addition, RE2020 introduced a new indicator to measure the performance of a dwelling in terms of summer comfort. The calculation of this indicator is based on meteorological data from the historic heat wave of 2003, with two thresholds of discomfort: the high threshold, above which the building is non-regulatory due to excessive discomfort, and the low threshold, below which the building is considered comfortable in hot weather. Between these two thresholds, the building complies with the regulatory requirement but, to incentivise reaching the low threshold with passive (i.e. non-energy-consuming) solutions, a cooling flat-rate is added to the energy consumption.

RE2020 applies since January 2022 to residential buildings and since July 2022 to office buildings and primary and secondary education buildings. Feedback from the first years of application of the rules was launched in early 2024 on the basis of an observatory of RE2020 attestations.

For existing dwellings, in mainland France, a simplified indicator to assess the passive summer comfort (i.e. without taking into account air conditioning systems) of a dwelling, resulting in three levels of performance based on several input data (dual-aspect, presence of outdoor sun

protection, etc.) has been integrated into the energy performance diagnosis (EPD). The same indicator assessing the summer comfort of a dwelling complements the energy audit. In Overseas France, by virtue of a legislative authorisation obtained in 2011 and renewed in 2015, Guadeloupe has an enforceable energy performance diagnosis since 2020, including the calculation of a hygrothermal comfort indicator for air-conditioned homes. Martinique also adopted an invoice-based EPD in 2011, which has not been amended so far. For the other Overseas territories (DROMs) (Réunion, Guyane and Mayotte), an enforceable EPD is being studied, with the plan to systematically include the calculation of a hygrothermal comfort indicator among the indicators evaluated.

Since January 2024, as part of the global renovation projects supported by MaPrimeRénov' in mainland France (for a major renovation), expenditure associated with the installation of outdoor solar protection of bay windows and ceiling fans is eligible for financial aid. Analyses are under way to conclude on the need to develop this type of aid for overseas territories. Support programmes for renovation and project management in the overseas departments and regions will have to be developed where necessary.

In addition, it will be necessary to further develop the France Rénov' advisory centers. These will allow households to access free and neutral recommendations, allow the mobilisation of existing financial support programmes, and create an ecosystem leading to the development of support structures and the RGE (recognized guarantor of the environment) labelling of qualified companies.

As regards professionals, applicants for approval to become 'Accompaneurs Rénov', who are in charge of advising households carrying out major renovations, must be aware of the rules for the proper use of housing after work, in particular those relating to summer comfort. The training courses for the RGE technical referents, which are currently being revised, will better take summer comfort into account.

NEW ACTIONS

1. Improve knowledge of the performance of the building stock vis-à-vis summer comfort
2. Renovate housing to adapt to climate change and prepare to the future climate
3. Improve climate change adaptation of new housing
4. Raise awareness among the general public and professionals on the need to adapt housing to the future climate and promote good practices in the event of heat waves

ACTION 1

Improve knowledge of the performance of the building stock vis-à-vis summer comfort

Existing data on the performance of the building stock vis-à-vis summer comfort are currently insufficient. Collecting data from measurement campaigns or simulations will make it possible to improve knowledge of the current situation, anticipate future changes in comfort linked to climate change and adapt public policies accordingly, if necessary.

In addition, in order to simulate the impact of climate change, prospective weather data scenarios will be made available to allow everyone to test the impact of the future climate on a construction or renovation project, and to understand future developments at the level of the French building stock.

1.1 - Conduct an inter-ministerial field study to measure summer comfort in new and existing buildings, whether renovated or not, **and their impact on the health of occupants.** The study will focus on housing as well as certain tertiary buildings with a sensitive public (hospitals, schools, nurseries, EHPAD). This study will be used to provide feedback on the implementation of the RE2020 regulation on new buildings and on the relevant thermal renovation measures in order to adapt, where appropriate, existing public policy arrangements.

1.2. - Conduct multi-criteria assessments on selected technologies for summer comfort in buildings, such as nature-based solutions (vegetalisation) and the use of reflective roof coverings to better understand their technical, economic and environmental relevance.

1.3. - Produce prospective weather data scenarios integrating future climate change in coherence with the reference warming trajectory for adaptation (TRACC).

PILOTE	DHUP with the support of DGEC, DGS, DGT, DGPR, MENESR, Ademe, CSTB, Cerema and Météo-France
BUDGET	1.1 : To be defined 1.2 : To be defined
TIMETABLE	1.1 - 2024 : Setting up the project: definition of terms of reference, governance, financing and selection of service providers. Realization of forward-looking weather scenarios - 2025 : Selection of buildings and practical implementation of the study - 2028 : Conclusion of the study 1.2. Publication of the DGALN-CSTB study on the use of white paint on roofs in 2024. 1.3. Start of the work of Météo-France and Ademe in 2024 Completion planned for early 2025
INDICATORS	- Launch and restitution of the summer comfort study - Number of buildings studied - Launch and production of studies on summer comfort technologies - Publication of prospective weather data scenarios - Publication of the common framework

ACTION 2

Renovate housing to adapt to climate change and prepare to the future climate

The public renovation policy is based on several types of tools that can be adapted to take account of the future climate:

- Regulatory obligations
- Renovation aid
- Management of professionals
- Rules for the protection of built heritage

- Renovation of condominiums
- Information on the right behaviour (see also Action 4).

The aim is to take summer comfort into account in all major renovation projects receiving public support by 2030.

2.1. - Regulatory obligations:

2.1.1 - Improve the summer comfort assessment indicator in the energy performance diagnosis (EPD) in mainland France; integrate a thermal comfort assessment indicator in the EPD in Overseas France; include recommendations for renovation work to improve them if they are classified as insufficient and adapt the energy audit accordingly.

In France, the indicator to assess the summer comfort of a dwelling is very simple and needs to be improved in order to reflect more accurately the performance of the dwelling on this criterion. This could be done by taking into account the location of the building, on the basis of a description in degree-hours of discomfort as in the environmental regulations of new buildings RE2020. This improvement requires the implementation of a thermal calculation method that is complex to apply in the existing system.

Once the indicator is defined and improved, it may then be possible to consider actions to improve its visibility, such as displaying this indicator on real estate advertisements, and its use in the energy performance diagnosis of tertiary buildings. Secondly, on the basis of a reliable indicator, particularly in relation to the results of action 1.1, it may be considered to adapt the audit and its recommendations for work.

PILOTE	DHUP with the support of DGEC, DGOM, Ademe, CSTB, ANAH and Cerema
BUDGET	€500k (preliminary estimate) to develop a new summer comfort indicator in the EPD and energy audit
TIMETABLE	2024-2025 : Update the energy audit Horizon 2028: Update of the EPD summer comfort indicator and integrate the thermal comfort indicator in the overseas EPDs (excluding Mayotte, postponed to 2030)
INDICATORS	- Updating of the DPE - Updating the energy audit - Statistics on the summer comfort indicator in post-renovation EPDs

2.1.2 – Study the eventual integration of summer comfort criteria into the definition of efficient renovation as referred to in Article L111-1 of the Construction and Housing Code.

This definition is used in the context of renovation recommendations, notably in the regulatory energy audit, and as part of the criteria of several renovation support schemes. The inclusion of a summer comfort criterion in this definition would therefore make it possible to massify this type of work.

PILOTE	DHUP in connection with the Ministry of Culture
BUDGET	50 k€

TIMETABLE	2028-2030
INDICATOR	Launch of an opportunity study

2.2. Renovation aid:

2.2.1 - An axis "Supporting the implementation of innovative cooling solutions in residential or tertiary buildings" was included in the **call for energy economy certificates programmes** launched in September 2024. The implementation of the selected projects will take place in 2025-2026.

PILOTE	DGEC
BUDGET	Target envelope of 15 TWh cumac for both axes of the call for programmes
TIMETABLE	Publication of the call for projects and selection of applications in 2024 Implementation of winning projects in 2025-2026
INDICATORS	- Amount of projects financed - Number of buildings concerned

2.2.2 - Study the possibility of incorporating summer comfort gestures into **MaPrimeRenov'** programme, such as installation of fixed sunscreens, ceiling fans and blinds.

PILOTES	DHUP and ANAH in connection with the DB
BUDGET	Depending on future MaPrimeRénov' envelopes
TIMETABLE	2025-2026: Opportunity study
INDICATOR	Share of assisted renovations taking into account summer comfort or thermal comfort in Overseas France (target 100% in 2030)

2.2.3 - Study the possibility of introducing a conditionality for the integration of summer comfort measures, or thermal comfort in Overseas France, in the financing programmes for the energy renovation of the **social building stock**.

PILOTES	DHUP and ANAH in connection with the DB
BUDGET	To be defined
TIMETABLE	2026-2027

INDICATOR	Share of assisted renovations taking into account summer comfort or thermal comfort in Overseas France

2.3. Raising awareness and engaging professionals:

2.3.1 – Study the possibility of introducing a requirement for expertise in work to improve summer comfort, and overseas thermal comfort, for France Rénov' Counsellors or provide them with training on the subject [DHUP].

To date, applicants for the 'My Renov Advisors' approval must 'know the rules for the proper use of housing after work, in particular those relating to indoor air quality, the use and maintenance of heating, cooling and ventilation equipment, summer comfort and eco-behaviour'. The opportunity to introduce a requirement for expertise in summer comfort work will be studied in order to ensure that advisors can advise individuals on the types of work to be undertaken.

2.3.2 - Make presentations to the building professionals on the challenges related to the adaptation of buildings in order to **raise awareness among construction stakeholders**, as part of a dedicated working group of the Assises du BTP including Overseas professionals [DGE].

2.3.3 - Obtain commitments from the sector relating to the adaptation of buildings [DGE].

PILOTES	DGE and DHUP (depending on the actions), with the support of the Ministry of Culture, Ademe, ANAH and Cerema
BUDGET	To be defined
TIMETABLE	2027: Decision-making on the introduction of expertise and training requirements for summer comfort and overseas thermal comfort for France Rénov' Advisors
INDICATORS	- Number of Renov advisors with summer comfort skills - Implementation of awareness-raising actions for professionals

2.4 Architectural rules:

2.4.1 – Insert, in the future interministerial guide on the energy rehabilitation of old and heritage buildings, recommendations aimed in particular at architects of Bâtiments de France to reconcile solar protection with respect for the architectural and heritage quality of buildings, so as to ensure minimum solar protection [Ministry of Culture/DHUP].

2.4.2 - Support the evolution of the management documents for remarkable heritage sites (safeguarding and enhancement plans and architectural and heritage enhancement plans), when required, **to strengthen the consideration of the thermal comfort of buildings** and decline, if necessary, the possibilities of installing solar protection systems [Ministry of Culture].

PILOTE	DHUP with the support of DGEC, the Ministry of Culture, Ademe, ANAH and Cerema
BUDGET	To be defined

TIMETABLE	Publication of the guide in 2025
INDICATORS	- Revision of the Heritage Buildings guide - Number of revised heritage site management documents

2.5 Condominiums:

2.5.1 – Develop a guide on the installation of sunscreens and shutters in condominiums, including Overseas.

2.5.2 – Set up a working group on summer comfort (and thermal comfort for overseas territories) in condominiums to study the levers to be operated in order to embark on work improving summer comfort and thermal comfort, and in particular the installation of sunscreens during major renovations in condominiums (façade renovation, roof renovation, etc.), carpentry changes or the installation of any other relevant equipment, subject to heritage, architectural or technical constraints. Consideration could also be given to whether summer comfort should be included among the works contained in the multi-annual work plan in condominiums.

PILOTE	DHUP with the support of DGEC, the Ministry of Culture, Ademe, ANAH and Cerema
BUDGET	No additional need
TIMETABLE	2025-2026 : Conduct of the working group on summer comfort and thermal comfort in condominiums
INDICATORS	- Share of declarations of condominium incorporating instructions for the installation of sunscreens and shutters - Share of major renovations in condominiums leading to the installation of sun protection

ACTION 3

Improving climate change adaptation of new housing

Elements on drinking water consumption will be incorporated into environmental regulations for new buildings subject to RE2020. Regulations to limit drinking water consumption in new buildings will therefore be adopted in the near future (see measure 3 of the Water Plan and measure 21 of the NAP-3).

The results of action 1.1 will also make it possible to assess the achievement of the thermal discomfort thresholds set out in the RE2020 and the relevance of these thresholds, in order to ensure that they are adequate to protect the residents' health in the context of the reference warming trajectory for adaptation to climate change (TRACC). Depending on the results of this study, a decision may be taken on whether to adjust the RE2020 to adapt the provisions on summer comfort in new dwellings if necessary.

It should be noted that, in France, the environmental regulation of new buildings (RE2020) must be gradually extended to other buildings, starting with specific tertiary buildings (crèches, media libraries, hotels, restaurants, shops, universities, gymnasiums, industry, health, etc.). It will aim to be particularly ambitious on buildings receiving a sensitive public from the point of view of summer comfort.

PILOTE	DHUP
BUDGET	€2 million for studies in the event of a necessary revision of RE2020
TIMETABLE	2025-2026: Consolidating RE2020 feedback 2025: Entry into force of RE2020 for other buildings
INDICATORS	- Number of buildings built with a summer comfort and thermal comfort requirement overseas - Number of buildings built with a drinking water requirement - Number of buildings implementing rainwater and/or bathroom greywater reuse

ACTION 4

Raise awareness among the general public and professionals on the need to adapt housing to the future climate and promote good practices in the event of heat waves

This action is complementary to the action of measure 21 of the PNACC which targets sobriety in water uses in the habitat.

4.1 - Update and widely disseminate existing guides on relevant works and behaviours to improve comfort in housing in summer for the general public, landlords and construction companies [ADEME].

4.2 - Carry out a general public communication campaign on this subject, focusing more specifically on summer comfort behaviour, the installation of sunscreens, passive and effective cooling solutions, the greening of outdoor spaces and changes in behaviour. In addition to this specific campaign, the network of Renov' Advisors should be mobilised to promote good practices [MTEBFMP/MATD].

4.3 - Develop a prevention system dedicated to adaptation to high heat, targeting in particular occupants of dwellings exposed to heat. A first version was released in May 2024 [Santé publique France].

4.4 - Build partnerships with major DIY brands so that advisors-sellers communicate to customers on the performance of renovation materials in terms of heat protection, especially bio-based materials with good thermal resistance to heat and a strong thermal phase shift [Plan Bâtiment Durable].

4.5 - Develop and promote a self-renovation guide to improve summer comfort in housing for self-renovators and professionals accompanying self-renovation projects [Ademe].

4.6 - Raise awareness of Article R241-30 of the Construction and Housing Code, which provides that 'in rooms in which a cooling system is installed, the system must be put into operation or kept in operation only when the internal temperature of the rooms exceeds 26 °C'.

PILOTES	MATD, MTEBFMP, SPF, Ademe and PBD
BUDGET	To be defined
TIMETABLE	2025: Launch of a communication campaign on an annual basis
INDICATORS	- Updating of summer comfort guides - Implementation of the communication campaign - Update of the prevention system of Public Health France - Number of DIY brands under partnership - Publication of the guide on self-renovation - Communication around the operating temperature of air conditioners



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3 Third French National Adaptation Plan

MEASURE N°10

Deploying renewable cooling technologies on a large scale

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

Despite the implementation of measures to limit thermal discomfort in buildings *via* passive solutions, which remains a top priority (see measure n°9 of the NAP), cooling needs are expected to increase in the medium to long term, in particular to protect populations that are particularly vulnerable to the heat (children, elderly or sick people in particular).

In dense areas, cooling networks are highly energy efficient, making it possible to take advantage of natural sources such as lakes, rivers, seas or subsoil. They pool the production of cold and mobilize for this purpose industrial machines with very high energy efficiency, offering a better control of the refrigerants used. They also make it possible to postpone electricity consumption *in off-peak hours* *via* the manufacture and storage of ice and, in some cases, to replace electricity consumption by the recovery of available renewable and recovery energy. Finally, they avoid aggravating the heat islands effect linked to thermal discharges at building level. According to the draft national multiannual energy programming, the objective would be to increase deliveries from cooling and recovery networks from 0.78 TWh in 2021 to 2 TWh in 2030 and between 2.5 and 3 TWh in 2035.

For less dense areas, where refrigeration networks are less relevant, the aim is to promote the deployment of efficient, made-in-France cooling systems with a lower impact on the environment.

The development of air conditioning solutions also concerns rolling stock (buses, coaches, trains, trams), in order to ensure the comfort of passengers in periods of high heat and to prevent breakdowns. In this context, it seems necessary to develop air-conditioning solutions for rolling stock with a low environmental impact, in order to limit energy consumption. In addition to avoiding maladaptation, this would limit the impact of air conditioning energy consumption on the range of electric buses and coaches.

ACTIONS ALREADY UNDERTAKEN

The so-called Heat Fund already includes funding for investments in the production and distribution of cold, but that budget is rarely used for this type of project.

As part of the ENRezo project, co-financed by the General Directorate for Energy and Climate of the ministry of Ecology, the public operator CEREMA is mapping suitable areas for the development of district heating and cooling networks.

Many works have been carried out in Martinique since the early 2000s to highlight valuable geothermal resources. These activities were mainly financed by the public agency ADEME, the local authority of Martinique and the mixt union for electricity in Martinique (SMEM), under the Territorial Programme for Energy Management, as well as by the Bureau of geological and mining research (BRGM).

Technologies adapted to the tropical climate such as SWAC (seawater air conditioning) are being tested in La Réunion and French Polynesia.

A working group was set up by the General directorate for infrastructure and transport in February 2024 with the objective of defining a roadmap on the adaptation of rolling stock to high heat, with recommendations for authorities in charge of organising mobility (see measure n°30 of the NAP).

NEW ACTIONS

1. Promote the deployment of cooling networks in dense areas
2. Support the development of a French sector of innovative cooling systems with a lower environmental impact

ACTION 1

Promote the deployment of cooling networks in dense areas

In dense urban areas, cooling networks are an important lever to effectively meet the cooling needs of the tertiary sector. A number of actions will be implemented to promote their deployment both technically and financially.

Action 1.1:

- Finalisation of a **mapping of areas with high potential for the deployment of cooling networks** (CEREMA)
- **Campaign to promote** cooling networks among the communities and major consumers of cold (social housing, educational and health buildings, prisons)

Action 1.2: Study of incentives to promote the distribution of cooling (subscription and supply) by network, and articulation with the government's 'geothermal' action plan.

Action 1.3: Continuation of **the Heat Fund's** support for cooling networks.

Action 1.4: Implementation of **regulations favourable** to cooling networks, in particular to: make operational the regulation on the automatic classification of urban cooling networks by adapting the renewable-energy rate required as part of the concept of virtuous cooling network; extend the corporate status open to local authorities participation in cooling production facilities; integrate "local heating and cooling plans" into territorial climate-air-energy plans as part of the transposition of the Energy Efficiency Directive of October 2023.

PILOTE	DGEC with the support of MINEFI, ADEME and CEREMA
BUDGET	To be defined
TIMETABLE	From 2026
INDICATORS	- Amount of additional cooling delivered by the networks (in TWh, in line with the objective of the national multiannual energy programming) - Number of awareness-raising actions implemented - Number of networks created - Budget of the Heat Fund used for refrigeration networks - Number of local heat and cold plans

ACTION 2

Support the development of a French sector of innovative cooling systems with a lower environmental impact

In 2020, the number of air conditioning equipment sold exceeded 1 300 000 units. However, individual air conditioners, and in particular mobile air conditioners, have many drawbacks, with both direct and indirect impacts: low energy efficiency, peak loads on the electricity grid, presence of refrigerants that contribute to greenhouse gas emissions, contribution to increasing the heat island effect by the release of hot air outside.

The aim is to support the development of a French sector through **the 'Support for R&D' call for projects under the TASE strategy for France 2030** (extension of the Demo-TASE call for projects to heat pumps, in particular those producing cold and refrigerants with low environmental impact). A complementary call for projects could target cooling and lower environmental impact systems in public transport.

PILOTE	DGE
BUDGET	As part of the France 2030 envelope for Demo-TASE
TIMETABLE	Winners announced in the 2nd ^{half of} 2025
INDICATOR	Number of projects supported



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MEASURE N°11

Adapting working conditions to climate change by strengthening employers' prevention obligations

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The purpose of this measure is to better understand the impact of heat on workers and to increase their protection against this impact.

In the context of climate change, the prevention of heat-related risk on working conditions, health and safety of workers is a growing challenge. The fourth national occupational health plan (PST4) states that *'heat generates occupational risks specific to activities exposing to high temperatures (foundries, glassworks, etc.), but also more often for all outdoor activities (construction, etc.) and indoor activities (offices and workshops) during heatwaves. Heatwaves and high heat lead to a deterioration of working conditions in a large array of sectors, and increase the risk of accidents at work.'*

ACTIONS ALREADY UNDERTAKEN

Action 5.3 of PST4 provides for 'taking into account the effects of climate change on workers' health, in particular the effects of heat waves' by raising companies' awareness of the importance of risk assessment linked to heatwave episodes and prevention rules, and by monitoring the mortality and morbidity associated with heatwaves in order to improve knowledge of the risk.

The Ministry of Labour and its decentralised services are strongly mobilised before and during the health monitoring period in order to protect employees from exposure to heat and to support companies in their preventive actions. In line with the ministerial instruction on health monitoring, the Ministry of Labour publishes each year a circular to specify the actions to be implemented by the services.

The Regional Directorates for the Economy, Employment, Labour and Solidarity organise awareness-raising and information activities, in particular with prevention partners, social partners and professional branches. Labour inspectorates are also particularly involved. From the beginning of the vigilance period and throughout its duration, officers in charge of enforcement verify that employers have assessed heat-related risks and put in place preventive measures. Targeted control actions are carried out during orange and red heat-wave alerts.

The Ministry of Labour has also drawn up a guide to assist companies in implementing appropriate prevention measures. The professional body for the prevention of construction also provides companies with resources in this area.

Similarly, the National Institute on Research and Security (INRS) offers a range of supports to act in prevention and raise awareness among employees about working in hot summers.

With regard to improving knowledge, the government asked the French Agency for Food, Environmental and Occupational Health and Safety (ANSES) to work on occupational exposures to solar ultraviolet rays and the risk of skin cancers.

The PST4 (2021-2025), which is the result of a constant dialogue between the State, the institutional players in occupational health and the social partners, includes a specific action entitled 'anticipating crises in order to better manage them and limit their effects over time', one of the objectives of which is to help companies adapt their risk assessment and prevention measures to crisis situations, in particular through information communicated to employees and crisis management exercises.

In Overseas France, Article 241 of Law No 2022-217 of 21 February 2022 on differentiation, decentralisation, deconcentration and various local public action measures introduced the publication of a communication aimed at workers on the major natural risks to which they are exposed at their workplace.

NEW ACTIONS

1. Continue and strengthen monitoring of mortality and morbidity associated with heat waves
2. Strengthen prevention obligations for employers in order to safeguard the health and safety of workers and give new powers of intervention to the labour inspectorate during high heat
3. Develop personal protective equipment (PPE) against the risks associated with the effects of heat waves and improve PPE to guarantee both their function of protecting the health and safety of workers in relation to the risks against which they are designed, as well as their ergonomics in the event of a heat wave or period of high heat in the Overseas Territories
4. Finalise the adaptation of the scheme for weather-related work stoppages in the construction sector, and launch a reflection for all outdoor activities, in order to sustainably address the economic consequences of heat-related work stoppages for companies

ACTION 1

Continue and strengthen monitoring of mortality and morbidity associated with heat waves

This action aims to develop a better understanding of the impact of heatwaves on the health and safety of workers, in connection with the 'accidents at work and occupational diseases' branch of Social Security, in order to define preventive actions adapted to this emerging risk and in particular to promote the development of personal protective equipment (PPE) that are better adapted to the effects of heat (see action 3 below). A study will be conducted by Santé Publique France with the objective of retrospectively analysing the spatio-temporal distribution of cases of accidents at work under the general and agricultural schemes, all causes combined or specifying, as far as possible, specific causes related to heat. This study will be carried out in partnership with the National Health Insurance Fund and the Central Agricultural Social Insurance Agency, on the basis of a statistical analysis of the available data.

PILOTE	DGT
BUDGET	No additional need identified
TIMETABLE	Study results expected in Q3 2025
INDICATOR	Publication of the study

ACTION 2

Strengthen prevention obligations for employers in order to safeguard the health and safety of workers and give new powers of intervention to the labour inspectorate during high heat

The recurrence and intensity of heat waves call for considering new ways of strengthening the preventive measures put in place by employers, but also the means of action of the labour inspectorate to put an immediate end to situations of serious and imminent danger linked to exposure to heat and in the absence of appropriate preventive measures.

In the face of recurrent heatwaves, the Labour Code now lays down 'general' regulatory obligations with regard to thermal working conditions:

- The provisions relating to the single occupational risk assessment document (DUERP) provide that the latter 'lists all the occupational risks to which workers are exposed and ensures the collective traceability of these exposures' (Article L.4121-3-1);
- Articles R.4213-7 et seq. relating to the 'thermal environment' concern the adaptation of the temperature of workplaces and their ancillary premises;
- Outdoor workstations must be arranged in such a way that workers are protected against atmospheric conditions;
- Personal protective equipment (PPE) must be appropriate to the conditions under which the work is carried out, must not itself give rise to additional risks and must be wearable in conditions compatible with the work to be performed, in compliance with ergonomic principles;
- As regards building sites and public works, Article R.4534-142-1 requires the provision of premises where workers can be accommodated '*under conditions such as to preserve their health and safety in the event of climatic conditions likely to adversely affect them, or of construction site arrangements guaranteeing them under equivalent conditions*'. In

addition, Article R.4534-143 requires the provision of at least three litres of water per day and per worker.

If the inspection officer of the labour inspectorate estimates that the employer has failed to fulfil his or her obligations, may, in the current state of the regulations: send a letter of observations to the employer (work premises and outside posts), notify a formal notice prior to a report to carry out any air ventilation and remediation measures (work premises) and/or draw up a report for failure by the employer to comply with its general obligation to preserve the health and safety of workers, with a view to obtaining a formal notice from the authorities requesting him or her to take the necessary measures. None of these legal tools can put an immediate end to a situation posing a serious and imminent danger to the worker.

Consultation will be held with the social partners in the framework of the Working Conditions Guidance Council (COCT) on possible further preventive measures. The aim is to develop a legal basis applicable to all situations where workers are exposed to high levels of heat that may affect their health and safety both outdoors and indoors.

The consultation may cover the following measures:

- Add new provisions to the Labour Code applicable to work equipment and workplaces in order to maintain a suitable thermal environment;
- Lay down new provisions applicable to principals but also to contracting authorities in order to coordinate the preventive measures implemented by the various employers participating in the same operation;
- Clarify the concept of vigilance corresponding to an episode of intense heat by referring to a decree setting the levels of meteorological alerts of the system known as the 'heatwave' of Météo-France and determining the levels of vigilance corresponding to an episode of intense heat to be taken into consideration by the employer for the implementation of preventive measures;
- Where the risk assessment so requires, introduce the principle of the preparation by employers of preventive measures against the risk of workers' exposure to intense heat, such as organisational measures (shifting of working hours to the cooler periods of the day, increase in the number and/or duration of breaks, adjustment of the workload).

Consultation should also make **it possible to develop the tools available to labour inspectors**, both in terms of prevention and deterrence, in order to encourage employers to plan and organise preventive measures before the occurrence of extreme temperatures, in order to protect workers and put an end to a dangerous situation without delay.

As such, the objectives are to create:

- A regulatory basis enabling labour inspectors to give notice to employers to draw up or update the list of measures or actions mentioned above in the event of shortcomings identified, prior to a report;
- A legislative basis allowing the temporary cessation of works or activities in the most serious situations where workers are exposed to excessive temperatures during periods of heat wave (heatwave and extreme heatwave) that may affect their health and safety, regardless of the sector of activity, in the absence of adequate preventive measures implemented by the employer.

Discussions on the prevention of climate-related occupational risks will be encouraged within the framework of the Social and Economic Committees (CSE) and the Health, Safety and Working Conditions Commissions (CSSCT) of companies, in order to build solutions as close as possible to the needs.

PILOTE	DGT
BUDGET	No additional need identified

TIMETABLE	Dependent on the legislative vector
INDICATORS	- Number of formal notices issued by the labour inspectorate prior to the report in the event of non-compliance by the employer with the obligation to implement measures to prevent and protect against the risks associated with heat waves - Number of temporary stoppages of activity carried out by the labour inspectorate in the event of a heat wave - Number of workers removed from a situation of serious and imminent danger following a work stoppage in the event of a heat wave pronounced by a control officer

ACTION 3

Develop personal protective equipment (PPE) against the risks associated with the effects of heat waves and improve PPE to guarantee both their function of protecting the health and safety of workers in relation to the risks against which they are designed, as well as their ergonomics in the event of a heat wave or period of high heat in the Overseas Territories

The context of climate change and the increase in the frequency and duration of heatwave periods exposes workers to risks directly linked to the effects of heat but also accentuates occupational risks in circumstances where the personal protective equipment (PPE) worn by workers is not sufficiently adapted ergonomically to the effects of heat.

The Economic, Social and Environmental Council (CESE), in its opinion "Work and health-environment: What are the challenges in the face of climate change? of April 2023, notes the difficulty associated with the design of certain PPE with regard to the environment in which they are used by workers. Thus, the report notes that, as regards the handling and spreading of toxic products, 'the most protective combinations are also the least breathable and are generally unusable when the outside temperature is high, because they prevent normal body thermoregulation, which entails a significant risk of heat stroke. Such equipment, tested in a laboratory before being placed on the market, often appears unsuitable for the real conditions of outdoor work in high temperatures, even though its use is a precondition for the authorisation to place dangerous products on the market.'

The General Commission for Strategy and Prospective (France Stratégie) made a similar observation in its note 'Working with climate change' of June 2023 (No 123): "the risks are also higher when 'aggravating' factors such as the difficulty of the task or the wearing of suits or personal protective equipment (PPE) are added, which limit the dissipation of body heat."

On that basis, several aspects need to be examined in more detail with regard to PPE:

- Better take into account, from the outset, the principles of ergonomics, so that this equipment is adapted to the effects of heat in periods of heat wave, or high heat in Overseas France;
- Develop PPE against the effects of heat linked to heat waves, or high heat in Overseas France. There are a limited number of "traditional" PPE against the effects of heatwave-related heat. Innovative devices are developed but not all of them are PPE, such as:
 - o Connected accessories or monitoring of the thermal environment (heat sensors, thermal drones, etc.);
 - o Medical devices (they inform about the state of health but do not protect);

- Innovative equipment whose performance must be rigorously demonstrated (refreshing accessories, phase change materials).
- Adapt the regulations on employers' obligations regarding the conditions of use of PPE, so that climatic conditions are taken into account.

It is therefore a question of:

3.1 : Establishing an inventory to **identify PPE design standards** that integrate the prevention of the effects of heat risk related to heat waves and high heat in Overseas France, and those that have little or no provisions in this area.

3.2 : **Changing PPE design standards** to include the prevention of the effects of heat risk linked to heat waves or high heat in Overseas France.

3.3 : **Amending the provisions of the Labour Code on the use of PPE** taking into account climatic conditions.

PILOTE	DGT
BUDGET	No additional need identified
TIMETABLE	2nd half of 2025: State of play on PPE design standards
INDICATOR	Number of standards that have evolved to include heat risk prevention

ACTION 4

Finalise the adaptation of the scheme for weather-related work stoppages in the construction sector, and launch a reflection for all outdoor activities, in order to sustainably address the economic consequences of heat-related work stoppages for companies

The 'BTP-Intempéries' scheme is a compensation scheme for work stoppages linked to bad weather in the construction sector, which is managed by the network of Agencies on weather-related leaves in the construction sector (CIBTP France). Its operation is based on insurance and its financing is private and ensured by the contributions paid by the member companies. Ministerial letters dating back to 1947 do not, however, allow the scheme to cover reductions/suspensions in activity due to heat waves. Even though, since the heat wave of 2003, the scheme has been gradually opened up to exceptional compensation for work stoppages linked to heat waves, the conditions for this treatment are very restrictive and not sustainable.

Faced with recurrent episodes of high heat, the professional organisations in the building and public works sector have expressed their willingness to open up the long-term management of work stoppages to heat waves. This will to widen the perimeter of the building and public works sector to include the risk of heat waves is shared by the Ministry responsible for labour.

Since July 2023, several exchanges have taken place between CIBTP France and the State services, and have enabled technical work to be carried out on the practical arrangements for integrating the heatwave risk into the BTP-Intemperatures regime. CIBTP proposed several scenarios based on projections from an actuarial study.

As a result of these technical works, the decree of 28 June 2024 on the special compensation scheme for employees by construction and public works companies in the event of a work stoppage caused by inclement weather came to enshrine the coverage by the BTP-Intempéries regime of work stoppages related to the heat wave. The Labour Code now¹ provides that periods of heat wave are considered as atmospheric conditions giving right to the support of the BTP-Intempéries regime.

In practice, CIBTP France, the association in charge of the scheme, is already taking care of work stoppages linked to heatwaves during the summer of 2024. This coverage will be continued in the coming years while ensuring the sustainability of the regime. To that end, the Labour Code provides that the Minister responsible for employment may authorise the scheme’s managers to reduce the rate of reimbursement of heatwave-related stoppages.

The next steps will be to specify, by order of the Minister for Employment, the conditions for the application of the Decree of 28 June 2024. This decree must thus define the precise criteria to qualify the heat wave giving entitlement to benefit from the BTP-Intempérie scheme.

A reflection will be launched in the other sectors involving outdoor activity during high heats, in order to better deal with potential work stoppages and, more broadly, the adaptation of working conditions. The involvement of professional federations in this work will help to better identify current business continuity challenges related to climate phenomena and lead to sectoral recommendations.

These reflections could lead, in the long term, to the establishment of sectoral schemes such as the BTP-Intempéries scheme, which will make it possible, in support of the contributions recovered by the professional sector, to compensate for interruptions in activity linked to the risk of heat waves.

PILOTE	Delegation for Employment and Vocational Training
BUDGET	The BTP-Intempéries scheme is financed by contributions paid by member companies.
TIMETABLE	2025 : Drafting and publication of the decree following the publication of the decree of 28 June 2024 amending the regulations
INDICATOR	Number of hours of work stoppage related to the heat wave covered by the BTP-Intempéries scheme

¹ Article D. 5424-7-1 of the Labour Code



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3 Third French National Adaptation Plan

MEASURE N°12

**An exemplary State to
integrate adaptation to
climate change into the
daily work of public officials**

CATEGORY OF THE MEASURE

**Axis 1: protect the
population**

BACKGROUND

The purpose of this measure is to take account of the future climate in all real estate operations of the State, in order to avoid their maladaptation, and more generally in the organisation of the work of public officials.

Infrastructure, including buildings, has not been designed to operate under projected climatic conditions for decades to come. In the absence of anticipatory actions (on the building and/or its uses), thermal comfort in the most exposed buildings risks deteriorating to the point of calling into question their operation and the health and safety of workers during the most important heat events. Isolated and one-off cases of activation of the right of withdrawal linked to overheating of work premises have already been reported in recent years.

ACTIONS ALREADY UNDERTAKEN

The 'eco-responsible public services' scheme, adopted in February 2020, is the subject of a new circular. It aims to accelerate the implementation of existing legislative and regulatory obligations on sustainable construction and renovation. It includes new measures, some of which have a direct impact on the administration's ability to adapt to climate change and, in particular, to overheating: insulation and greening of new buildings, equipment in water fountains, de-impermeabilisation and shade on parking spaces.

NEW ACTIONS

1. Integrate summer comfort and thermal comfort in Overseas France into all energy renovations of the State building stock
2. Adapting work organisation and reception conditions for public officials

With a building stock of 94 m2 and almost 140 000 buildings spread throughout the country, including overseas and abroad, the State is particularly affected by emerging risks due to rising temperatures. The subject is all the more sensitive since some of these establishments host activities that are essential to the continuity of the public service.

To mitigate the phenomenon of overheating, two levers can be activated at the building scale: work to limit daytime solar inputs and facilitate nocturnal destocking/changes in use.

ACTION 1

Integrate summer comfort and thermal comfort in Overseas France into all energy renovations of the State building stock

For the works-related lever, the actions will mainly target building components that are also concerned by energy renovations, in particular the envelope. Also, in order to rationalise interventions and limit the real risk of 're-renovation' needs (for interventions that do not take sufficient account of medium and long-term needs and risks), summer comfort and thermal comfort in Overseas France will be taken into account into all energy renovation projects in State buildings, starting with those relating to renovation works.

The measure is divided into two levels of decision-making:

1.1 – At building stock level, when drawing up (or updating) strategic building plans with a macro approach covering:

- The general risk assessment on the perimeter of the strategic building plan;
- A strategy for prioritizing adaptive actions on high-stakes assets.

1.2 – At the level of the real estate transaction, the measure consists of, prior to any transaction by the State:

- Assessing, qualifying and quantifying the risks associated with summer comfort and thermal comfort in the Overseas Territories;
- Proposing adaptive solutions that can relate to the building (works), interior and exterior fittings, and uses. They should be, as far as possible, passive, i.e. energy-free.

This measure will be systematically examined during the labelling procedure (in national and regional public real estate conferences) of the projects concerned.

At the same time, local and regional authorities, in particular the Regions, are invited to implement a similar approach in order to gradually improve summer comfort in all public buildings.

PILOTE	DIE
BUDGET	Estimated average additional cost of 10% compared to an overall energy renovation that does not take into account summer comfort

TIMETABLE	This measure is directly linked to energy renovation projects carried out by the State services (and its operators) and will therefore be rolled out over the course of the examination of the files concerned.
INDICATOR	Providing methodologies, guides and tools to assess and manage summer comfort risks in government real estate operations and strategies

ACTION 2

Adapting work organisation and reception conditions for public officials

In periods of high heat, changes in usage also make it possible to limit the health risks for public officials and users of public buildings: shift in working hours, reorganisation of the occupation of premises on less exposed walls, adaptation of work clothes and behaviour to limit daytime solar inputs and facilitate nighttime destocking, adaptation of power supply.

A communication campaign will be carried out every year in all administrations to remind the right steps to take in case of high heat (regular hydration, wearing light and light-coloured clothing, lowering blinds during the day, airing the premises during cool hours when possible, etc.).

To go further, an experiment will be conducted, in connection with the Directorate for the State real estate (DIE), in certain public buildings particularly exposed to the risk of high heat (uninsulated and unrenovated premises, in a region particularly exposed to high heat, for example in the Lyon metropolis), by changing working hours, increasing the possibilities of teleworking and proposing adaptations like the four-day working week for example. This will involve a broader reflection on staff transport conditions and the articulation between office hours and school hours for staff who are parents of pupils. The proposal of completely cold lunch menus, which limit the exposure of workers to the preparation of hot dishes during periods of heat peaks (grill, ovens, etc.) will also be tested.

PILOTE	MAPFPS
BUDGET	To be defined
TIMETABLE	2025: Experiments
INDICATORS	- Launch of communication campaigns - Launch of the experiment on working conditions



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MEASURE N°13

Renature cities to improve their resilience to climate change

CATEGORY OF THE MEASURE

Axis 1: protect the population

BACKGROUND

The aim of this measure is to develop adaptation solutions for artificialised urban spaces: reduce vulnerability to rain and high heat through nature-based solutions with a target of 1,000 hectares renatured per year thanks to funding from the Green Fund (Fonds vert), aimed at local authorities. Alongside renaturation, strong land use policies are essential to prevent urban sprawl from generating new vulnerable spaces.

Waterproofed soils are subject to significant surface runoff, which causes flooding and pollution. In periods of high heat, urbanised and mineralised areas absorb, trap and store heat around 'urban heat islands', causing thermal discomfort or even health risks. It is therefore a question of preserving existing green spaces and desealing urban soils by bringing nature back into the city to make urban spaces more resilient to the effects of climate change and improve the living environment. A renaturation operation can thus decrease the temperature felt by 5 to 10°C and the real temperature by 1 to 2°C.

In addition to these nature-based solutions, an adapted urban design, at the crossroads of different fields of expertise, makes it possible to reduce vulnerability to climate change. This is thanks to 'grey' solutions that bring together bioclimatic techniques relating to urban infrastructure and 'soft' solutions, which relate to urban uses and practices, in particular to limit heat inputs by adapting individual and collective behaviour.

ACTIONS ALREADY UNDERTAKEN

The Green Fund's **Cities and Villages Renaturation measure** co-finance climate change adaptation solutions based on the presence of nature in cities, i.e. renaturation projects – in the sense of recreating or improving ecological functionalities – of soils, plants or aquatic/wet environments located in urbanised areas, which help adapt the urban areas to the effects of climate change (islands of freshness, infiltration of rainwater into the plot). The funding targets local authorities and focuses primarily on carrying out renaturation works, but it can also subsidise upstream engineering. We notice a very strong demand for this measure by the territories, confirming their interest and their need to act in the face of urgency.

Since December 2023, **the low-carbon label method known as the 'Town with trees' has made it possible** to value the emission removals linked to projects to increase tree cover in urban areas, as well as the associated co-benefits, in particular urban cooling. Private or public economic operators wishing to contribute to the fight against climate change or offset their emissions can thus participate in the financing of these low-carbon projects.

Mapping the exposure of urban areas to the phenomenon of urban heat islands (UHI) is a key issue in diagnosing the vulnerability of a territory. Since 2017, the public operator CEREMA and other actors have developed a mapping method that, based on urban morphology data, determines the level of vulnerability to UHIs and makes it possible to prioritise sectors of intervention. Experimented on several territories in France, the current project aims to systematise the **mapping of areas prone to UHI phenomena** in all urban areas with more than 50 000 inhabitants.

Sesame is a project developed by CEREMA since 2019 to support the city of Metz, which is interested in **the ecosystem services provided by trees** in urban and peri-urban areas. Sesame examines these services as well as the hurdles linked to vegetation in urban areas, in order to propose the most suitable choice of plant variety. Since then, Sesame has been used on a dozen territories, making it possible to enrich the plant species database with new data from territories with diverse morphological, geological and, above all, climatic characteristics. In 2023, a web version was developed to offer all territories a decision support tool.

NEW ACTIONS

1. Evaluate: equip and train local authorities to carry out accurate and contextualised climate vulnerability diagnoses
2. Plan: support local authorities in developing adaptation and renaturation strategies at different planning scales
3. Design: support the design of dense, desirable and resilient urban spaces, reconciling policies for land use sobriety and renaturation, in order to create the conditions for climatic comfort without increasing the exposure of urbanised spaces to climatic hazards, while preserving the resource of living soils
4. Implement: massively rehabilitate urban ecosystems and their ecological functions with a view to adapting to the effects of climate change
5. Train: organise and facilitate the development of skills in the professional sectors involved in ecological engineering, nature-based solutions and bioclimatic planning
6. Share: support exemplary development operations taking into account climate change adaptation and network project promoters

ACTION 1

Evaluate: equip and train local authorities to carry out accurate and contextualised climate vulnerability diagnoses

1.1 - Harmonise diagnostic methodologies on climatic hazards in urban areas:

- Establish a uniform national mapping of the urbanised sectors most conducive to urban heat island phenomena in the main French agglomerations, aimed at the local authorities, to guide local action on the most vulnerable sectors. This work, engaged with CEREMA and completed in 2024, covered the 83 urban areas of mainland France with more than 50,000 inhabitants. This work will then be enriched with local mapping initiatives to build a methodological resource database on the diagnosis of urban heat islands. Ultimately, the objective would be to cover all mainland and ultramarine urban areas with more than 20 000 inhabitants. Adaptation to urban heat being one of the challenges linked to nature in cities, these maps are intended to be cross-referenced with different data that can guide renaturation strategies, in particular the black spots of ecological corridors, rainwater infiltration, daily accessibility for all to nature spaces, etc.
- Carry out methodological definition and mapping of urban cool islands in the largest agglomerations and then develop an application to find the nearest cool island.

1.2 - Strengthen the capacity of communities to establish climate vulnerability diagnoses adapted to the future local climate and specific territorial context by providing them with financial assistance for upstream studies and climate vulnerability diagnoses applied to the urban environment (in connection with measures 22 and 25 of the NAP).

PILOTES	DHUP and DGEC
BUDGET	1.1. Urban heat island mapping, mapping and development of an application for identifying islands of freshness: 200 k€ / year. 1.2. Green Fund renaturation measure (upstream studies component)
TIMETABLE	2024-2027
INDICATOR	Areas covered by heat island and cool island mapping

ACTION 2

Plan: help local authorities develop adaptation and renaturation strategies at different planning scales

In order to have coherent renaturation programmes at the level of a territory (development of ecological corridors, including as a support for adaptation) and to ensure synergies with related issues (improvement of air quality, land use sobriety, biodiversity, energy-carbon, etc.), it is necessary to provide financial assistance to local authorities in conducting strategic studies for the renaturation of urban areas and bioclimatic urban planning. This aid should enable them to draw up local planning documents (PLU(i), PCAET, SCoT, SRADDET, S(D)AGE) which naturally adapt the city to future climates and identify preferential areas for renaturation (e.g. via the PLOs of the PLU(i)). The aim is to keep up the pace by funding **upstream diagnoses or strategic studies** through the Green Fund's measure on the renaturation of towns and villages.

PILOTE	DHUP
BUDGET	Green Fund renaturation measure (upstream studies component)
TIMETABLE	2024-2027
INDICATORS	- Qualitative evaluation of the impacts of the measure renaturation of cities and villages - Area renatured with the financial contribution of the Green Fund - Surface desealed with the financial contribution of the Green Fund - Population living close to a green space created with the financial contribution of the Green Fund

ACTION 3

Design: support the design of dense, desirable and resilient urban spaces, reconciling policies for land use sobriety and renaturation, in order to create the conditions for climatic comfort without increasing the exposure of urbanised spaces to climatic hazards, while preserving the resource of living soils

This involves consolidating planning operations adapted to the future climate by integrating adaptation solutions (nature-based solutions, bioclimatism, natural ventilation and light, insulation, etc.) with operational planning tools *via*:

- The financing of technical studies prior to renaturation operations to enhance their benefits in terms of adaptation to the effects of climate change.
- The development and deployment of the Sésame web decision support tool among developers (see above, section "Actions already undertaken") to design a renaturation project adapted to future climates. Sesame web currently contains the only data of the first accompanied territory. Its enrichment over time will make it an adapted tool for a greater number of different territorial and climatic contexts.

PILOTE	DHUP with Cerema
BUDGET	- Green Fund renaturation measure (pre-operational studies component) - Enrichment and deployment of Sesame Web: €50k/year
TIMETABLE	2024-2027
INDICATOR	Number of territories accompanied by Sesame and whose data have been integrated into the Sesame web tool

ACTION 4

Implement: massively rehabilitate urban ecosystems and their ecological functions in order to adapt to the effects of climate change (urban heat islands, runoff, coastline retreat, etc.)

The aim is to support the investment needs of local authorities to implement their actions for the preservation and restoration of urban ecosystems and their ecological functionalities, the greening and renaturation of urban soils and integrated rainwater management (linked to action 4 of measure 21 of the NAP), including at watershed level, by providing financial support for these operations which contribute, through the restoration of ecological functionalities, to improving the resilience of urbanised areas to the effects of climate change. The objective is to support, through the Green Fund's measure for the renaturation of towns and villages, the operations of local authorities at a rhythm of **1 000 hectares of areas to be renatured per year**.

These operations will have to prioritize renaturations that are beneficial to the people most vulnerable to the effects of climate change (schools, seniors, disadvantaged populations, etc.). They will include a specific approach to renaturation in coastal urban areas. They will have to take into account water needs and integrated water management in renatured areas. Attention will be paid to combating vector-borne transmission of viruses by mosquitoes and to the risks of introducing invasive alien species into projects.

PILOTES	DHUP and water agencies
BUDGET	- Green Fund renaturation measure (operations component) - Subsidies from water agencies - Mobilization of the " City with trees" method of the Low Carbon Label (non-budgetary)
TIMETABLE	2024-2027
INDICATORS	- Qualitative evaluation of the impacts of the measure on renaturation of cities and villages - Number of projects supported and amount of grants awarded to renaturation under the Green Fund - Area renatured with the financial contribution of the Green Fund - Population living close to a green space created with the financial contribution of the Green Fund

ACTION 5

Train: organise and facilitate the development of skills in the professional sectors involved in ecological engineering, nature-based solutions (in connection with the ecological engineering roadmap) and bioclimatic planning

As part of the Nature in the city Plan and in conjunction with the professional organisations, the schools concerned and their line ministries, an inventory of the integration of adaptation issues into professions and professional courses will be carried out by sector: crop production (nurseries, forestry, etc.); planning and design (planners, design offices, landscape designers,

architects, urban planners, ecologists, etc.); ecological management (technical services, gardeners).

All sectors must be acculturated to the creation of adapted natural spaces that also help adapt the city to climate change. This involves the diversity of species, the mobilisation of species adapted to the current and future local context (climatic, soil, ecological), taking into account the water needs of green spaces, etc. The training modules will then be developed or adapted according to the needs identified. This action is linked to action 5 of measure 20 of the NAP.

PILOTE	To be defined
BUDGET	To be defined with professional organisations
TIMETABLE	2024-2027
INDICATORS	- Number of initial training modules developed, adapted or reinforced - Number of training courses on the ecological management (with a view to adapting to climate change) of nature spaces in cities

ACTION 6

Share: support exemplary development operations taking into account climate change adaptation and network project promoters

6.1. Identify the State measures aiming at accompanying urban projects (programmes such as Priority areas as part of urban policies, Resilient neighbourhoods, Coeur de ville, Small towns of tomorrow, Sustainable city demonstrators, EcoNeighbourhoods, Ecocity, Partnership development projects, etc.) and systematise the consideration of adaptation to climate change.

6.2. Develop and lead a community of pioneering planning actors and demonstrators on adaptation to climate change: identification of project promoters, valorisation of their operations, capitalisation of lessons learned, sharing of experiences and best practices. Make capitalisation platforms converge to make data available. Work in continuity with the mode of action of the LIFE ARTISAN project.

PILOTE	DHUP
BUDGET	Strengthen the OFB's expertise on adaptation solutions based on urban nature: 50 k€/year
TIMETABLE	2024-2025
INDICATORS	- Identification of accompanying programmes - Creation of the network of actors



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MEASURE N°14

Protecting precarious populations from hot weather

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

Heat waves particularly affect vulnerable people, especially those living on the streets, in precarious housing (squats, slums, reception areas for Travellers), or in accommodation facilities (the housing stock represents 2.5 million m² in collective or diffuse facilities and 800 day care facilities). While the state of the building is not exactly yet known, there are strong needs. Indeed, many facilities have an old and degraded structure, not well adapted to heat waves.

There is a strong link between precariousness and vulnerability to high temperatures. People living on the streets or in precarious housing are disproportionately exposed to heat and urban overheating, especially since they often combine aggravating risk factors: cardiovascular or respiratory diseases, taking treatment for diseases including psychiatric diseases, age, isolation, wandering, consumption of psychoactive substances including alcohol, cognitive impairment, difficulties in accessing food aid, etc.

ACTIONS ALREADY UNDERTAKEN

In times of heat wave, frequent mobile relief teams from associations help homeless people, notably by distributing water in slums or in reception areas for Travellers. Fresh and air-conditioned rooms are also open in day centres for precarious populations to take refuge in periods of high heat. Also, the internet platform [for cleaning up slums](#) makes it possible to help identify sites at risk that require urgent intervention in times of heat waves and to monitor the various actions implemented.

Since 2008, the Humanisation Support Fund, led by the Interministerial Directorate for Housing and Access to Housing (DIHAL) and managed by the National Housing Agency (ANAH), has been financing the renovation of existing accommodation facilities with a view to improving reception and comfort conditions. While this fund was created with the primary objective of individualising rooms and sanitary blocks, it also makes it possible to finance upgrading work (accessibility, security, etc.) and energy renovation. Between 2017 and 2023, this programme enabled the rehabilitation of 6,172 places in 238 structures, for a total budget of €67 million.

NEW ACTION

Renovate the accommodation centres (CHU and CHRS) and day care facilities, taking into account summer comfort and the future climate

1. Carry out a diagnosis of the state of the building and the energy renovation needs of the housing stock

This survey will make it possible to estimate the number of establishments in need of energy renovation and adaptation of their buildings to high heat. In parallel, work is under way on a more detailed estimate of the nature and cost of energy renovation works in collective accommodation structures.

PILOTE	DIHAL
BUDGET	No additional budget
TIMETABLE	2025
INDICATOR	Carrying out the diagnosis Milestone: diagnostic launch (February 2025)

2. Adjust existing funding to encourage the renovation of accommodation facilities and day-care facilities taking summer comfort into account

Following the results of the survey, priority will be given to buildings with the greatest need for adaptation to heat, and to getting in contact with the associations concerned to support their building renovation in favour of summer comfort. The humanisation programme can be mobilised to finance energy renovation needs.

Today, while a very significant part of the work carried out under the Humanisation Fund includes energy renovation works, no specific level of energy performance and summer comfort is required at the end of the work. Thus, regulatory changes are being studied to strengthen the adaptation of buildings to climate change through the setting of minimum energy performance criteria at the end of the works or renovation measures to be carried out to improve summer comfort.

PILOTES	DIHAL and DHUP
BUDGET	2025 : Has a constant envelope (€10.3 million in 2025) 2026 and beyond: Needs to be refined according to the results of the inventory of buildings and energy renovation needs
TIMETABLE	2025 : Depending on the opportunity analysis, regulatory changes to strengthen the acceleration of the renovation of badly insulated buildings and the adaptation of buildings to climate change through aid for humanization
INDICATORS	- Number of accommodation centres renovated taking into account summer comfort - Evolution of the program to promote renovation of badly insulated buildings

3. Supporting stakeholders in the sector of social integration in terms of energy renovation, building rehabilitation and adaptation to climate change

Supporting associations is a key factor in ensuring that accommodation structures are adapted to climate change. Indeed, the structures of the reception, accommodation and integration sector do not always have the internal means to engage in reflections on adaptation to climate change and need to be equipped, particularly in the context of building projects and renovation of buildings.

the Interministerial Directorate for Housing and Access to Housing (DIHAL), in support of partner administrations and federations of associations involved in the subject, will strengthen the capacities of decentralised services (DDETS/ DREETS) and associations in the social integration sector on the issue of ecological transition and adaptation to climate change. For example, the multiannual agreement of objectives 2023-2025 with the Federation of Solidarity Actors, funded by DIHAL, focuses on engagement in the green transition. The partnership will continue after 2025 with a priority on adapting to climate change and supporting members in the green transition of their structures.

Objectives of the support for stakeholders:

- Support priority rehabilitation operations by providing multidisciplinary expert support (conducting building projects, financing projects, transforming the offer of accommodation and the social project of associations, raising awareness of the uses and good gestures to be adopted in the face of heat waves and other climate risks, etc.);
- Establish partnerships with State operators on the ecological transition and other actors involved in these matters (ADEME, ANAH, Banque des territoires, ANAP, etc.);
- Put in place a plan for the preparation and management of heat waves in all associations in the social integration sector, along the lines of the 'blue plan' of the medico-social sector;
- Raise awareness among teams of the health risks linked to climate change for precarious and vulnerable people that are present in structures and on the street (pregnant women, precarious children, the elderly, etc.);
- Implement national and local communication actions targeted at the needs of homeless people in times of heat waves in conjunction with the Directorate-General for Health and highlight volunteer missions to strengthen social monitoring teams.

PILOTE	DIHAL
BUDGET	125 k€ / year
TIMETABLE	2025 - 2027
INDICATORS	- Recruitment of a full-time official at DIHAL to monitor the green transition challenges in the AHI sector - Number of actions implemented for associations (deliverables and animation time) - Number of partnerships with key transition organizations



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MEASURE N°15

Protecting prison staff and detainees from hot weather

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The objective of this measure is to characterise the vulnerability of prisons to climate change and to encourage future climate considerations in projects, including renovation or new construction as of 2025.

The prison administration has a floor area of 3.5 million m² for 387 sites. This stock is very heterogeneous in terms of occupation status (ownership, provision, rental, etc.), constitution (architectural, functional, construction period, etc.), and geographical location (presence all over mainland France and overseas), and even its use.

These characteristics make the prison administration vulnerable to climate change. Subject to the conduct of appropriate studies (subject matter of this measure), the main hazards that represent a threat to the prison administration are:

1. Heat waves (and episodes of intense cold);
2. Droughts and shrinkage-swelling of clays;
3. Occasionally, flooding phenomena.

Heat waves pose numerous risks to living and working conditions in detention and to the performance of prison administration's work, mainly the risk to public security. Taking into account the occupancy rate of prisons, the property characteristics (age, use) and the characteristics of their specific functional programmes (primary security constraints that can weigh on the achievement of thermal comfort), heat waves can generate:

1. Risks to people's physical and psychological health: staff (prison staff, nursing staff, educational staff, external staff) and persons placed under the care of justice;

2. An increase in violent incidents and behaviour, linked to thermal discomfort and the documented effects of heat on bodies and behaviour;

3. Service disruptions, related to the effects of heat on (unsuitable, old) infrastructure and equipment.

Climate change is also having a negative effect on the working conditions of prison staff.

The constraints inherent in the prison administration may limit the possibilities of using conventional solutions for combating heat (ventilation systems, sun protection devices).

ACTIONS ALREADY UNDERTAKEN

Taking into account summer comfort in buildings: the Ministry of Justice, represented by the 'energy manager' of the prison administration, and in partnership with the Public Agency for the Real Estate of Justice (APIJ), presented the issues of summer comfort in detention buildings at the National Conference on Public Real Estate (CNIP) on energy transition. They highlighted the difficulty of designing buildings and systems, in the current state of summer and mid-season heat, that limit the indoor temperature in cells.

Adaptation of the way of construction: the new construction programmes define new indicators taking into account the concept of adaptive comfort (standard EN16798-1, ex EN 15251). All systems to combat summer overheating in buildings are evaluated: the implementation of sunscreens that respect the constraints inherent in prison security, natural ventilation (opening of windows only, through ventilation, thermal draught), mechanical overventilation (simple extraction in simple flow, extraction and blowing). The most effective strategies to date are those leading to an improvement in ventilation conditions by favouring larger openings, coupled with ventilation by thermal draught (-29 % in the number of hours of discomfort).

Thematic outlook: Since the summer of 2023, the Directorate of Prison Administration (DAP) has been conducting a thematic foresight study on the impact of heat waves on living conditions (inmates) and working conditions (staff) in detention, infrastructure, equipment, and the functioning of prisons. This work identified various topics for which working groups and pilot projects are being or will be set up:

- evolution of the layout of the cells to better adapt to heat waves (pilot project launched in November 2024);
- adapting the outdoor spaces of prisons (pilot project launched in 2025);
- evolution of personal protective equipment for uniformed prison officers (working group launched in 2025);
- The evolution of standard operating days according to the heatwave alerts triggered by Météo France.

NEW ACTION

Vulnerability study of around 60 penitentiary institutions

At the end of 2026, the prison administration will have at its disposal an analysis of the vulnerability of its prisons to climatic hazards according to the reference warming trajectory for adaptation to climate change (TRACC) and an adaptation plan.

This risk analysis and mapping approach is part of the ‘Prospective’ action programme proposed in May 2023 by the Sustainable Development, Innovation and Good Practices Laboratory of the Directorate of Prison Administration (DAP). A contract was published in December 2024, for a start of study in September 2025. This approach provides for:

1. Analysis of climate risks at the macroscopic level of all prisons: study of natural and technological risks based on the identification of processes common to all prisons.
2. Creation of a sample: identify typologies to create a consistent sample of institutions and project sites.
3. Analysis of the risks and impacts of climate change on the sample according to two levels of TRACC warming (+2.7°C and +4°C): produce an in-depth diagnosis of the risks and impacts of climate change on the prisons and project sites that make up the sample.
4. Prioritisation of the issues at stake and construction of an adaptation plan for the sample typologies: support the prison administration in prioritising the issues at stake (risks and impacts, vulnerabilities, dependencies, etc.) and building an adaptation plan by typology.
5. Specification of adaptation plans for each prison and project site: extrapolate the methodology and lessons learned from the in-depth study of the sample to all prisons to identify vulnerabilities at each site and co-construct appropriate adaptation actions.
6. Support in carrying out similar studies in the various overseas territories.

In addition, a prospective approach based partly, but not exclusively, on the data and lessons learned from the vulnerability study will be carried out to imagine possible scenarios for future developments, possible climate change adaptation solutions and initiate the transformation of the prison administration through thematic projects (heatwave management, water conservation, personal protective equipment, etc.).

This will involve consultation with users and other relevant stakeholders.

Finally, with regard to the renovation of prisons, it is noted that if work is planned on the building envelope, the issue of summer comfort will have to be integrated on the basis of the TRACC.

PILOTE	DAP (Laboratory for Sustainable Development, Innovation and Good Practice), with a dedicated internal comitology
BUDGET	400 k€
TIMETABLE	2025 – 2026: Vulnerability study 2026 – 2027: Production of an adaptation plan

INDICATORS	Process indicators: • Production of risk mapping (hazard X vulnerabilities) • Prioritised risk analysis • Publication of recommendations for adaptation • Presentation to the Director of Prison Administration Result indicators: • Number of penitentiary institutions subject to a risk assessment • Number of penitentiary institutions subject to an adaptation plan



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MEASURE N°16

Developing the One Health approach for the prevention of health risks linked to climate change

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

In 2022, the High Council for Public Health (HCSP) noted the following: *“Actions undertaken at national and international levels for the low-carbon strategy and the fight against global change and for adaptation must take into account from the outset the health impacts that will increase with, inter alia, heat waves and extreme climatic events and the development of pathologies associated with environmental changes and biodiversity imbalances, including vector-borne diseases.”* In this sense, the HCSP recommends prioritising, in terms of public action in health and the environment, actions that take into account the link between climate change and health and between climate change and biodiversity loss.

The actions proposed as part of this measure are part of a **cross-cutting and integrated approach** to address the ‘triple crisis’ of climate change, biodiversity loss and pollution, highlighted by the Budapest Declaration (July 2023) adopted by France. This approach is consistent with the new Joint One Health Action Plan of the Quadripartite Alliance (WHO, WHO, FAO and UNEP) published in October 2022.

The One Health approach recognises that the health of humans, domestic and wild animals, plants and the environment are closely linked and interdependent.

ACTIONS ALREADY UNDERTAKEN

The **National Environmental Health Plan 4** (PNSE4), co-led by the Ministries responsible for the ecological transition and health, has been built according to a cross-cutting approach that takes into account the interactions between all health, and proposes a better articulation with existing thematic plans, including the National Climate Change Adaptation Plan.

In terms of governance, the **Environmental Health Group (GSE)** is the national body responsible for monitoring and guiding the actions of the PNSE4. It brings together many stakeholders: State, parliamentarians, local authorities, associations, trade unions, companies, qualified personalities and professionals from all health sectors.

Within the framework of the PNSE4, a monitoring group dedicated to the 'One Health' principle, whose secretariat is provided by the Ministry responsible for agriculture, supports the GSE specifically on this subject. This committee is made up of associations of elected representatives and local authorities, representatives of environmental associations, research and expertise bodies, professionals and representatives of the State.

As regards the declination in the territories, as early as 2004, the legislator provided for the declination of the PNSE into **Regional Health and Environment Plans** (PRSEs). Article L. 1311-7 of the Public Health Code provides that PRSEs are implemented every five years by decentralised State services (including DREALs), Regional Health Agencies and Regional Councils, in association with other local authorities in order to mobilise all available expertise to contribute to an effective environmental health policy. As such, PRSE4s are invited to cover the "One Health" perimeter, and local governance now includes the decentralised services of the ministry in charge of agriculture. Five actions of the national health and environment plan have been identified as having to be implemented in the PRSEs, considering the national issues attached to them. Some of them are fully covered by the 'One Health' approach in the context of adaptation to climate change. They may be adapted to the local context, where appropriate, in line with those implemented in previous PRSEs:

- Training of health professionals (Action 5.1);
- Prevention of vector-borne diseases, transmitted by mosquitoes, by methods compatible with the preservation of the environment and biodiversity (Action 11.1 of the PNSE4, see also Measure 17 of the PNACC for the surveillance of these diseases);
- Prevention, monitoring and management of human health impacts caused by invasive or proliferating alien species (ambrosia, processionary caterpillars, etc.) using methods compatible with the preservation of the environment (Action 11.3);
- The improvement of indoor air quality in establishments serving sensitive populations on an ongoing basis (action 14.4), which has synergies with measure 29 of the NAP;
- Monitoring of terrestrial wildlife health and prevention of zoonoses, a flagship measure of the PNSE4 (Action 20).

Depending on the challenges identified locally, other One Health measures in the context of climate change adaptation have been included in some PRSEs.

In order to encourage each community, regardless of its size, to commit to environmental health as part of a "One Health" approach in the context of adaptation to climate change, a booklet entitled "Acting for a Health-Friendly Environment - What environmental health policies at local level?" was produced in 2022. It first gives the keys to understanding this systemic approach to living environments. Then, the booklet shares several inspiring local initiatives, included on the website "Territory committed to my environment, my health", which is dedicated to the sharing of initiatives and tools developed in territories in environmental health. The booklet and the platform were drawn up in the framework of the PNSE4 by the committee responsible for mobilising the territories:

territoire-environnement-sante.fr/espace-documentaire/agir-pour-environnement-favorable-la-sante.

The PNSE4 also led to the creation of a **regional coordination committee** to take greater account of environmental health issues in the regions by involving all local authorities (regions, departments, intermunicipalities, municipalities) on a massive scale, in accordance with their powers and their levers of action: spatial planning, urban planning, transport and mobility, housing, environment, food, social action, etc. This committee, co-chaired by two elected local representatives, is composed of associations of elected representatives and local authorities,

representatives of environmental associations as well as representatives of regional health agencies (ARS) and the State.

The international level is also mobilised to work together on the prevention of health impacts linked to climate change, in particular through joint actions and research partnerships. The latter, which are often thematic, can incorporate into their thinking the 'One Health' approach and possible interactions with the challenges of climate change (particularly in relation to infectious diseases, but not only), with the result that new knowledge is produced and cross-cutting actions are implemented. Health issues related to climate change and the opportunity offered by the One Health approach to address them are also regularly on the agenda of major international events (G7, G20, WHO, etc.).

In connection with the PNSE4, several more thematic actions are already being implemented in *ad hoc* plans by mobilising the 'One Health' approach and increasingly integrating climate change issues, particularly in terms of preventing and combating infectious diseases (zoonoses, vector control or antimicrobial resistance). Beyond the challenges of infectious diseases, work is also underway to strengthen the mobilisation of the One Health approach and the consideration of climate change in several other health fields, including sustainable food, water quality, spatial planning and pollution prevention. Climate change also impacts plant health, particularly through the effects on the distribution of pests.

The One Health approach is cross-cutting across all PNSE4 actions. However, some actions fall more explicitly under this approach, and will be strengthened and complemented under the PNACC-3.

STRENGTHENING ACTIONS

1. Develop and raise awareness of the One Health training offer
2. Develop awareness-raising, health education and communication actions for human and animal health professionals on emerging infectious diseases that may pose a climate change related health risk
3. Raise public awareness of the One Health approach and its association with climate change adaptation issues
4. Prevent and combat species that pose health risks (mosquitoes, bed bugs, ambrosia, processionary caterpillars, etc.) using methods that are compatible with the preservation of health, the environment and biodiversity
5. Strengthen coordination at national and local levels to prevent and control species that pose health risks
6. Strengthening zoonotic disease surveillance, synergies and inter-institutional collaborations between the three forms of health

ACTION 1

Develop and raise awareness of the One Health training offer

The aim is to ensure that the concept is put into practice in an interdisciplinary way by involving professionals in human health, animal health and, more generally, ecosystem health (Action 5, identified as the 'flagship action' of the PNSE4).

As regards training, the ministries in charge of agriculture, health and the environment have supported – as part of the acceleration strategy "Emerging infectious diseases and nuclear, radiological, biological and chemical threats" of France 2030 – the creation of a 'One Health Institute' to become the reference body for training and raising awareness among public and private decision-makers on this approach. Supported by the EID@Lyon Research University

School and supported by the Université Lyon 1, the institute relies on an innovative catalogue of training courses, both interdisciplinary and intersectoral, offered by three major schools: VetAgro Sup, in particular its in-house school ENSV-FVI, AgroParisTech and EHESP. **Issues related to climate change and associated health impacts are intended to be part of the training programmes.**

These trainings have been provided since 2024 with the aim of offering several sessions per year. They are spread over the territory in order to allow adaptation to the local context, thus including the territorial challenges of adaptation to climate change (including the subject of vector control). Innovative pedagogical tools are deployed in this context to highlight transversal approaches (for example the interactive “fresk” methodology).

The objective of developing training is also present in several existing thematic plans that mobilise this “One Health” approach, with the result that there is an opportunity to raise the profile of climate change adaptation issues. This is the case, for example, in the fight against antimicrobial resistance, with a training component for professionals both in the new interministerial roadmap (Objective 1) and in its more sectoral versions: national strategy for the prevention of infections and antimicrobial resistance in human health (Actions 11 and 12) or Ecoantibio 3 plan in animal health (Actions 9, 10 and 11).

Awareness of the ‘One Health’ approach is also planned as part of the common core curriculum for training senior public service managers led by the National Institute of Public Service (INSP), with a dual objective of pooling the training tools already produced and broad cross-fertilisation of trained audiences.

ACTION 2

Develop awareness-raising, health education and communication actions for human and animal health professionals on emerging infectious diseases that may pose a climate change related health risk

These awareness-raising, health education and communication actions will include the topic of vector-borne diseases such as those transmitted by mosquitoes and ticks. They will make maximum use of existing networks and structures for the training of professionals in each of the sectors (human health, animal health and ecosystem health).

ACTION 3

Raise public awareness of the One Health approach and its association with climate change adaptation issues

In addition to training for professionals, a number of actions are being implemented and will be stepped up to make the general public more aware of the One Health approach and its association with climate change adaptation issues. This is particularly the case for primary, middle and high schools via the ‘health promoting school’ approach, with once again an opportunity to mobilise innovative teaching tools.

ACTION 4

Prevent and combat species that pose health risks (mosquitoes, bed bugs, ambrosia, processionary caterpillars, etc.) using methods that are compatible with the preservation of health, the environment and biodiversity

Action 11 of PNSE4 includes:

- Prevention of mosquito-borne diseases (see also PNACC measure 17 for surveillance of these diseases);
- Prevention and control of infestations by bedbugs, cockroaches, rodents, etc.,
- Prevention, monitoring and management of human health impacts caused by invasive or proliferating alien species (ambrosia, processionary caterpillars, etc.).

It is also essential to prevent the introduction of species that have an impact on environments, ecosystem services, economic activities, crop health, livestock and human health, the extension of which can be promoted by climate change (see in particular measure 43 of the PNACC). **In particular, biosecurity protocols will be put in place at borders** (linked to Action 10 of the National Biodiversity Strategy 2030).

The prevention of mosquito-borne diseases and the prevention of human health impacts caused by invasive or proliferating alien species thanks to methods compatible with the preservation of the environment and biodiversity, are part of the long-term adaptation strategy to help tackle the 'triple crisis' of climate change, biodiversity loss and pollution.

ACTION 5

Strengthen coordination at national and local levels to prevent and control species that pose health risks

Coordination at national and local level will be strengthened to prevent and combat species carrying risks to different health (natural environments, agricultural production, human health). This will be done, in particular for those that classify as invasive alien species, drawing on the actions and networks of actors mobilised under the National Biodiversity Strategy (measure 'Limiting introduction and combating invasive alien species').

ACTION 6

Strengthen zoonotic disease surveillance, synergies and inter-institutional collaborations between the three forms of health

Action 20 of the PNSE4, identified as a 'flagship action', provides for enhanced surveillance of zoonotic diseases, synergies and inter-institutional collaborations between the three health sectors. This PNSE action has strong links to measure 16 of the PNACC. The consideration of zoonotic risk must also be assessed both on the human-animal interface and on the potential for disease transmission between wildlife and farmed animals, in connection with the actions implemented under the National Biodiversity Strategy (in particular as part of its Measure 29).

The implementation of the One Health approach represents a major strategic opportunity to strengthen the integrative nature of public policies in all sectors, including climate change adaptation. While several innovative actions mobilising this approach are already being rolled out, notably under the PNSE4, a broader inter-ministerial approach was initiated in 2023 with the creation of a One Health Task Force to reinforce this ambition. This task force brings together the ministries responsible for health, the environment, agriculture and research, and aims to propose a more operational vision of the One Health approach, highlighting and linking

the many works already carried out to identify prospects for co-construction, and above all proposing new ambitious actions.

The scope of the topics under consideration is voluntarily open: it ranges from the fight against infectious diseases (zoonoses, vector control and antimicrobial resistance), to the challenges of preventing environmental pollution, water quality, sustainable food and health-promoting spatial planning and urban planning (including, for example, the benefits expected from the presence of nature and biodiversity spaces in cities in terms of combating heat islands, physical and mental well-being, reducing sedentary lifestyles and associated mortality, while limiting the presence of plant and animal species harmful to human health and exotic species recognised as invasive). Climate change will be one of the structuring priorities of this work, both to take climate impacts on (human, animal, plant and ecosystem) health into account and to define concrete medium- and long-term adaptation actions by 2030. Particular attention will be paid to training and awareness-raising issues.

PILOTES	DGPR and DGS (co-pilots of the PNSE4); DGAL, DGS and DGPR (participation alongside DGRI in the One Health interministerial task force).
BUDGET	Financial resources implemented for PNSE4 actions related to the One Health approach. Budgetary Operational Programme n°181 on the development and implementation of PRSEs by DREALs. "Health" Regional Intervention Fund (RIF) on the development and implementation of PRSEs by ARSs. French and European resources dedicated to the deployment of joint actions and research partnerships that integrate the One Health approach and climate change issues. Means dedicated to the deployment of the One Health Institute as part of the MIE-NRBC strategy (France 2030). Financial resources implemented as part of the third Ecoantibio plan.
TIMETABLE	Implementation of the PNSE4: 2021-2025 Timetable for drawing up the PRSEs: All mainland PRSE4s were adopted in 2023-2024 and two ultramarine PRSEs will be adopted in the first half of 2025. The development of PRSE4 has not started in two ultramarine regions. Ongoing work of the "One Health" Interministerial Task Force (measure 29 of the SNB). Establishment of the OH Institute and awareness-raising through the fresk (measure 29 of the SNB)
INDICATORS	Each PNSE4 action has monitoring indicators. A first progress report has been published for 2021-2022 https://www.ecologie.gouv.fr/sites/default/files/27.10.2022_Rapport%20PNSE4.pdf Others will be produced on a regular basis. The PRSEs are monitored locally. Each year, a report on progress in the regions will be presented and can feed into the assessment made at national level. Result indicators (SNB3): - Invasive alien species introduction rate with a target of -50% - Number of invasive alien species present by metropolitan department and ultramarine territory by 2030 with the aim of stabilising or even decreasing wherever possible.

The follow-up to be given to the PNSE4, and its regional variations, will have to feed the momentum initiated in terms of taking into account the interactions between human health, animal health and ecosystem health in a context of adaptation to climate change at all scales.



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3 Third French National Adaptation Plan

MEASURE N°17

Improve monitoring and knowledge of the impacts of climate change on health

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The objective of this measure is to strengthen monitoring and knowledge of the induced effects of climate change on human health, based on analysis and mapping of health risks, in order to better protect the entire population, including the most vulnerable people.

Indeed, the World Health Organization (WHO) considers climate change to be the greatest public health risk of the 21st century, but also its greatest opportunity.

A global climate crisis could jeopardise the progress made over the past 50 years in terms of global health, in particular by:

- reducing universal health coverage and further widening **health inequalities** between and within populations, in particular by increasing the existing burden of disease and barriers to access to health services;
- leading to **an increase in deaths and diseases due to increasingly frequent extreme weather events**, such as heat waves, intense cyclones and floods;
- contributing to an **increase in zoonoses, food-borne diseases and water-related or vector-borne diseases**; an increase in plant-related allergies (pollen);
- disrupting food systems, **compromising many social determinants of good health**, such as livelihoods, equality and access to healthcare and social support structures;
- leading to an increase in **mental health problems**;
- **increasing social inequalities in health**: differences in exposure, physiological vulnerability (elderly people, pregnant women,

people with chronic conditions, etc.), sensitivity (nutritional state, socio-economic status) and adaptability (access to effective prevention and care, alert systems, health policy).

These impacts may persist for several years after the triggering event. **While some are well known and visible, others are less well characterised or unknown.**

NEW ACTIONS

1. Carry out analysis and mapping of risks to human health related to the impacts of climate change in order to put in place effective prevention measures and improve our knowledge on the effects of climate change on health
2. Consolidate the monitoring of health-related impacts of climate change, including through risk analysis and mapping within a One Health approach

ACTION 1

Carry out analysis and mapping of risks to human health related to the impacts of climate change in order to put in place effective prevention measures and improve our knowledge on the effects of climate change on health

Knowledge gaps have already been identified on the following (non-exhaustive) topics: impacts and tools for monitoring and preventing drought, fires, floods (immediate and delayed impacts, including for populations located far from the event), taking into account and preventing multiple crises (e.g. heatwave combined with fire, drought and infectious epidemics), the impacts of environmental developments on mental health, taking into account the specificities of overseas territories, developing risk prediction models (in particular the risk of drowning), evaluating the effectiveness of prevention, adaptation and mitigation measures already implemented from a health point of view (intervention study, effectiveness of measures deployed in the context of heat, etc.), developing health promotion actions.

In this context, it is proposed to:

- Refer to the High Council for Public Health (HCSP) to carry out an **analysis of the risks to human health linked to the impacts of climate change**. This analysis should anticipate, as far as possible, short-, medium- and long-term risks. It may draw on studies carried out in the regions as part of the regional environmental health plans (PRSE 3), and, where appropriate, on predictive models integrating the reference warming trajectory for adaptation to climate change (TRACC).
 - This analysis will lead to a risk mapping that will identify prevention and preparedness measures to adapt and reduce the negative impacts of climate change on health. This analysis will also provide recommendations for areas of research to be developed or strengthened.
 - On this basis, a call for interdisciplinary research projects at the national level may be launched to better understand at the territorial and national levels the impacts of climate change in the short, medium and long term.

- **Share at international level** the knowledge gained on the impacts of climate change on health, notably in the context of the WHO Alliance for Transformative Action on Climate and Health (ATACH) working groups, and promote **international partnerships** to enrich databases, pool knowledge and share best practices for a comprehensive and coordinated response.
- Make a request to the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) to draft a **thematic chapter on health, biodiversity erosion and climate change**.

PILOTE	DGS
BUDGET	To be defined on the basis of the opinion of the HCSP in order to identify the needs to be covered by the call for research projects
TIMETABLE	After a first COVARS opinion in March 2024 on the risk assessment of major exceptional health situations for human health focusing on infectious risks and their short-term risks, particularly in relation to climate change, a complementary referral to the HCSP in 2025 will provide an analysis of all health risks covering the medium and long term (post 2030). Launch of research projects. Request to IPCC and IPBES after the release of the PNACC. Sharing of knowledge acquired through the above-mentioned groups.
INDICATORS	- HCSP report - Chapter of an IPCC/IPBES report on health, biodiversity loss and climate change.

ACTION 2

Consolidate the monitoring of health-related impacts of climate change within a One Health approach

The monitoring of the impacts of climate change on the health of workers and the general population should be developed in a "One Health" approach. At the same time, it is a question of:

- Developing tools for monitoring exposures and developing methods for quantifying impacts on human, animal, plant and environmental health in the short, medium and long terms and extend monitoring to overseas territories;
- Covering a wide range of risk factors for human, animal, plant and environmental health related to climate change. Such quantifications already exist for temperature and air pollution but could be extended to other subjects: UV, forest fires, vector-borne infectious diseases (entomological and epidemiological surveillance), infectious diseases linked to water and food contamination, pollen, etc.;
- Structuring the network of actors, at regional and national level, to be mobilised for surveillance (Santé Publique France, Anses, French Biodiversity Office, Météo-France, CNAMTS, CEREMA, Plant Health Epidemio-surveillance Platform, etc.). The deployment of monitoring tools is only possible through strong partnerships with the holders of the necessary environmental or health data and on the basis of the work undertaken by GD4H as part of PNSE4 (Action 18): cataloguing environmental databases that can be used in

epidemiological studies, cataloguing tools to cross-reference environmental and health databases;

- Connecting as much as possible the different databases in order to improve knowledge of the impacts of climate change on health (Green data for health, national health data system, cohort, etc.).
- Mobilising regional health agencies, in conjunction with regional climate expert groups, so that:
 - Regional Health Plans include elements of foresight on the consequences of environmental crises on health;
 - Training schemes for health professionals are deployed in each region to enable them to better understand future risks;
 - Regional observatories start addressing the issue of climate change.

Monitoring systems will quantify the health impacts of climate change and identify the most vulnerable populations and territories, contributing to the design of targeted adaptation policies. In addition, these systems will contribute to the assessment of the measures proposed by the PNACC-3 from the point of view of health.

PILOTE	DGS in liaison with the ministerial directorates involved in the "One Health" actions
BUDGET	Financial means implemented under the PNSE4
TIMETABLE	As soon as the PNACC is released, launch of a reflection on the implementation of this surveillance and deployment of first health indicators for the population Further deployment of new indicators post 2024-2025
INDICATOR	Availability (provision) of new monitoring tools



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3 Third French National Adaptation Plan

MEASURE N°18

Maintaining outdoor air quality during heat waves

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The aim of this measure is to better communicate the impact of climate change on outdoor air quality in order to encourage virtuous behaviour, and to test solutions to maintain good air quality in hot weather.

The concentration of certain pollutants (related in particular to pollens or ozone) and their effect on health (in 2023, one in four French people said they were allergic to pollens) are accentuated by heat waves. Compliance with air quality thresholds and the maintenance of good air quality must therefore be understood by integrating the effects of climate change.

The aim is not to question the thresholds defined in the legislation (Air Quality Directive, Climate and Resilience Act, etc.) but to change actions to improve air quality so that they take into account the effects of climate change.

ACTIONS ALREADY UNDERTAKEN

The national air quality monitoring network (<https://www.geodair.fr/>) and the national pollen monitoring network provide real-time data on outdoor air quality and pollen on the French territory. As part of the revision of the Ambient Air Quality Directive, the air pollution monitoring network is being densified by 2026 by increasing the number of sensors for the various pollutants as well as the number of pollutants measured, while consideration is being given to consolidating and adapting the monitoring network on pollen and mould, so as to bring it up to the issues at stake.

Actions are being taken to improve air quality and reduce pollutant concentrations. Thus, at national level, the national air pollutant emission reduction plan (PREPA) and sectoral measures (e.g. low-emission zones) contribute to reducing emissions and concentrations of pollutants in the air and, at local level, complementary actions are being implemented, in particular in state-led local plans (atmospheric protection plans) or community-led local plans (territorial climate-air-energy plans). In the event of a pollution peak, information and recommendations are provided to the population, and prefects can trigger measures to reduce the sources of pollutants.

In addition, in order to better understand the consequences of forest fires, the risk of which is increased by the effects of climate change, the French Agency for Food, Environmental and Occupational Health and Safety (ANSES) was asked by the Ministry responsible for the ecological transition and the Ministry responsible for health to conduct a study on the air pollutants emitted during these fires and their impacts. The first results are available concerning the state of play, in France and internationally, of the instructions for the protection of the health of populations in the event of large-scale vegetation fires and the basic list of substances and measurement methods for monitoring smoke from these fires. The update of the body of knowledge on the short- and long-term effects on human health of pollution generated by large-scale wildfires is ongoing.

NEW ACTIONS

- 1. Communicate on the impact of climate change on air quality
- 2. Carry out an experiment for a maximum of two years in a department so that the prefect can examine the opportunity of triggering of measures that are usually applied during pollution episodes, in the event of orange or red heat alert. A dedicated committee of experts will be set up to select the measures and analyse their effectiveness

ACTION 1

Communicate on the impact of climate change on air quality

The specific consequences of climate change on air quality, such as the problems of concentration of certain pollutants and chemical reactivity and increased health risks (wide range of pathologies, not only respiratory), are not well known to the general public. Explaining them and communicating more widely on the subject will allow better awareness.

A dedicated working group was set up within the National Air Council (CNA) to study ozone air pollution including the impact of climate change. The analysis carried out in this context will help gather knowledge in order to share it better and to identify further necessary in-depth studies.

PILOTES	Pilots of the Ozone Working Group of the National Air Council (CNA), in liaison with the DGEC, the CNA and its members
BUDGET	Means to be deployed within the CNA
TIMETABLE	2024-2028 (1st milestone planned in 2025)
INDICATEUR	Recommendations issued by the CNA Working Group

ACTION 2

Carry out an experiment for a maximum of two years in a department so that the prefect can examine the opportunity of triggering measures that are usually applied during pollution episodes, in the event of orange or red heat alert. A dedicated committee of experts will be set up to select the measures and analyse their effectiveness

Pursuant to the Order of 7 April 2016¹ on prefectural procedures in the event of episodes of ambient air pollution, the prefect may trigger, by prefectural order, some measures that are co-designed with an expert committee composed of stakeholders. Those measure can be triggered in the event of the alert thresholds for a pollutant being exceeded or in the event of the information and recommendation threshold being persistently exceeded. These concerted measures for pollutant reduction are adapted to the local context and may concern, for example, for industry, the postponement of certain operations likely to increase the emissions of pollutants involved in the episode, limitations, traffic postponements or speed reduction for the transport sector, carpooling, teleworking, suspension or postponement of the use of generators for the energy sector, etc.

Since heat aggravates the health effects of certain pollutants, the proposed experiment consists, during an orange or red heat alert episode, in involving the committee of experts set up in the event of a pollution peak in order to examine the appropriateness of triggering some of the measures provided for in the event of such a peak, without it necessarily being reached, while studying, if possible, the associated economic impacts.

Given the impacts linked to ozone in the event of a heat wave, the experiment will mainly focus on this pollutant and on those contributing to its formation, called precursors. This will include a test of the "abacus" that the National Institute for the Industrial Environment and Risks (INERIS) put on line on a daily basis. Those should allow, in certain territories and depending on local conditions, to evaluate actions to reduce emissions of ozone precursors which could have a beneficial effect on concentrations of that pollutant, such as traffic restrictions, free public transport, other restrictions on use, postponement of certain operations emitting those gases, etc.

PILOTE	Prefecture of the testing site, in particular with AASQA, INERIS, DREAL and ARS
BUDGET	No additional need
TIMETABLE	Up to two years
INDICATOR	Feedback from the experiment

¹Order of 7 April 2016 on the initiation of prefectural procedures in the event of episodes of ambient air pollution: <https://www.legifrance.gouv.fr/loda/id/JORFTEXT000032376671/>



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3 Third French National Adaptation Plan

MEASURE N°19

Integrating climate change adaptation challenges into the prevention of technological risks

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The aim of this measure is to integrate the increase of natural risks due to climate change into the technological risks prevention policy.

Facilities classified for environmental protection, including Seveso sites, integrate natural risks and their potential consequences on facilities, in particular through hazard studies (EDD). The operator is required to analyse, on the basis of the geographical location of the concerned site and the state of knowledge available, whether the installations are likely to be affected by such natural events. The operating permit (prefectural order) includes appropriate requirements, such as the positioning of vulnerable installations at higher elevations than those of the reference flood, the anchoring of tanks or the preparation of specific emergency instructions.

For Seveso high threshold sites, these hazard studies are subject to a five-year review. The objectives of the review of the EDD are to ensure that the site remains compatible with its environment, to identify possible improvements in the management of technological risks and to incorporate possible modifications to the facilities.

All Seveso installations must have an emergency plan known as an internal operation plan (POI). This plan must also cover accidents with natural causes by integrating the evolution of risks.

Finally, brownfield sites are a potential for urban and industrial development while preserving natural and agricultural areas, which are essential for adaptation. In this perspective, it is necessary to identify the sites where residual pollution is still present in order to allow their use in brownfield recycling.

ACTIONS ALREADY UNDERTAKEN

A CGE/IGEDD inspection mission on the risks of 'natech' accidents, i.e. technological accidents caused by a natural event, was launched at the end of 2023. Its conclusions were submitted in early 2025.

The soil information sector is a mechanism resulting from the Law on Access to Housing and Renovated Urban Planning of 24 March 2014 (ALUR Law), which led to the inventory of land plots on which the State is aware of residual pollution. These 5400 sites are annexed to the urban planning documents and can be consulted on the [Georisks](#) website.

NEW ACTIONS

1. Define how to take into account the reference warming trajectory for climate change adaptation in the framework applicable to facilities classified for environmental protection
2. Identify coastal sites in low-lying areas for which a soil pollution information exists and bring them to the attention of local and regional authorities

ACTION 1

Define how to take into account the reference warming trajectory for climate change adaptation in the framework applicable to facilities classified for environmental protection

The aim of this action is to determine how to take into account the reference warming trajectory for adaptation to climate change (TRACC) in the methodological rules applicable to the preparation of hazard studies or emergency plans for facilities classified for environmental protection. Ultimately, according to the follow-up given to the inspection mission (see action already undertaken), the methodological rules applicable to hazard studies or emergency plans will be modified in a proportionate manner according to the challenges presented by the facilities.

PILOTE	DGPR
BUDGET	No additional need
TIMETABLE	2024-2026
INDICATOR	Number of high-threshold Seveso site hazard studies taking into account natural aggressions as part of the initial hazard study or its revision

ACTION 2

Identify coastal sites in low-lying areas for which a soil pollution information exists and bring them to the attention of local and regional authorities.

The objective is to identify within three years among the 5,400 sites subject to soil information those vulnerable in 2030 and 2050, and to encourage local authorities to set up specific treatment plans.

This crossing will be carried out by the French public institution for Earth science (BRGM). A test approach on a few sites (five for example) will allow to define the evaluation methodology and make it available to local authorities for implementation at their own scale. The methodology will be put in place by the General-Directorate in charge of risk prevention (DGPR) with the help of the public operators BRGM, INERIS and ADEME.

PILOTE	DGPR
BUDGET	Green Fund
TIMETABLE	Identification of the sites concerned before the end of 2027
INDICATORS	- Number of sites subject to a soil pollution information identified in low-lying area - Number of sites cleaned up and developed by local authorities



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3 Third French National Adaptation Plan

MEASURE N°20

Deploy nature-based solutions for adaptation

CATEGORY OF THE MEASURE

1. Protecting the population

BACKGROUND

The purpose of this action is to accelerate the use of nature-based solutions for adaptation and scale up their deployment so that they are systematically used where relevant.

According to the definition adopted by France at the United Nations General Assembly for the Environment (UNEA-5 resolution, March 2022), nature-based solutions are 'actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits'.

These solutions promote adaptation to climate change and are recognised in different public policies (National Biodiversity Strategy, Water Plan, National Strategy for Integrated Coastal Zone Management, NAP) and at different levels (international, European, national, local). They also contribute to policies aimed at reducing greenhouse gas emissions and protecting biodiversity and improving the living environment.

For example, agroecology increases the resilience of the agricultural sector to climate change by maintaining soil quality, limiting soil erosion and runoff, and improving water storage and availability for crops. It also increases carbon storage capacity, reduces river pollution, and contributes to ecosystem conservation (NAP Measure 43). The greening of cities helps to combat urban heat islands and promote rainwater infiltration while improving the health of inhabitants, the living environment and urban landscapes. Similarly, the de-artificialisation of soils or the restoration of wetlands are both adaptation measures and measures to restore nature and biodiversity.

The value of these solutions lies both in their effectiveness in combating climate change (mitigation and adaptation) and in the co-benefits they bring in the environmental and socio-economic dimensions, which is why they are sometimes described as ‘no regrets’ solutions. Their legitimacy is based on years of research (still active) and positive results, in terms of adaptation, conservation, restoration and sustainable management of nature in all environments.

ACTIONS ALREADY

Several actions are underway to promote the use of nature-based solutions for adaptation (NbS) through the development of references, tools and training, and to raise awareness among all stakeholders of the need to adapt to climate change by conserving and restoring biodiversity.

The Life ARTISAN project, coordinated by the French Office for Biodiversity (OFB), was launched in 2020 for an eight-year period (2020-2027). With 28 associated beneficiaries and a budget of €16.7 million, this project aims to create an enabling framework for the deployment of NbS at all scales. The project is based on four main axes:

- A demonstration programme consisting of ten pilot sites in Hexagon and Overseas France, in different contexts and responding to different climate change adaptation challenges;
- A regional animation, with a facilitator in each region to facilitate the implementation of NbS projects (training, linking different project actors). The sustainability of this activity is important to ensure that biodiversity is taken into account in adaptation projects;
- A national network structured around thematic working groups (urban, forest, agriculture, water, coastal, economic) and the production of resources and tools for elected officials, public and private decision-makers, municipal technicians and to a lesser extent companies and associations.

The Adapto project aimed to explore, solutions to marine erosion and submersion in natural or agricultural coastal areas in the context of increasing climate change. On ten pilot sites belonging to the Conservatoire du littoral, Adapto tested flexible coastal line management which helped to demonstrate the environmental and economic interest of improving the resilience of coastal areas to protect human activities by restoring mobility to the coastline (<https://www.lifeadapto.eu/>). In order to deploy these solutions on a larger scale, a new LIFE Adapto+ project (2024-2029), submitted by the Conservatoire du littoral and its partners, was selected in June 2024 by the European Union. In particular, it aims to create a methodology and a decision-making support tool that will enable local stakeholders to implement coastal management adapted to the new challenges posed by climate change and the conservation of biodiversity.

The ‘Solubiod’ priority research program and equipment, led by the CNRS and INRAE, aims to promote scientific approaches that support the design, implementation and evaluation of NbS. It also aims to encourage the emergence of a new economic sector with strong social and environmental benefits. The national research programme is funded by France 2030 investment plan to the tune of €44.2 million over a nine year(2023-2032). It will be implemented in close collaboration with the public research communities and a large number of social actors. <https://www.pepr-solubiod.fr/>

At European level, the Biodiversa+ partnership considers NbS as a cross-cutting theme in all its activities. The partnership dedicates one of its work streams to Nature-based Solutions. Two knowledge syntheses have been produced so far: i) on the [role of biodiversity in the design, delivery and benefits of NbS](#) in 2023, ii) on how NS promote transformative change for

the sustainable use and management of biodiversity in socio-ecological systems in 2024. (<https://www.biodiversa.eu/actionable-knowledge/knowledge-syntheses/>).

34 projects were awarded the call for projects in 2023 – ‘Nature-based solutions for biodiversity, human well-being and transformative change’ (BiodivNBS). The objective of this call is to support biodiversity research in order to better understand the issues and conflicts related to the underlying mechanisms of Nature-based Solutions that affect their implementation in terms of benefits for nature, human well-being and societal transformations. The dedicated budget for this call is €40 million, including €2 million from the National Research Agency (ANR).

List of successful candidates: <https://www.biodiversa.eu/2023/06/05/2023-2024-joint-call/>

NATALIE research project, funded by Horizon Europe, was launched in September 2023 for a period of five years. It involves 42 European partners, 8 demonstration sites and 5 replication sites. Its objectives are:

- Deploy NbS in Europe in consultation with local stakeholders (one demonstration site in France);
- Carry out replication studies following tests in observation sites (one replication site in France);
- Develop tools to assess the impacts of these solutions;
- Build appropriate financing tools.

Other adaptation projects based on NbS and funded by the Horizon Europe programme or the European Commission’s DG Climate are also underway: Maco-Bios, NBRACER, RECOVER, REWRITE, RestCoast, ReGreen, etc. They combine research, monitoring of pilot sites, and the production of tools for decision-makers and technicians.

On the coast, nine NbS projects addressing issues in these areas were implemented from 2019 to 2023 as part of a call for projects by the Ministry of Ecological Transition. An evaluation booklet was published in 2024:

https://www.ecologie.gouv.fr/sites/default/files/documents/Recits_de_sites_SfN_AAP_2019-2023_web.pdf

In 2024, a new call for projects (2024-2029) was launched by the Ministry of Ecological Transition to adapt coastal areas to erosion and support the implementation of NbS. Twelve winning projects have been selected (<https://Observatoires-littoral.developpement-durable.gouv.fr/les-12-laureats-du-new-appel-a-projets-sfn-2024-a210.html>).

The Caisse des dépôts et conservation biodiversité’s Nature 2050 programme, launched in 2016, aims to strengthen the region’s adaptation to climate change and to conserve and restore their biodiversity by implementing nature-based solutions by 2050.

Finally, a guide to public procurement relating to ecological engineering works is being developed.

In the field of water and as part of the **Water Plan**, a measure is dedicated to NbS: Seventy flagship projects to combat droughts and floods will be identified. This measure is also reflected in the DOM Water Plan (PEDOM).

NEW ACTIONS

1. Establish a common framework for comparison between NbS and "grey" solutions
2. Structuring NbS’s supply chains in with the context of the revision of the Green engineering roadmap

3. Mobilise, raise awareness and disseminate knowledge related to NbS
4. Support national and regional animation on NbS to facilitate the mobilisation of all actors of society
5. Conduct awareness-raising actions and deploy existing training on NbS among elected officials, technical services of local authorities and state services
6. Develop consumer communication campaigns including the links between climate, biodiversity and health and the role of NbS
7. Supporting project owners and promoters of NbS projects
8. Mobilising public and private funding for NbS

ACTION 1

Establish a common framework for comparison between NbS and "grey" solutions

A synthesis of existing or ongoing studies (e.g PEPR Solubiod) and additional studies are needed to be able to compare SFN with grey solutions (air conditioning, dykes, dams, chemical inputs, etc.) in the context of climate change. This summary will consist of several parts:

Part A. Cost analysis

An analysis of the costs over the full cycle of adaptation projects necessary for their implementation (preliminary studies, investments and initial works, supply of raw materials (plants and seeds), short, medium and long term maintenance) will be carried out. This analysis can be based on already existing cost elements. It will thus identify the factors influencing the cost of projects and their development: hidden costs, company tariff benchmarks, potential economies of scale, but also economic benefits for the territory such as job creation. Account must also be taken of the costs avoided in the event of a climatic hazard (loss of crops, materials, working tools, resources, partial or total allocation of infrastructure and reconstruction costs, closure of public or private premises, etc.) thanks to the solution implemented.

For some projects, particularly those involving the coastline and the risk displacement of population or economic activities, it is essential to carry out studies in the humanities and social sciences on the conditions of social acceptance, the impact on employment and, more generally, the socio-economic impact.

Part B. Performance

Studies on the effectiveness of nature-based solutions in preventing and reducing the impact of climate hazards and conserving biodiversity are available and can be updated as necessary. Further studies on the effectiveness of nature-based solutions for adaptation to climate change need to be initiated. In parallel, similar studies need to be conducted to measure the effectiveness of "grey" solutions allowing project owners to easily compare different solutions or even implement mixed solutions where relevant to their needs. The analysis of this performance needs to be done at least in the context of the reference warming trajectory for climate adaptation (TRACC), as well as other national objectives such as the mitigation or conservation of water resources.

Part C. Carbon, energy and resource impact (water in particular)

In order to avoid maladaptation and the implementation of adaptation solutions with significant negative impacts, the different types of solutions ("nature-based" or "grey") must also be the subject to a comparative study to measure their impacts (carbon, energy and water resources). Quantifying the of these potential impacts is particularly important in the case of a large-scale deployment of a solution.

Part D. Environmental, social and economic benefits

The multiple benefits of adaptation solutions, in particular nature-based solutions, are also a decision-making factor for developers and need to be further studied and disseminated, including the benefits to mental and physical health, the landscape integrity of territories, the development of economic activities, the reduction of social and environmental inequalities, the living environment of inhabitants, etc.

This knowledge needs to be refined, in particular in the field of emerging infectious diseases/zoonosis, mental and physical health, the reduction of mortality, the reduction of social inequalities, health, etc. in with the context of climate change. Quantitative health and social impact assessments should be developed, taking into account the specificities of offshore environments.

Nature-based solutions aim at a net gain of biodiversity and are based on the proper functioning of ecosystems. Knowledge on feedback loops between the state of ecosystems and the adaptive capacity of territories needs to be synthesised, disclosed and enriched as needed. The direct impacts of "grey" solutions on biodiversity and ecosystems, and the indirect impacts on the adaptive capacity of territories also need to be assessed and disseminated to decision-makers.

In addition to these studies, it would be desirable to produce easy-to-use decision support tools so that decision-makers and developers have a true picture of the costs and benefits of adaptation projects.

PILOTES	Parts A, C and D: DEB and CGDD in conjunction with OFB, PEPR Solu-Biod and Horizon and Biodiversa+ projects onNbS Part B: DEB and DGS conjunction with OFB, PEPR Solu-Biod and Horizon and Biodiversa+ projects on NbS
BUDGET	An additional €100,000 for the synthesis
TIMETABLE	From 2025
INDICATOR	Completion of a synthesis of the four parts

ACTION 2

Structuring NbS's supply chains in with the context of the revision of the Green engineering roadmap

The challenges of nature restoration and the fight against climate change will significantly increase the need for engineering. It is therefore essential to ensure that sponsors and promoters of NbS projects can mobilise these skills with confidence, that the offer is readable, that the projects funded are of high quality, and that the providers have the necessary skills. The specific features of the overseas territories will be taken into account.

This action will be carried out in conjunction with the revision of the Ecological Engineering Roadmap and the IUCN Global Standard for Nature-Based Solutions to ensure a high quality supply of NbS and to promote the identification of trusted operators.

PILOTE	DEB
BUDGET	Additional budget: 200 k€

TIMETABLE	From 2025
INDICATOR	New Green Engineering Roadmap published

ACTION 3

Mobilise, raise awareness and disseminate knowledge related to NbS

Several mechanisms contribute to the mobilisation, dissemination of knowledge and awareness of actors on adaptation and biodiversity issues. This is the case of the Life ARTISAN project, which operates at national, regional and local level, but also of the PEPR Solubiod, which provides in particular knowledge transfer and university training (licence, masters, BTS, etc.), including in overseas France. These various programs also helps to strengthen the presence of NbS in the [Resource Centre for Adaptation to Climate Change](#) (CRACC).

Knowledge-sharing networks or communities of practice can also be set up to link stakeholders and promote mutual learning and cooperation on nature-based solutions.

These actions are essential to support actors and the effective deployment of NbS in the territories and must be sustained beyond these multiannual programmes by stimulating a community of actors at national level that enables:

- Dissemination of knowledge and tools;
- Technical support and the provision of expertise to contribute to new programmes, calls for projects, etc.;
- Development of the skills of actors and in particular those responsible for training actors (communities, businesses, managers, conservatories, etc.). (see complementarity with Action 7 below).

This animation could take the form of a "resource" team (complementary to the missions of the CRACC and the other resource centres managed by the OFB) which, in addition to contributing to a better interface between research actors and actors in the field, managers, communities, would ensure the integration of NbS in the various national and local public policies related to adaptation and make concrete a transversal treatment of the issues related to adaptation to climate change and the preservation of ecosystems.

PILOTE	DEB, in conjunction with the OFB and the pilots of the PEPR Solu-biod
BUDGET	Additional budget: €100 000 per year or 2.5 FTE for the creation/maintenance of a network on NbS within the OFB from 2026
TIMETABLE	From 2025
INDICATOR	Establishment of a national network on NbS

ACTION 4

Support regional animation on NbS to facilitate the mobilisation of all actors of society.

In order to develop the use of nature-based solutions, animation is necessary to show the successes on the ground, to support project leaders in the technical and financial assembly of projects (directing them to technical experts for quality projects and to funding windows), to network project leaders, to organise trainings and events at the scale of the territory (seminar, organisation of regional trophies, etc.). Until 2025, this animation is carried out within the framework of the Life ARTISAN project by the regional animators financed by this project in each region, including Overseas France. This animation will continue and evolve towards support and project engineering. An animation of the NbS theme at the national level is also necessary and will continue beyond the Life ARTISAN project which ends in 2027.

PILOTES	DEB and OFB
BUDGET	Additional budget: 50 000 €/year
TIMETABLE	From 2025
INDICATOR	Number of regional facilitators on NbS

ACTION 5

Conduct awareness-raising activities and roll out existing training on NbS to elected officials, local authority technical services and state services (in connection with measure 22 of the PNACC)

In order to increase the use of nature-based solutions for adaptation, awareness-raising activities will be carried out, in particular among elected representatives, building on the training provided under the Life ARTISAN project. Training will be provided for technical and State services. The training will have to be adapted to the environment and context of the territories and, in particular to the adaptation issues specific to each of them, starting with water issues and the various hazards. *As a minimum*, training for territorial agents and training for public decision-makers should be offered every year in all regions. An extension of these trainings to economic actors will be considered.

PILOTES	DEB and DGS in conjunction with OFB and CNFPT
BUDGET	ARTISAN budget Additional budget: 0.5 FTE
TIMETABLE	From 2026
INDICATOR	Number of persons trained

ACTION 6

Develop consumer communication campaigns including the links between climate, biodiversity and health and the role of NbS

The NbS theme will be integrated into the communication campaigns foreseen by the Life Biodiv'France project and the National Biodiversity Strategy (SNB). The aim is to mobilise all stakeholders in society (citizens, local authorities, businesses, the State) to contribute to the adaptation of ecosystems and the use of nature-based solutions.

PILOTE	OFB
BUDGET	To be defined
TIMETABLE	From 2025
INDICATOR	Number of communication campaigns carried out

ACTION 7

Supporting project owners and promoters of NbS projects

Operational guidelines will be developed to provide technical support to project owners and promoters of NbS projects and to avoid maladaptation. They will include the need for a monitoring and evaluation process, building on the IUCN Nature-Based Solutions Guidelines and/or the objectives of the UAE Framework for Global Climate Resilience. A communication on the published guidelines will also be produced.

In addition, a common core of actions and a support offer for State operators will be established (see measures 22 and 25 of the NAP).

PILOTES	DEB and OFB
BUDGET	Adaptation mission budget
TIMETABLE	From 2026
INDICATOR	Publication of operational guidelines

ACTION 8

Mobilising public and private funding for NbS

NbS can be financed by several budgets or programmes, including the Green Fund, the XIIth Water Agencies Programme, the OFB Overseas Solidarity Fund, the "Banque des Territoires" and local authorities. The mapping of available funding will be carried out by the services of the Ministry for Ecological Transition. This could include funding through payments for environmental services (PES) or biodiversity credits.

PILOTE	DEB
BUDGET	No additional need
TIMETABLE	2025
INDICATOR	Provision of funding mapping



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3 Third French National Adaptation Plan

MEASURE N°21

Preserving water resources in the context of climate change: strengthening the Water Plan

CATEGORY OF THE MEASURE

2. Ensuring the resilience of territories, infrastructure and essential services

BACKGROUND

The objective of this measure is to ensure a sustainable supply of water (quality, quantity) by 2050, despite the effects of climate change on the water cycle, by accompanying the necessary structural adaptation of our uses.

It consists of:

- Implementing the Water Plan, which is the first building block of climate change adaptation
- Integrating the future climate into long-term planning of uses and resources (strategic, planning documents and committees)
- Integrating the issues of sobriety, leakage resorption and infiltration into the ground in spatial planning, including at the scale of the building in construction and major renovation projects
- Changing drought management: developing knowledge of "real-time" flows, decision and steering support tools, moving from crisis management to drought anticipation with adapted measures to reduce the frequency and severity of acute crises
- Promote water reuse and study the conditions for the use of desalination

The aim is to improve the reliability of territorial projections of the adequacy of needs/resources as a result of climate change on one hand and changes in uses on the other hand. Systems for planning and managing water resources and uses must make it possible to anticipate potential conflicts. The actual availability of water resources for different uses must be considered in the light of the quality of the resource.

The major topic of water use in agriculture is addressed more specifically in measure 37 of the PNACC-3.

ACTIONS ALREADY UNDERTAKEN

The Water Plan, presented by the President of the Republic on 30 March 2023, aims at resilient and sober resource management in order to guarantee quality water and preserved ecosystems for all. This is the first level of adaptation for water management. The actions included in this plan make it possible to organise sobriety, to optimise the availability of the resource and to preserve water quality in order to meet water needs while respecting the balance of uses and ecosystems. Those measures shall include, in particular:

- Support in drawing up water sobriety plans (HSPs) for all economic sectors (measure 1 of the Water Plan): establishment of a water sobriety plan to adapt to a resource that is less available over long periods of time and contribute to the achievement of the national target of -10% in withdrawal. 17 sectors are now involved in the process, including the most hydro-sensitive sectors (chemistry and materials, agri-food, electronics, mining and metallurgy).
- Support in drawing up water sobriety plans for fifty-five of the most water-consuming industrial sites (measure 2 of the Water Plan). Work started in summer 2023 and was finalised at the end of 2024.
- Development of the regulatory framework for the recovery of unconventional water for various uses, including domestic uses (measure 15 of the Water Plan). Eight texts out of eleven have been published. Future publication of a decree on urban sanitation, and decrees on the use of water unfit for human consumption in installations classified for the protection of the environment (ICPE).
- The establishment by 2027, in each sub-watershed, of a forum including all stakeholders to eventually develop a political territorial project on the sharing of water resources (Action 33 of the Water Plan).
- The setting, by regulation, of a requirement of sobriety with regard to drinking water consumption for new buildings (measure 3 of the Water Plan). Methodological work and proposals for thresholds are ongoing. A publication is planned soon. The measure will concern the typologies of new buildings subject to the current building energy efficiency regulation RE2020 (housing, offices and primary and secondary education) for entry into force from 2028 onwards.

The Explore2 research project aims to improve knowledge on the impacts of climate change on water resources. The Life Water & Climate project has produced resources and tools to address climate change. The prospective study of the General Commission for Strategy and Prospective France Stratégie on water needs by 2050 looked at the evolution of uses. The results of these studies and projects were disseminated in October 2024 and January 2025. The intersection of the two studies (planned for April 2025) will provide a knowledge base for the adaptation of public policies.

Another ongoing initiative is the updating of the Strateau tool by Cerema, which will allow territories to reconstruct, visualise and anticipate water uses in order to develop territorial water strategies.

NEW ACTIONS

1. Improve knowledge of the impact of climate change on water resources
2. Plan structural water management and crisis management by integrating the future climate, and developing tools to move from a response-to-the-crisis policy to a drought-anticipation policy
3. Finely monitor water withdrawals to ensure, over time, the balance between needs and available resources, while respecting the good functionality of aquatic ecosystems
4. Improve rainwater infiltration into soils and improve water availability
5. Support users (businesses, individuals, farmers, local authorities) in reducing their water consumption
6. Support new domestic uses of water unfit for human consumption
7. Study the conditions for using seawater desalination solutions
8. Train facilitators on the protection of catchments in a context of climate change
9. Adapt water management governance and funding
10. Improve knowledge of the impact of climate change on bathing sites and support those responsible for bathing waters (including local authorities) in the declaration of new sites and the maintenance and management of existing sites

ACTION 1

Improve knowledge of the impact of climate change on water resources

1.1 – Integrate the Reference Warming Trajectory for Climate Change Adaptation (TRACC) into water resource projections

The Explore2 project, assessing the quantitative evolution of the natural water resource, was launched before the adoption of the Reference Warming Trajectory for Climate Change Adaptation (TRACC). Its results have been available since 28 June 2024 and disseminated for local ownership and debate in sub-basin bodies. Methodological work is underway to correlate these results with TRACC warming levels.

PILOTE	DEB, in conjunction with the Explorer2 scientific consortium
BUDGET	Correlation of results to TRACC: 225 k€ needed for the scientific component, to be defined for the support component of the actors and the toolbox for the dissemination/transfer of data
TIMETABLE	Publication of hydrological projections according to TRACC on the Météo-France DRIAS-Eau portal from end 2025
INDICATOR	Publication of hydrological projections according to TRACC on the DRIAS-Water and MEANDRE portal

1.2 - Know the vulnerability of water uses in the light of climate change by launching prospective impact studies on different uses according to TRACC at the scale of watersheds in tension, integrating the scientific results of the Explore2 project and the France Strategy

report on current and future anthropogenic uses of water. These studies will then make it possible to support and adapt the uses and infrastructure impacted by climate change.

PILOTE	DEB, in connection with the identified public policy pilot services (DGE, DGAMPA, MASA, DGEC, Ministry of Sports, Youth and Community Life, etc.)
BUDGET	To be defined
TIMETABLE	2024 : Calibration of studies 2025 : Launch of studies 2026 : Submission of studies
INDICATOR	Publication of studies

1.3 - Improving knowledge on the impact of climate change on overseas territories

Scientific locks have not allowed the Explore2 project to establish hydro-climatic projections for overseas territories according to the same methodology as in mainland France. A roadmap will be drawn up by 2026 in each territory of the municipalities covered by Article 73 of the Constitution in order to produce local hydro-climatic projections.

PILOTES	DEB, DGPR and DGOM
BUDGET	To be defined
TIMETABLE	Calibration of studies in 2025
INDICATOR	Share of overseas local authorities subject to a roadmap for the production of hydro-climatic projections

1.4 - On the basis of the hydro-climatic projections resulting from action 1.3, launch a vulnerability study on the supply of drinking water in the overseas territories with regard to TRACC

PILOTES	DEB and DGOM
BUDGET	To be defined
TIMETABLE	Second half of 2025: Calibration of the study 2026 : Launch of the study 2027 : Submission of the study
INDICATOR	Publication of the study

1.5 - For overseas territories, draw up an operational guide on the adaptation of public water and sanitation services (e.g. network materials, sanitation techniques, etc.) to climate change and the specific constraints of overseas territories (relief, partitioning, risks)

PILOTES	DEB and DGOM

BUDGET	To be defined
TIMETABLE	Publication of the guide in December 2025
INDICATOR	Publication of the guide

ACTION 2

Plan structural water management and crisis management by integrating the future climate, and developing tools to move from a response-to-the-crisis policy to a drought-anticipation policy

2.1 - Update the next generation of water management schemes (SAGEs) and territorial water management projects (PTGEs) taking into account TRACC

This upgrade may be carried out during their preparation, or renewal/revision. SAGEs and PTGEs **will also have to integrate withdrawal trajectories** in line with resource projections, so as to ensure quantitative balance (see measure 10 of the Water Plan). The SAGE Decree has been amended accordingly (Decree of 2 December 2024). **The water agencies and water offices in the overseas territories, in their intervention programme, will accompany this trajectory.**

PILOTES	DEB and DHUP
BUDGET	Animation of the planning network
TIMETABLE	Over the course of the revision of the documents and depending on the availability of 2030 data: all SAGEs as well as the new or revised PTGEs incorporate withdrawal trajectories
INDICATORS	- Number of SAGEs whose revision or elaboration is initiated after the publication of the decree of December 2, 2024 - Number of SAGEs, PTGEs integrating TRACC

2.2 - Encourage the carrying out and taking into account of studies on the adequacy of water resources and needs taking into account TRACC in territorial coherence schemes (SCoT), PLU(i) and regional development schemes (SAR), in particular in the event of new populations/activities being taken in.

PILOTE	DHUP-DEB
BUDGET	To be defined for the provision in the planning-territory network of a reference methodology by the public operator CEREMA
TIMETABLE	2025-2026
INDICATOR	Number of territories monitored

2.3 - Develop a drought risk anticipation tool for surface water based on the experimental tool PREMHYCE

The challenge is to gradually evolve from a crisis management situation to a logic of anticipation. This preventive approach aims to equip the State, local authorities and managers of low-water support works with the means to anticipate drought situations rather than react to them.

Building on existing tools (low-water State site and PREMHYCE experimental platform), the first step is to assess the capacity to implement a low-water project and design this service (functionalities, associated resources), before being able to carry out the necessary development work and then, subject to the human and budgetary resources allocated, to deploy the tool in an operational forecasting chain. In case of confirmed feasibility, an instruction to the services will be drafted for the implementation of these forecasts.

PILOTES	DEB and DGPR, with operational support from INRAE
BUDGET	To be defined
TIMETABLE	2025-2027 : Feasibility study of the service Schedule of developments and deployment to be defined according to the resources allocated (budgetary and FTE)
INDICATOR	Operational implementation of river flow forecasting

2.4 - Generalise drinking water supply master plans on the basis of the conclusions of the results of actions 1.1 and 1.2

The Master Plan for Drinking Water Supply establishes, according to the current and future water needs of the inhabitants, a project of works at the scale of the territory in order to ensure the quantity and quality of the distribution of drinking water in the territory.

It is a valuable decision-making aid for the management of competence thanks to:

- Multiannual technical planning (actions and works)
- Budget programming
- Prospective pricing.

The action therefore aims to generalise them on the basis of the conclusions of the results of actions 1.1 and 1.2 and taking into account TRACC.

PILOTE	Ministry of the Interior
BUDGET	DSIL (tbc)
TIMETABLE	Multiannual over the duration of the PNACC
INDICATOR	Number of drinking water supply master plans in territories identified under stress as part of the 2022-2023 IGEDD mission on water management during the 2022 drought and taking into account TRACC

2.5 - Carry out an ORSEC (Organization of Civil Security Response) exercise on drinking water every year

In addition to cases of accident or disaster, any failure of drinking water distribution is the subject of a specific ORSEC (Organization of Civil Security Response) system to limit health risks and provide for the requisition of the necessary means. Exercises will be carried out every year, in conjunction with the competent authorities, to better anticipate these situations and to test the arrangements provided for in the ORSEC drinking water components of the ORSEC RETAP RESEAUX (water networks) modes of action.

PILOTE	Ministry of the Interior
BUDGET	No additional need
TIMETABLE	Every year
INDICATOR	Number of prefectures that have carried out an ORSEC drinking water exercise each year

2.6 - Expanding access to data on water withdrawals and the status of water resources

This action is consistent with the Water Plan (measure 12 and measure 52) and aims to:

- (i) better knowledge of the state of water resources: via the overhaul of the Underground Water database (ADES), but also the continuation of the low water status project led by the Directorate for Water and Biodiversity (DEB) and the the Directorate General for Risks Prevention (DGPR).
- (ii) better knowledge of pressures on water resources through withdrawal: by improving the system for monitoring withdrawals and deploying remote water meter readings.
- (iii) better anticipation of drought risk: through the development of anticipation tools such as MétéEauNappes, a project led by the Bureau for Research on Geology and Mining (BRGM).
- (iv) better communicate restrictions of use: via the continuation of the VigiEau site and its tool for communicating restrictions on water use to users, particularly in times of drought (measure No 50 of the Water Plan).

The tools developed will be complementary to VigiEau. In the long term, the crossing of data on withdrawals, the state of water resources, predictions as well as crisis levels collected in the context of each tool will strengthen the anticipation of tensions on the water resource.

PILOTES	DEB and DGOM, with the support of the DGPR for the state of surface resources
BUDGET	To be defined
TIMETABLE	Continuation of the site beyond 2024
INDICATORS	- Implementation of the tool and use of the developed tool - Attendance of the VigiEau site

ACTION 3

Finely monitor water withdrawals to ensure, over time, the balance between needs and available resources, while respecting the good functionality of aquatic ecosystems

3.1 - Structure an accessible database on water withdrawals, broken down by sector and territory

Since 2012, water withdrawals have been monitored by the National Water Withdrawal Bank (BNPE), which aggregates data on water withdrawal subject to the water agencies' fees each year. However, the BNPE has various limits that do not allow data to be available at operational spatial and temporal scales for the quantitative management of water resources.

This action aims at structuring an accessible database on water withdrawals, broken down by sector and territory. This data can then be analysed and used to size water withdrawal authorisations and allow informed monitoring and control.

The action will consist of:

- Develop a unified reference system for "drinking water abstraction" allowing withdrawal structures to be associated with groundwater abstraction points as well as surface water abstraction points;
- Completing the hydrographic reference system by integrating territorial data, organising its collaborative updating and making available the maps necessary for the various regulations;
- Then, develop digital tools for operational monitoring of samples allowing the collection, processing and centralisation of data in open access. A first experiment is underway on the territory of La Reunion. The deployment of a national digital service will be considered depending on the learnings from this experimentation.

PILOTE	DEB
BUDGET	Financing of MTEBFMP (particularly via France Nation Verte), water agencies, water offices, local authorities, public institutions Recruitment of a general interest contractor
TIMETABLE	2024: Development of the improvement strategy 2025: Development of the reference framework 2026: Launch of the digital tool
INDICATORS	- Compliance of the data to be integrated into the SIEau of the withdrawal data - Launch of the digital tool

3.2 - Develop a mapping of the networks and their efficiency, in order to have a precise vision of the needs of the territories and to identify the municipalities most in difficulty

The development of this mapping will make it possible to prioritise the territories in which network renovation actions must be carried out. The network efficiency rate of the communities are indicated on the SISPEA observatory. In addition, from 2026 onwards, the introduction of new drinking water performance charges will encourage the competent authorities to improve the performance of their networks, if they want to benefit from a modulation of this charge. On this basis, the French Office of Biodiversity, which is the manager of this observatory, will be involved in the reporting of data for the realisation of this mapping, and prepares each year a national report that illustrates the territorial dynamics. Data on the efficiency of networks is also requested as part of the monitoring of the Government Priority Policy (PPG) on Water and the Water Plan.

PILOTE	DEB
BUDGET	To be defined to develop the mapping of networks and their performance.
TIMETABLE	A first mapping could be carried out by the end of 2025 on the basis of the data available in the observatory. To be updated annually.
INDICATOR	Publication of network mapping and performance Indicator on the efficiency of the distribution networks of the SISPEA Observatory

3.3 - Leveraging digital technologies to optimise water networks and consumption

Generalising meters with remote transmission of the volumes taken for all major withdrawals, in connection with measure 12 of the Water Plan.

PILOTE	DEB
BUDGET	To be defined
TIMETABLE	A first experimental work on a dozen test territories will be initiated in 2025.
INDICATOR	Number of territories engaged in a generalisation of the teletransmission of large water users

ACTION 4

Improve rainwater infiltration into soils and optimise water availability

4.1 - Renature soils and urban areas: **develop the creation of drainage channels and rainwater infiltration zones and accelerate soil desealing**

This action is related to measure 13 (action 2) of the PNACC on the renaturation of urban territories.

PILOTES	DEB and DHUP
BUDGET	Green Fund - axis 2 renaturation
TIMETABLE	2024-2027
INDICATORS	- Length of drainage channels created - Surface desealed

4.2 - Optimize the availability of the resource in case of drought on the navigable network (storage)

The challenge is to study the possibility of creating several tens of millions of cubic metres of additional storage on the network entrusted to the navigation authority Voies navigables de France (VNF) compared to the current situation. This storage would benefit all water uses. This would involve, for example, waterproofing of the bays in order to reduce leakage, compliance of the dykes of the reservoir dams in order to allow for higher operating dimensions, and dredging for optimal water storage capacity in the bays. The current storage volume of reservoir dams is in the order of 150 million cubic metres (Mm³). The work to comply with the hydraulic safety standards as well as the increase in dimensions could make it possible to store a volume of up to 180 or even 190 Mm³.

PILOTES	DGTM and VNF
BUDGET	Will be specified according to the progress of the VNF study programme
TIMETABLE	2025-2026: studies 2026-2032: First phase of works
INDICATOR	Evolution of storage capacities in Mm ³

4.3 - Introduce a deadline for the implementation of rain zone management plans by the organising authorities responsible for urban rainwater management. Integrate TRACC into these plans.

The implementation of rain zone management plans, as defined in Article L.2224-10 of the General Code for Local Authorities (CGCT), will promote planning for rainwater management in connection with limiting soil sealing at the level of the competent organising authority. Those plans have been mandatory since the Water Law of 1992, but because of the lack of a deadline set in the law for its implementation, it has not always been taken up by local authorities. This action requires a legislative change.

PILOTES	DEB and DGCL
BUDGET	No additional need
TIMETABLE	Depending on the availability of a legislative vehicle
INDICATOR	Developments in legislation

ACTION 5

Support users (businesses, individuals, farmers, local authorities) in reducing their water consumption

The objective of this action is to organise the sobriety of all uses to limit tensions on the resource and contribute to the national objective of reducing water withdrawals by at least 10% by 2030. As far as possible, water quantity and quality issues should be addressed in an integrated manner.

As part of companies' water sobriety plans, the appointment of a water referent will be encouraged.

5.1 - Support the development of water sobriety plans (PSHs) of data centres

Namely:

- Use the Digital Infrastructure Sector Strategic Committee as a framework to draw up a PSH for data centres;
- Promote the emergence of innovative water-efficient solutions;
- Disseminate best practices in water efficiency to data centres (guide to good practices drawn up by the public operator ADEME);
- Use the vector of the sectoral delegated acts of the EU Energy Efficiency Directive revised in 2023 to ensure that the water/energy pair is taken into account in the data collection and publication requirements and the establishment of thresholds for the environmental performance of data centres;

PILOTE	DGE
BUDGET	To be defined
TIMETABLE	Publication of the Delegated Act on Data Centres in the first half of 2024 , first data retrieval in the second half of 2024 in the European database Analysis of collected data and Commission proposals for setting thresholds for the environmental performance (energy and water) of data centres from 2026
INDICATOR	<i>Water Usage Effectiveness (WUE) of data centres</i>

5.2 - Support the development of water sobriety plans (PSHs) for the tourism (hotels, cafés and restaurants, including outdoor hotels; outdoor sports, including golf and skiing; amusement and leisure parks), and trade and crafts sectors (measure 1 of the Water Plan)

The PSHs in tourism will be drawn up with tourism stakeholders within the framework of the Tourism Sector Committee, on the basis of a study on 'water sobriety in tourism' conducted by the Directorate-General for Enterprises (DGE).

For trade and crafts, priority must be given to:

- Develop PSHs for each of the ten artisanal and commercial sectors identified as high consumers and dependent on water (car wash stations, domestic well drilling companies, laundries, hair-care centres, garden centres-florists, distilleries-breweries, food crafts, supermarkets, construction companies, certain crafts);
- Strengthen the resilience of the most vulnerable sectors in the event of drought through various levers (e.g. set up a voluntary standard for the reuse of unconventional wastewater with professionals in collaboration with the national standard organisation AFNOR).

PILOTES	DGE, MTEBFMP, Ministry of Sport and ADEME
BUDGET	€50 000 (DGE budget – focus on the study); Aid from the Water Agencies
TIMETABLE	Drafting and signing of PSHs in 2025

INDICATORS	- Number of companies involved in working groups by tourism sector - Number of water sobriety plans in the tourism sector - Number of PSH signatory companies - Number of car wash stations equipped with water recycling gantries (less than 3% to date)

5.3 - Monitor the implementation of the water sobriety plans (PSHs) of the industrial sectors and the fifty-five sites identified (measure 2 of the Water Plan)

For the fifty-five sites, of the action aims at accompanying the industries towards the funding programmes identified, in conjunction with the Water Agencies, the deconcentrated State services (DREETS and DREAL) concerned, and of following the projects indicated in the PSHs. For the Strategic Sector Committees, it is about monitoring the implementation and impact of the actions identified within the various sectors as part of their sectoral/PSH contracts.

PILOTE	DGE
BUDGET	Intervention programme of the Water Agencies, call for projects INNOV'EAU.
TIMETABLE	Since March 2024 and depending on the sector contracts of the Strategic Sector Committees and the objectives set by each site (2025 and beyond) .
INDICATORS	- Number of industrial water sobriety projects launched - Estimated volumes of water saved

5.4 - Draw up an inventory and secure the possibilities for multi-use of water between certain activities, for example between agricultural activities and aquaculture activities (aquaponics, use of water discharged from aquaculture farms by farmers in the context of 'on-farm aquaculture' projects, etc.).

PILOTE	DGAMPA, in conjunction with DEB, MASA and DGPR
BUDGET	To be defined
TIMETABLE	Identification and proposal for regulatory scoping (2025) of aquaponic and aquaculture activities concerned by water reuse
INDICATOR	Number of water multi-use projects

ACTION 6

Support new uses of water unfit for human consumption

The challenge is to develop a circular water economy by using water unfit for human consumption for certain uses, including domestic uses, in collective housing, individual housing, establishments open to the public, the tertiary sector, etc. where these uses do not pose health risks to users.

The actions are being progressively implemented with the sectors concerned since 2024, following regulatory work (adaptation of the provisions of the Public Health Code).

6.1 - Supporting actors on the ground in the implementation of the new rules

The aim is to develop the professional sector and to carry out communication activities and standardisation work.

Particular attention will be paid to establishments serving sensitive public, in particular health establishments, social and medico-social establishments and crèches, to encourage the development of the use of water unfit for human consumption for domestic purposes, while ensuring public safety.

PILOTE	DGS, in liaison with DGE and professional organisations
BUDGET	To be defined
TIMETABLE	Ongoing
INDICATOR	Number of sensitive establishments using water unfit for human consumption for domestic purposes

6.2 - Generate new data and knowledge

The use of certain types of water for certain uses is still underdeveloped and can only be standardised if practices demonstrating knowledge of health risks and their control are tested.

PILOTES	Professional actors in the framework of the France Experimentation scheme
BUDGET	Action carried out within the framework of the France Experimentation scheme
TIMETABLE	Ongoing
INDICATORS	- Number of experiments on the use of water unfit for consumption for uses not regulated to date - If possible, estimate of water volumes saved

6.3 - Conduc European and international monitoring on the development of practices for the use of water unfit for human consumption for domestic purposes

PILOTE	DGS
BUDGET	No additional need
TIMETABLE	From 2024
INDICATOR	Number of countries that have recourse to the use of water unfit for human consumption for domestic purposes

ACTION 7

Study the conditions for using seawater desalination solutions

The use of seawater desalination solutions for the production of drinking water is developed sparingly in certain territories with strong constraints (particularly in insular situations, such as in Mayotte). Given the increase in tensions over water resources, it is necessary to assess the appropriateness of the use of desalination on coastal territories. Knowledge of the environmental impacts of these projects, including cumulative effects, and impacts on water prices must be studied in depth in order to avoid risks of maladaptation. The General Inspectorate of the Environment Ministry (IGEDD) will be given a task in this regard.

PILOTE	DEB
BUDGET	No additional need
TIMETABLE	2024: Launch of the IGEDD mission 2025: Publication of the IGEDD report
INDICATOR	Publication of the IGEDD report

ACTION 8

Train facilitators on the protection of catchments in a context of climate change

Diluted in smaller volumes of water, pollutants make the raw water resource of the catchments vulnerable: many catchments are forced to close each year, others are approaching potability limits. Faced with this observation, the EU Drinking Water Directive requires each competent authority to protect catchments, by means of an action plan known as the PGSSE, where the monitoring of pollutants shows a risk of exceeding the permitted limit values. Approximately 5,500 catchments in France (out of a total of 33,000) are concerned.

The action consists of co-financing 1 500 facilitators trained in the protection of catchments. This action complements the development of the catchment areas PGSSE for all catchments by 2027 (see measure 23 of the Water Plan).

The role of those facilitators is to lead the community of stakeholders, on behalf of the local authority that is responsible for drinking water supply, in order to draw up an action plan and support changes in unsustainable practices that cause diffuse pollution and endanger the operation of the catchments. That position is exposed to the various stakeholders that cause pollution, which requires listening, dialogue and diplomacy. A training time will be provided by the catchment resource centre.

PILOTE	DEB, with the support of DGS
BUDGET	Intervention programme of the Water Agencies
TIMETABLE	2025-2027: Training of facilitators
INDICATOR	Number of trained facilitators

ACTION 9

Adapt water management governance and funding

9.1 - Promote and facilitate governance for water cycle adaptation and resource sharing

Each sub-watershed will have, by 2027, a forum for dialogue (prefigurative of a CLE i.e. a local water commission) including all stakeholders, and a territorial policy project aimed at organising the sharing of the resource (in accordance with Action 33 of the Water Plan), in order to anticipate and manage the risks of conflicts of use and to find compromises specific to each territory. The emergence and strengthening of the role of these dialogue bodies and the integration of climate change adaptation policy, particularly in Overseas France, will be essential to the success of local adaptation in good conditions.

PILOTE	DEB
BUDGET	To be defined
TIMETABLE	2027
INDICATOR	Number of CLEs (established by prefectural decree) or bodies for dialogue on water in the territory (reporting by the prefects of departments)

9.2 - Focusing public funding on adaptation measures

The climate change adaptation basin plans, adopted or currently being voted on in each basin, will serve as a basis, in particular, for the 2025-2030 intervention programmes of the Water Agencies and Water Offices.

PILOTE	DEB
BUDGET	Water agencies, coastal conservatory, water offices, local authorities.
TIMETABLE	2030
INDICATOR	Amount of funding allocated for adaptation measures

9.3 – Trends in water tariffs and charges

The reform of water agencies' charges introduces three new charges (drinking water consumption, the performance of drinking water networks and the performance of collective sanitation systems) which replace the previous charges for 'domestic pollution' and 'modernisation of collection networks'.

The objective of the reform is to give a stronger price signal on withdrawals, water pollution and the performance of public drinking water and sanitation services (fight against leakage, reduction of pollutants discharged into rivers). Operational actions will include:

- Putting an end to the degressive pricing of water prices for large consumers (end of the ceiling of 6 000 m³ on the domestic pollution charge).

- Incentivising public drinking water and sanitation services to performance of use by modulating the amount of charges. The more efficient the services are, the lower the level of fees.
- Generalise incentivised billing to subscribers.

PILOTE	DEB
BUDGET	Affected taxation of water agencies
TIMETABLE	Entry into force on 1 st January 2025
INDICATOR	Amount of drinking water consumption charges / performance

ACTION 10

Improve knowledge of the impact of climate change on bathing sites and support those responsible for bathing waters (including local authorities) in the declaration of new sites and the maintenance and management of existing sites

In a context of climate change and increasing heat waves, the development of areas for refreshment for the benefit of the population appears essential.

Nevertheless, for several years, some bathing waters have been affected by microbiological pollution that could be promoted by climate change, with environmental conditions conducive to the proliferation of efflorescences of bacteria or microalgae called blooms (e.g. cyanobacteria in fresh waters, microalgae of the *Ostreopsis* spp. type or bacteria of the *Vibrio* spp. type in seawater). Other bathing waters are gradually deteriorating in microbiological quality due to the existence of unremediated sources of pollution. These various types of pollution can lead to temporary or permanent closures of the bathing sites concerned, due to the health risks potentially incurred by the population, but also the cost associated with the management of these sites.

In this context, it is essential to improve knowledge of the emerging health risks associated with bathing water in a context of climate change, and to define appropriate management arrangements, using a risk-benefit measurement approach. This is a prerequisite for supporting those responsible for bathing water (PREB) with the aim of improving the management of the bathing sites concerned by these new risks. In addition, better identification of the sources of pollution affecting certain bathing sites and the implementation of concrete measures to reduce these sources, in addition to meeting European obligations to improve the quality of bathing water, will also contribute to the sustainability of existing sites. It will be useful to rely on the communities of regular users of the ocean (navigators, surfers, divers, fishermen, aquaculturists, etc.), freshwater users and their associations to provide information from the ground about perceived health issues. Finally, it seems appropriate to better understand the obstacles and difficulties encountered by local authorities in identifying bathing sites in order to encourage the declaration of new sites, including in urban areas, and the provision of refreshment places for the benefit of the population.

PILOTE	DGS, in conjunction with the DEB, the expert agencies (in particular ANSES), the decentralised departments of the MSJVA and representatives of local authorities

BUDGET	To be defined in the light of the results of the inventory to be carried out in order to identify the obstacles to the declaration of new bathing sites and the difficulties in maintaining existing sites (e.g. <i>preparation and revision of bathing profiles, cost associated with the removal of sources of pollution affecting bathing sites, cost associated with the health control implemented by the local health agencies, etc.</i>)
TIMETABLE	To be defined, in connection with the health expertise work to be undertaken
INDICATORS	- Number of bathing sites studied - Evolution of the pollution status of the sites studied



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3 Third French National Adaptation Plan

MEASURE N°22

**Make available
local authorities
information needed to adapt
their territory to climate
change**

CATEGORY OF THE MEASURE

**2. Ensuring the resilience
of territories,
infrastructure and
essential services**

BACKGROUND

The objective of this measure is to provide local authorities with the information on the future climate and its impacts on their territory that they need to build their climate change adaptation strategy.

ACTIONS ALREADY UNDERTAKEN

As part of the second National Climate Adaptation Plan, a [Resource Centre on Adaptation to Climate Change](#) was put online. This platform, led by Cerema at the request of the ministry responsible for the ecological transition, in partnership with Ademe and Météo-France, offers resources to address the impacts of climate change, to learn about climate change adaptation solutions, and to implement concrete actions (example of good practices).

The ministry responsible for the ecological transition organised pilot sessions in 2022 to raise awareness among elected representatives on climate change, with a specific focus on adaptation to climate change. The training of government officials in the ecological transition was also initiated in 2023 with test training and deployment in 2024. It is also planned to train all government officials on these issues by 2027. This training will integrate the challenges of adaptation and will cover both aspects relating to the functioning of the administration and the measures to be taken in the field of public action.

Météo-France has developed several climate services to help local authorities access local data on the impacts their territory will face ([DRIAS](#), [DRIAS-water](#), [Climat HD](#), [Climadiag commune](#), [Climadiag entreprises](#)).

Météo-France has also started to work on the production of high-resolution (2.5 km) regionalised climate simulations on the West Indies-Guyana, Réunion, Mayotte, New Caledonia, Wallis and Futuna and the most densely populated islands of French Polynesia,

which were previously unavailable. In particular, they will make it possible to define the reference warming trajectory for adaptation to climate change (TRACC). The first simulations will be available in the first half of 2025 and the goal is to establish a long-term framework to ensure the regular production and updating for the four ultramarine zones, as well as the implementation of climate services similar to those that Météo-France offers for mainland France.

Météo-France's objectives and performance contract also includes the implementation of a heatwave alert system in overseas territories where this is relevant in terms of public health. This action started at the beginning of 2024 with the establishment of a working group with the objective, for each department, of defining the periods conducive to heat wave conditions (cyclonic periods in the respective basins: Caribbean, Indian Ocean), to identify in the climatology / previous years periods that may have corresponded to situations of high heat (temperature data, humidity, wind, etc.) and to cross these meteorological data with health data. The objective is to have a clearly defined system for operational implementation according to the calendars of the hot periods of the different departments.

NEW ACTIONS

1. Developing climate services by integrating the Reference Warming Trajectory for Climate Change Adaptation (TRACC)
2. Propose awareness-raising tools for local elected officials and training tools for local authority officials
3. Label the design offices for carrying out vulnerability studies of territorial climate-air-energy plans (PCAET)
4. Defining a common no-regret basis for action in the PCAETs
5. Publish a guide on maladaptation for local and regional authorities
6. Support adaptation to the effects of heat on health in the context of climate change at local level through advocacy for changes in professional practices

ACTION 1

Developing climate services by integrating the Reference Warming Trajectory for Climate Change Adaptation (TRACC)

The first step is to **integrate the reference warming trajectory for climate change adaptation into existing climate services** ([DRIAS](#), [DRIAS-eau](#), [Climat HD](#), [Climadiag commune](#), [Climadiag entreprises](#), etc.) so that they present their results by TRACCwarming level (+2 °C in 2030, +2.7 °C in 2050 and +4 °C in 2100 in mainland France compared to the pre-industrial era). This work has already started and the data provided by Météo-France on DRIAS, Climadiag commune and Climadiag entreprises are already available by TRACC warming level. It is also a question of further developing these tools and making them more ergonomic and precise, to facilitate the use of end-users. It is also essential to continue communication around the added value of climate services to maximize their use.

A **national impact portal**, developed by Météo-France, will be created by the end of 2026. It will provide all adaptation stakeholders to data and impact assessments produced by various national actors, beyond just climate projection data. These data and impact assessments will be enriched beyond 2026. This portal could be fed with data from regional climate observatories and regional expert groups working on more accurate local data, including on adaptation, as well as links to resources that present the benefits of nature-based solutions.

PILOTES	DGEC and Météo-France
BUDGET	To be defined
TIMETABLE	2025: Specifications of the new DRIAS-impacts service and associated organisation, design and start of developments, governance of the action 2026: Pursuit and finalization of developments, integration of the first impact datasets
INDICATORS	- Number of climate services integrating TRACC: 100% target by the end of 2025 - Number of users of climate services - Number of themes covered by DRIAS-impacts

ACTION 2

Propose awareness-raising tools for local elected officials and training tools for local government officials

A pilot session was developed by the ministry in charge of ecological transition for acculturation to climate change and its challenges, and was tested in three departments. It is now a question of generalising the work undertaken by including data on future climate according to the TRACC.

All mayors and local elected representatives will be able to benefit from awareness-raising sessions on climate and biodiversity issues, adapted to local issues, drawing on the resources of expert public institutions (Cerema, Ademe, Météo-France, French Biodiversity Office). These sessions will help them strengthen their understanding of the expected impacts at territorial level, to take ownership of the means to adapt their territory to the future context, and to exchange between peers to share best practices and their questions.

To help local government officials develop their skills on adaptation, it is planned to establish, in 2025, a partnership with the National Centre for Territorial Civil Service (CNFPT) to offer dedicated training. Depending on the guidelines adopted in the Regional Health and Environment Plans, this training may also be part of the process of raising awareness of environmental health issues.

Specific training sessions for elected-technicians will make it possible to share their findings and take advantage of these feedbacks to explain their approaches to their colleagues and/or to the municipal council.

The Prefectural Corps will also be offered content on adaptation to climate change, as part of the sessions organised jointly by the Institute of Advanced Studies of the Ministry of the Interior (IHEMI) and the Ministry responsible for the ecological transition.

PILOTE	DGEC
BUDGET	To be defined
TIMETABLE	2024-2026 for elected officials 2025-2027 for the training of all officials of the State and local authorities

INDICATORS	- Number of awareness-raising sessions for mayors organised in the departments - Number of local elected representatives sensitised - Number of territorial agents trained - Number of government officials trained

ACTION 3

Label the design offices for carrying out vulnerability studies of territorial climate-air-energy plans (PCAET)

In the diagnostic phase of the PCAET, local authorities are required to produce a study of the vulnerability of their territory, which is essential in order to know and analyse the future impacts of global warming and draw up an action plan to adapt their strategy in the face of these vulnerabilities. Due to limited internal engineering, they often use design offices to carry out these vulnerability analyses. However, these analyses can be very heterogeneous in their quality. Labelling the design offices for carrying out vulnerability analyses will make it possible to produce better-quality PCAETs, responding to an overall weakness in the adaptation aspects of these plans, in order to improve the resilience of our territories and ensure that the challenges of other crises (biodiversity, resources) are taken into account. In the long term, engineering aid from the Green Fund could be conditional on the use of a certified design office.

PILOTE	DGEC, in collaboration with Ademe, Cerema and DREAL
BUDGET	To be defined
TIMETABLE	2025: Definition of the specification 2026: First labels
INDICATOR	Number of certified design offices

ACTION 4

Defining a common no-regret basis for action in the PCAETs

The analysis of the PCAETs adopted by the intermunicipalities shows a predominance of the energy and mitigation themes, and a weaker treatment of the adaptation theme, with in particular the difficulty for local authorities to translate the vulnerability study into concrete actions. The objective of the action basis is to accelerate the preparation of territories for the most significant impacts, with measures relevant to all territories and regardless of the level of warming. In the adoption or revision phase for the expiring PCAETs, the definition of a basis is an opportunity to guide local authorities on adaptation actions to be included in their plan. Each action will be associated with an indicator, which will also facilitate the reporting of adaptation actions at national level.

The first lines of action for the pillar mentioned in the PNACC-3 local authorities working group are:

- carrying out a diagnosis of urban heat islands;
- the identification of cool islands and public fountains;

- study of cooling requirements;
- Explore options for nature-based adaptation solutions, in particular:
 - The soil de-sealing and greening of public buildings, starting with schoolyards;
 - Completion of a rainwater management plan;
 - The maintenance of existing natural areas and the biological diversification of natural areas,
 - The plan for the renaturation of urban environments,
 - The increase of canopy in the city,
- combating water leakage;
- integration of heatwave preparedness into the (inter)municipal emergency plans;
- the inclusion of summer comfort in vehicle equipment specifications;
- The integration of summer comfort issues into the design of roads and parking (bicycle paths, pedestrian paths, car parks, car-sharing areas, etc.) with greening on several levels of height and/or shades, and permeable coatings with high albedo as soon as possible;
- The inclusion of adaptation criteria in the schemes to promote socially and economically responsible public procurement (SPASER), see measure 45 of the PNACC-3 on public procurement.

PILOTE	DGEC
BUDGET	No additional need
TIMETABLE	2025: Amendment to the PCAET Order
INDICATOR	Number of PCAETs integrating the basis of actions

ACTION 5

Publish a guide on maladaptation for local and regional authorities

The High Council on Climate recommends the publication of a guide on maladaptation, which it defines as 'adaptation action likely to increase negative climate-related effects, in particular through an increase in greenhouse gas emissions, an increase or transfer of vulnerability, the aggravation of injustices or the reduction of well-being, now or in the future'. Any action that would harm biodiversity is also considered maladaptation.

The publication of a guide will establish a reference framework for assessing the risks of maladaptation. This guide will include concrete examples of pitfalls to avoid. However, it will have to take all precautions, as the effectiveness of adaptation policies is very dependent on the territory in which they are implemented and the level of warming achieved.

PILOTE	DGEC
BUDGET	€10k
TIMETABLE	2025: Publication and dissemination of the guide
INDICATOR	Number of downloads of the guide

ACTION 6

Support adaptation to the effects of heat on health in the context of climate change at local level through advocacy for changes in professional practices

In order to change the professional practices of project managers and developers of urban development projects or construction/renovation of buildings, Public Health France is preparing the provision of evidence for their training organisations and network leaders. In conjunction with those involved in planning and building, the aim is to raise awareness, particularly among those involved in defining urban projects or buildings, whether new or to be rehabilitated, of the impact of their projects on the health of the population.

In 2025, the objective is to define operational means of action to be implemented to train/raise awareness/inform on public health aspects related to climate change.

PILOTES	DGS and Public Health France
BUDGET	To be defined
TIMETABLE	Ongoing, in 2025: Development of evidence valorisation tools and a network of data user partners
INDICATORS	Definition of a network tool, sharing of evidence support, working meeting with planning and building partners



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3 Third French National Adaptation Plan

MEASURE N°23

Progressively integrate the TRACC into all public planning documents

CATEGORY OF THE MEASURE

2. Ensuring the resilience of territories, infrastructure and essential services

BACKGROUND

The objective of this measure is to progressively bring all local and regional authorities' strategic documents into line with the reference warming trajectory for adaptation to climate change (TRACC) so that the future climate is well integrated into local decisions, as they are renewed.

ACTIONS ALREADY UNDERTAKEN

Since 2018, public institutions for intercommunal cooperation (EPCI) with more than 20 000 inhabitants have been required to adopt a territorial climate-air-energy plan (PCAET). In this context, they must carry out an analysis of the vulnerability of their territory to the impacts of climate change. The PCAET action plan must include an adaptation component.

At regional level, the regional plans for spatial planning, sustainable development and territorial equality (SRADDET), the regional climate, air and energy schemes (SRCAE) and the regional development schemes (for the Overseas Territories) define the main objectives for the adaptation of the regional territory.

Local urban plans (PLU), by their positioning at the link between territorial planning and operational developments, constitute a strategic scale of action in climate change adaptation. The Town Planning Code thus provides that the action of public authorities in the field of town planning is intended, inter alia, to achieve the objective of 'combating climate change and adapting to it'. In addition, the PLU or PLUi (intercommunal) must be compatible with the PCAET.

NEW ACTIONS

1. Initiate work with local authorities to define how the TRACC should be introduced in all relevant local planning and sectoral documents
2. Propose a "4°C patch" to EPCIs that have just completed their studies on the basis of other warming assumptions

ACTION 1

Initiate work with local authorities to define how the TRACC should be introduced in all relevant local planning and sectoral documents

1. In order to be able to refer to it in the various regulations concerned, the TRACC will be introduced by decree in the Environmental Code on the basis of Article 5 of Regulation 2021/1119.¹ This decree will establish the purpose, the principle of drawing up the TRACC and the conditions for its regular review.

This decree will also be the vehicle to include the PNACC-3, whose actions are based on the TRACC scenario, into the regulatory framework.

2. To act in a coordinated manner at local level, consistent with national planning, TRACC will need to be progressively integrated into all relevant local planning and sectoral documents. Thus, local and regional authorities will no longer have to ask themselves the question of the climate scenario to be adopted for their adaptation policy and the vulnerability analyses carried out will be harmonised and comparable. Concretely, it will be a question of modifying the texts framing the content of the documents concerned.

The decree on the PCAETs will also be amended to better regulate what is required of local and regional authorities on the adaptation aspect, in particular the themes to be addressed. Many PCAETs, valid for six years, will soon enter the revision phase and will thus be able to integrate the TRACC at the time of their renewal.

Local authorities will be able to gradually update these documents as they are revised.

To help them, they will have access to climate services and will be able to consult the national impact portal (measure 22). Local climate data, produced and provided by Météo-France via its [DRIAS](#) platform and the [Climadiag commune](#) site, are already available by TRACC warming level for France. By the end of 2025, they will also be available for overseas territories.

PILOTE	DGEC, with the support of DGALN and DGCL
BUDGET	No additional need
TIMETABLE	2025 : Publication of the TRACC Decree and updating of the PCAET Decree Integrating the TRACC into planning documents when revising them

¹ Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law')

INDICATORS	- Number of PCAETs integrating the TRACC - Number of regional schemes integrating the TRACC

ACTION 2

Propose a "4°C patch" to EPCIs that have just completed their vulnerability studies on the basis of other warming assumptions

PCAETs are regularly updated and some local authorities have just completed pre-development studies without using the TRACC as a working hypothesis. In order not to have to start all over again at this late stage of the procedure, they will be offered a '+4 °C' patch in order to realign their documents with the TRACC. For example, for PCAETs that have not projected beyond 2050, it will be necessary to check whether new risks appear on the territory of the local authority after 2050 and whether the PCAET action programme makes it possible to anticipate them or whether adjustments would be desirable.

PILOTE	DGEC, in collaboration with Météo-France, Ademe and Cerema
BUDGET	No additional need
TIMETABLE	2025
INDICATOR	Number of authorities integrating the TRACC with the '4°C patch' method: target to cover 100% of communities in the process of revising their PCAET



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MEASURE N°24

Integrating climate change adaptation challenges into all technical standards

CATEGORY OF THE MEASURE

2. Ensuring the resilience of territories, infrastructure and essential services

BACKGROUND

The objective of this measure is to adapt all the technical standards and regulations that have a climate component in order to take account of the future climate and ensure systematic and relevant adaptation to climate change of the sectors of activity concerned (building, urban planning, transport, energy production and transport, networks and infrastructure).

Many socio-economic activities rely on benchmarks or technical regulations specifying the conditions of their implementation. Many of them have a climate component, i.e. they specify the climatic conditions under which the equipment and processes contributing to these activities must be able to operate nominally. Examples include outdoor temperature ranges, precipitation intensity, wind strength, river flow, weight of snow on roofs, sea level or wave height.

In the past, these benchmarks and technical regulations were established on the basis of local climatology, deduced from observed or analysed climate data over an thirty-year period, ideally. It is therefore necessary to update these standards taking into account the future climate, in particular for activities relying on long-lived infrastructure or equipment, given that many of these standards are European or even international.

ACTIONS ALREADY UNDERTAKEN

International standards specific to the issue of adaptation to climate change have been developed (NF EN ISO 14 090 of 2019: adaptation to climate change – principles, requirements and guidelines; NF EN ISO 14 091 of 2021: vulnerability, impacts and risk assessment; NF EN ISO 14 093 of 2023: Local Adaptation Finance Facility, 2023).

In addition, work has been carried out on the sectoral application of the principles of adaptation to climate change, in the light of standard NF ISO 24566-1 of 2023 'Adapting water services to the impacts of climate change'.

A European Commission standardisation request on mainstreaming climate change adaptation into **European standards** was adopted by the Standards Committee in December 2023. It is based on the European Climate Law and the 2021 EU Adaptation Strategy, which is reflected in the 2022 Standardisation Strategy. It is included in the annual European Union work programme on standardisation for 2023. The standardisation request includes a list of 350 standards to be revised by the end of 2026.

NEW ACTIONS

1. Provide an overview of ongoing work on standards to identify gaps in terms of climate change adaptation challenges
2. Publish a list of criteria to be systematically taken into account when revising technical standards
3. Gradually adapt all technical standards and benchmarks

ACTION 1

Provide an overview of ongoing work on standards to identify gaps in terms of climate change adaptation challenges

A lot of work is already underway on standards and more will happen very quickly due to the European Commission's standardisation request (see section "Actions already taken"). This action is about providing an overview and identifying the complementary actions to be carried out. Standards may need to be amended to allow adaptation solutions to be put in place. For example, the standard on buried networks is evolving as it can make it difficult to plant trees in cities.

PILOTE	CGDD, with the support of DGEC and in connection with AFNOR
BUDGET	€35,000
TIMETABLE	1 st half of 2025: Realisation of the panorama
INDICATOR	Presentation of the panorama

ACTION 2

Publish a list of criteria to be systematically taken into account when revising technical standards

These criteria will need to integrate nature-based solutions for their systemic characteristic, their positive impact on biodiversity, climate change mitigation and adaptation, human health. These criteria could be the subject of an international document, based on French ambitions, as part of ISO's strategy for revising voluntary standards with regard to climate considerations.

PILOTE	CGDD, with the support of DGEC and in connection with AFNOR
BUDGET	€30 000
TIMETABLE	By the end of 2025: submission of the list of criteria
INDICATOR	Publication of the list of criteria

ACTION 3

Gradually adapt all technical standards and benchmarks

All technical standards and benchmarks will be progressively updated to take into account the future climate, following the reference warming trajectory for adaptation to climate change (TRACC). Details on the implementation of this measure can be found in the dedicated factsheets:

- Measures 3, 5, 6 and 7: natural hazards and removal-swelling of clays
- Measure 21: water
- Measure 30: transport
- Measure 31: energy system
- Measure 32: telecommunications services



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3 Third French National Adaptation Plan

MEASURE N°25

Sustain the 'Adaptation Mission', a unified State engineering offer for adaptation for local authorities

CATEGORY OF THE MEASURE

**2. Ensuring the resilience
of territories,
infrastructure and
essential services**

BACKGROUND

Linking up with the various State operators must be simplified and facilitated for local and regional authorities, through a coordinated interface, in order to define diagnoses and local adaptation strategies and to initiate adaptation operations, mobilising all the skills of these operators, on a case-by-case basis and according to the adaptation needs identified. The implementation of this programme, called 'Adaptation Mission', is fully in line with the version of the 'Charter for public engineering at the service of territories in the success of the ecological transition', signed by the ministry in charge of the ecological transition and the operators ANCT, ADEME, CEREMA, ANAH, ANRU and the Banque des territoires, at the Mayors' Fair in November 2023. Operators have undertaken to coordinate their national and local engineering offerings more effectively and to make them complementary in order to support the ecological transition of territories, to make them clearer and more operational, and thus respond as closely and accurately as possible to the needs of local public actors.

ACTIONS ALREADY UNDERTAKEN

Over the past decade or so, regional groups of climate experts (GRECs) have been set up with the aim of informing local stakeholders. GRECs provide complementary scientific expertise to the technical expertise proposed by State operators. In total, ten GRECs have been identified, mainly in hexagonal France.

State operators (ADEME, CEREMA, BRGM, Météo-France, etc.) are starting to develop services on the theme of adaptation to climate change, each in their field of expertise. The emergence and implementation of adaptation projects adapted to territorial contexts call for several disciplinary bodies and could be facilitated by the creation of a single interface to make available to local authorities the service offer of State operators.

NEW ACTIONS

1. Create an Adaptation Mission
2. Establish a national label for regional climate expert groups and network them with a national animation
3. Appoint an adaptation coordinator in each department prefecture, responsible for running a local network of local adaptation stakeholders

ACTION 1

Create an Adaptation Mission

In recent years, several stakeholders (for example, ADEME, CEREMA, ANCT, OFB, Agences de l'eau, Météo-France and Banque des territoires) have taken up adaptation issues in order to work on their support services for local authorities. Indeed, many local authorities do not have the internal skills to build a vulnerability analysis and the resulting adaptation strategy.

If the mobilisation of State operators on these subjects is both a positive and necessary signal, the dispersion of the service offer may create a lack of readability for local authorities. The operators of the ministry responsible for the ecological transition will therefore propose a joint offer, in terms of expertise and engineering, to support local and regional authorities in their approach to adapting to climate change. The roll-out of this new partnership offer is reflected in the establishment of a new service for local and regional authorities, called 'Adaptation Mission'. The Adaptation Mission will make it possible to move from one-off actions to more integrated approaches.

The Adaptation Mission's offer will include five blocks:

- **Block 1:** Initial understanding of needs and capabilities
A first exchange between the local authority and the Adaptation Mission contact person allows the policy officer to specify their request according to the structuring elements (level of maturity, internal organisation, etc.), provide simple answers and then orientate towards the other building blocks, with a view to an operational "pathway".
- **Block 2:** Rise in competence
Training for policy officers in local authorities, up to two days of training, allowing them to take on board their local authority more widely, including elected officials.
- **Block 3:** Development of an adaptation strategy
Follow the essential methodological steps of adaptation strategies: diagnosis with prioritisation of issues, trajectory of actions and forecast budgets (large masses), monitoring and evaluation, based on the TACCT approach (reference approach, enriched with CEREMA tools, in particular the resilience compass, Météo-France, the Water Agencies, the Banque des Territoires or the ANCT). The priorities identified that can feed into the programming of the contracts for a successful ecological transition (CRTE), as well as the most structuring actions, will be intended to update or supplement the corresponding CRTEs.

- **Block 4:** Referral to operators for thematic deepening
Some requests from local authorities may be accompanied by operators on thematic studies (infrastructure, buildings, water resources, etc.). Where appropriate, an identification of existing public funding may also be carried out.
- **Block 5:** AMO flash (drafting specifications, setting up financing files, etc.)
In addition to blocks 3 and 4, the points of contact of the Adaptation Mission will be able to accompany local authorities towards qualitative private engineering, by proposing standard specifications, to conduct certain studies or support the operational implementation of projects. Support for the preparation of applications for funding may also be provided.

Upstream, several reasons may lead the community to request the Adaptation Mission:

- A voluntary approach by the local authority, which challenges the Prefect of the department, territorial delegate of the ANCT;
- A direct interpellation by the Adaptation Mission, the State services or operators, who then interface with the Prefect of the department: the local authority seeks in return an approach recognised and validated by the public authorities.

In all cases, the Prefect of the department takes note of the request of the local authority.

In some territories, the mission may also accompany particular sites.

An annual review of the operation of this Mission will be carried out at the level of each region and shared with the national level (national directorates of operators, DGEC and CGDD); any difficulties will be identified on this occasion.

Results to be achieved following the Adaptation Mission support:

- An action plan for the local authority, the milestones of which will be consistent with the TRACC and which consolidates, among other things, the adaptation component of the territorial climate-air-energy plans (PCAET);
- A large-scale financing plan;
- The composition and sequencing of different bricks of technical and financial offers made by operators for the implementation of the action plan;
- A local authority embedded in the long term and embedded in an ecosystem of actors.

PILOTES	CGDD, ADEME, CEREMA and ANCT, in close cooperation with Météo-France, the Water Agencies, OFB, ANAP and Banque des Territoires
BUDGET	Constant means in 2025
TIMETABLE	First tests of the single support offer in 2025
INDICATOR	Number of local authorities supported

ACTION 2

Establish a national label for regional climate expert groups (GREC) and connect them through a national coordination framework

GRECs do not have an institutional structure comparable to the Intergovernmental Panel on Climate Change (IPCC) and do not always rely on the state of the art in science. The Court of Auditors therefore¹ considers that the status of these groups should be harmonised at the national level, with the creation of a label, the obtaining of which would be conditional on compliance with a specification, making it possible to ensure the quality of the expertise proposed, and integrating issues related to biodiversity and resources. The Court proposes that these specifications be defined by the High Climate Council, which would also assess the structures likely to benefit from them. A national animation of the GREC network will make it possible to promote the coherence of French expertise at all levels, from the territories to the international level. Synergies could be sought, for example to carry out coordinated and harmonised expertise for territories facing similar climate risks.

PILOTE	DGEC, in connection with the GRECs
BUDGET	No additional need
TIMETABLE	2025-2026
INDICATOR	Number of certified expert groups

ACTION 3

Appoint an adaptation focal point in each department prefecture, responsible for running a local network of local adaptation stakeholders

Appointing an adaptation focal point in each department prefecture would strengthen the role of the local State in adaptation policies, based on their authority and traditional missions in crisis management and support for local elected representatives. To this end, the adaptation focal point could be appointed from among the members of the network of referents of the National Resilience Day (JNR) already in place in the prefectures.

This could also make it possible to strengthen the local dialogue between local elected representatives and devolved State services (departmental prefectures, departmental directorate of territories (DDT)). The contact person could help bring together and mobilise the expertise of government departments and operators and funding (particularly contractual approaches) on territorial adaptation strategies. To strengthen links with decentralized services, the referent could work in pairs with a DDT person, as it is done for the CRTEs. This process should be accompanied by enhanced training of focal points, in particular on biodiversity and resources issues in addition to the climate, and by networking to share best practices.

Finally, the adaptation focal point will be responsible for animating a network bringing together local authorities and public and private economic actors concerned by the challenges of adaptation to climate change. The interdependence between actors from the same territory, in particular network operators, requires exchanges in order to develop integrated adaptation strategies, beyond the individual adaptation of each actor. This network will be able to build on the work on the adaptation of territories resulting from the regional COPs.

¹ Court of Auditors, *Annual Public Report 2024*, 12 March 2024

PILOTE	Ministry of the Interior, in collaboration with DGEC
BUDGET	No additional need
TIMETABLE	2025-2026
INDICATOR	Number of departmental prefectures with an adaptation focal point



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3 Third French National Adaptation Plan

MEASURE N°26

Better assessment of adaptation actions carried out across the territory

CATEGORY OF THE MEASURE

2. Ensuring the resilience of territories, infrastructure and essential services

BACKGROUND

The objective of this measure is to set up monitoring indicators to enable territories to better assess the effectiveness of their adaptation actions and to draw up a precise progress report on the preparation of the national territory for the impacts of climate change.

NEW ACTIONS

1. From 2025, define a base of monitoring indicators
2. Study the feasibility of making regular "adaptation" reporting mandatory in the long term
3. From 2028, extend the environmental annex of local authorities to the Adaptation axis

ACTION 1

From 2025, define a base of monitoring indicators

In order to be able to measure the progress made and the effectiveness of the adaptation policies put in place, it is proposed to work on the basis of some 20 indicators that could be used by all local and regional authorities to evaluate their adaptation policy. In 2025, a working group will be set up with associations of local and regional authorities to define these indicators and the data reporting process. The PNACC plans to define a mandatory base of actions for all local authorities (particularly for the PCAETs, see measure 22 of the PNACC-3). This will make it possible to establish a first base of indicators on the basis of this base of actions. These indicators should also make it possible to assess the impact of adaptation measures on biodiversity, health or natural resources, in order to correct trajectories if major or irreversible impacts are found.

PILOTE	DGEC
BUDGET	No additional need
TIMETABLE	2025
INDICATOR	Definition of the indicator base

ACTION 2

Study the feasibility of making regular "adaptation" reporting mandatory in the long term

Following the establishment of the indicator base, the desirability of gradually introducing regular "adaptation" reporting for local authorities, depending on their size, will be studied, in order to be able to measure the progress made and the effectiveness of the adaptation policies put in place. Although the opinion of the State services is sought when drawing up the regional plans for spatial planning, sustainable development and territorial equality (SRADDET)s and the PCAETs, the results of the implementation of the planned measures and their impact are not communicated to them. It will be necessary to ensure that local authorities have the data, clear instructions and support before making reporting mandatory and not to multiply the timetables. Regional climate observatories could be mobilised to help local authorities assess their adaptation policies.

Providing local authorities with a clear framework and using a common platform with reporting on greenhouse gas mitigation will make the exercise as simple as possible. Feedback and good reporting practices can be shared and showcased in the [Climate Adaptation Resource Centre](#) to inspire other local authorities.

PILOTE	DGEC
BUDGET	To be defined after the establishment of the indicator base
TIMETABLE	From 2026
INDICATOR	Number of local authorities carrying out the reporting

ACTION 3

From 2028, extend the environmental annex of local authorities to the Adaptation axis

[Article 191 of the Finance Law for 2024](#) introduces a new annex to the administrative account or the single financial account, known as the 'environmental annex of local authorities', in order to measure the impact of local budgets on the ecological transition.

This annex makes it possible to value the investment choices made by local authorities that have a positive impact on the environment and, thus, to facilitate ecological planning at

national level. From the financial year 2025 (accounts produced in 2026), the contribution to the ecological transition objectives is mandatory for all actual investment expenditure implemented, excluding capital repayments of borrowing years, main budgets and annexes applying budgetary and accounting instructions M4 and M57.

The green budgeting approach concerns local authorities with more than 3,500 inhabitants on the Mitigation axis, from 2025, and Biodiversity, from 2026. While the extension to the Adaptation axis in 2028 (on the 2027 accounts) is conditional on the related methodological resources being made available, it is necessary to start drawing them up in mid-2025 with a view to making them available by 2027 at the latest.

Indeed, the analysis of local authorities' expenditure in the light of the challenges of adaptation is desirable in several respects. On the one hand, it allows the local authority to take stock of the resilience of its public policies in the light of climate change. By raising awareness among the resource directorates and operational directorates of local authorities, it also allows them to integrate adaptation to financial trade-offs.

PILOTES	CGDD and DGFIP
BUDGET	No additional need
TIMETABLE	Methodological work to be initiated from mid-2025 and finalised by 2027, for an extension of the environmental annex to the Adaptation axis from 2028
INDICATOR	Target by 2027: Publication of the methodological resource



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MEASURE N°27

Taking greater account of adaptation to climate change into public funding for the ecological transition from 2024

CATEGORY OF THE MEASURE

2. Ensuring the resilience of territories, infrastructure and essential services

BACKGROUND

The objective of this measure is to guide existing tools available to local and regional authorities, in particular the contracts for the success of the ecological transition (CRTE), towards climate change adaptation actions, in particular through the use of the Green Fund. It complements, in particular, the measures relating to the setback of the coastline (measure 4 of the PNACC-3) and mountain tourism (measure 35 of the PNACC-3).

ACTIONS ALREADY UNDERTAKEN

In the context of the territorialisation of ecological planning, the CRTEs are, at the level of the living area, the privileged framework for multiannual support for projects by local actors contributing to the implementation of the ecological transition strategy adopted at regional level at the end of the 'Conferences of the Parties' (COP). This partnership method, which mobilises expertise, engineering and funding, creates the conditions to encourage and support project leaders in the integration of adaptation issues from the conception of projects and throughout their development. All public policies are concerned, including thematic programmes and plans such as the PNACC-3. The new method of the CRTEs consists in making this approach a real "project factory" with a high environmental ambition and this, on all public policies and all environmental issues, in particular on issues of adaptation to climate change. The new CRTE method involves, in particular:

- Regular "project reviews" between government departments to identify the most relevant financial and engineering support avenues to enable their rapid implementation with stronger environmental ambitions, including adaptation
- Redeployment of existing resources in support of the ecological transition
- Appropriate engineering resources

- Innovative support tools for the environmental improvement of projects such as the "Ecological Transition Compass" and the "My local authority Space" platform.

Announced on 27 August 2022, the Green Fund is an unprecedented mechanism to accelerate the ecological transition in the territories. In 2023 and 2024, the Green Fund allocated €3.6 billion to finance projects submitted by local and regional authorities and their public or private partners in three areas: environmental performance, adaptation to climate change and improvement of the living environment. The Green Fund continues its financial support for territorial projects with an endowment of €1.15 billion in 2025. With almost 2 000 projects in 2024, around 24% of projects representing 13% of the amount of projects accepted under the Green Fund in 2024 fall under its adaptation axis, which includes six sub-measures:

- Prevention of forest and vegetation fire risks
- Strengthening flood prevention
- Support for mountain communities facing emerging risks
- Renaturation of towns and villages
- Support for the adaptation of coastal areas to the decline of the coastline
- Reinforcement of the protection of buildings against cyclonic winds.

Support for engineering actions can also help to take adaptation into account and to place-based study of future trajectories.

The Energy Renovation of Buildings measure, which accounted for 43% of the amount of the Green Fund in 2024, has been integrating summer comfort and warmth comfort for overseas territories since 2024, as well as mixed school renovation and restoration operations, and is also helping to adapt territories.

NEW ACTIONS

1. Reinforcing the use of CRTEsto finance adaptation actions
2. Consolidate adaptation measures in the Green Fund and introduce aid conditionality for the consideration of the future climate

ACTION 1

Reinforcing the use of CRTEs for financing adaptation actions

Under the new CRTE method, project promoters and, on the State and operator side, the financial aid and engineering training services will ensure that adaptation issues are properly integrated into the CRTE project reviews. In particular, it will be necessary to ensure that all investments made by the State under the CRTEs meet criteria of resilience to future climate according to the reference warming trajectory for adaptation to climate change (TRACC). These criteria will be defined at national level to feed into the dialogue between the training services and the project promoters. They will be used, initially, to prioritise the financing of projects, then, in the long term, they will have to be respected in order for a project to benefit from State funding.

The project reviews will also be an opportunity to direct support needs to the interdepartmental engineering window, the hub of the various tenders, which can be redirected to the 'Adaptation Mission' (see measure 25 of the PNACC-3). The work of the territorial COPs, which can feed on those of the PNACC-3, will also contribute to the evolution of the CRTEs, both on the choice of projects selected and on the financial and engineering resources that will be mobilized to carry them out.

PILOTES	CGDD and ANCT
BUDGET	No additional need
TIMETABLE	2025
INDICATORS	- Number/share of CRTEs including actions for adaptation to climate change - Share of common law funding (DSIL, DETR) allocated to CRTE projects incorporating a future climate resilience criterion(s)

ACTION 2

Prioritise adaptation measures in the Green Fund and introduce aid conditionality for the consideration of the future climate

This is to ensure that a larger part of the Green Fund appropriations is used for adaptation, including in support of nature-based solutions projects, with the use of nature-friendly ecological engineering. Indeed, in 2024, there was little use of the Green Fund for actions under the climate change adaptation axis only. The success of the measure on the renaturation of towns and villages and of the renaturation projects associated with the renovation of schools attests to the strong interest of local authorities, which should be encouraged by taking into account the TRACC references.

In addition, the appropriations mobilised on the other axes must integrate more strongly the question of the future climate.

Under the PNACC-3, measures will be developed to better promote the Green Fund's adaptation actions among local authorities, complementing the relevant tools and benchmarks on climate change.

At national level, the allocation of funding in line with the actions provided for in the National Biodiversity Strategy will introduce criteria to ensure that the projects financed take into account the vulnerability of the project to climate change. Thus, climate issues (adaptation and mitigation) will be taken into account in the workbooks of project promoters and training services. The objective is the gradual introduction of aid conditionality, first by carrying out an analysis of aid intended to integrate the future climate according to the TRACC (from 2024) and then by updating the accompanying documents accordingly from 2025.

PILOTE	DGALN
BUDGET	Green Fund
TIMETABLE	Starting in 2024 and then every year when the accompanying workbooks are revised
INDICATORS	- Amount of the Green Fund in support of the PNACC-3 for axis 2 and summer comfort / thermal comfort for overseas France - Share of projects integrating the future climate on all projects supported by the Green Fund - Number of projects based on a professional certification "ecological engineering"



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MEASURE N°28

Ensuring continuity in school education and reception of young children in the context of global warming

CATEGORY OF THE MEASURE

**2. Ensuring the resilience
of territories,
infrastructure and
essential services**

BACKGROUND

The objective of this measure is to ensure the continuity of school education and early childhood care by identifying schools threatened by natural hazards or coastline retreat, by renovating buildings in favour of summer comfort, good ventilation of the premises and improvement of air quality, and by adjusting school activity in periods of high heat.

Heat reduces pupils' ability to concentrate and learn and can threaten their well-being or even their health for the youngest. The aim is to take advantage of school renovations to improve summer comfort for pupils and staff, as well as in crèches, with priority being given to the most vulnerable areas and places (priority education networks, urban policy priority areas, small municipalities, areas at high risk of heat waves, obsolete buildings, buildings with low thermal performance, etc.). These renovations also include the need to reduce drinking water consumption, particularly in areas at particular risk of shortages, and to improve ventilation and air quality systems. Solutions involving the renaturation of schoolyards should be preferred.

It is also necessary to make full use of the possibilities to adapt school rhythms and exams in the event of episodes of high heat.

ACTIONS ALREADY UNDERTAKEN

With regard to primary, middle and high schools

In June 2020, the **school building** unit of the General Secretariat of the Ministry of National Education made available on its website the guide 'Improving thermal comfort in school buildings during heat waves'. It is aimed at local and regional authorities and private owners of schools and schools, as well as their managers. It offers a range of best practices to improve thermal comfort in schools during heat waves.

The issue of summer comfort in schools was included in the energy renovation plan for schools announced on 5 September 2023 by the President of the Republic and included in the 20 measures of the action plan published by the Ministry of National Education in June 2023: 'The School, the first place for engaging in the green transition'.

In 2024, the Green Fund, aimed at supporting local authorities, was allocated €500 million to finance energy renovations of public schools. Since January 2024, it has been financing both energy renovation works aimed at saving 40% of energy and specific works dedicated to summer comfort (installation of external sun protection, renaturation of schoolyards). The Green Fund's specifications have been updated to include summer comfort.

The [Edu Renov renovation charter](#), published in September 2024 by the Bank of Territories (Banque des Territoires), provides clarity on criteria for project submission, particularly with regard to summer comfort.

In November 2023, the Ministry of National Education published a practical booklet entitled 'Bringing Nature into School', which focuses largely on the renaturation and greening of schoolyards.

In hot weather, decisions to **close schools** are taken at the local level, by decision of the prefectural authorities, on the basis of considerations specific to each establishment: local heatwave intensity, building performance and exposure, level of adaptation to heat events (greater adaptation in regions more accustomed to heat events), etc. As part of the national 'heatwaves' plan, a decision support tool for the closure of primary schools has been drawn up and is available in the departmental ORSEC (Organisation of civil security programme) guide S6: 'Specific provisions for health management during heat waves' – Directorate-General for Health – May 2021.

In addition, adjustments to the timetables are possible locally, such as starting classes earlier in the morning when it is still cool. New class schedules were tested in three schools in Montélimar (Drôme) in June 2024.

As far as exams are concerned, there is no local autonomy or adaptation: there is a legal framework in case of force majeure; it is at the national level, at the level of the Ministry of National Education, that the necessary decisions can be taken depending on the situation. In 2019, a one-off change in the timing of the national middle-school diploma (brevet) was decided to adapt to the ongoing heat wave. A reflection was then carried out at national level. This work has shown that changing the national school calendar is not the most appropriate lever to respond to that climate phenomenon. Heads of schools are also encouraged to anticipate the organisation of the tests on the basis of national recommendations (<https://www.education.gouv.fr/recommendations-to-directors-d-ecole-et-chefs-d-etablissement-pour-prevenir-les-effets-de-la-10454>), which are reminded of each year to the rectors, and to adapt them according to their constraints in order to ensure that the exams run smoothly.

As regards early childhood care

The **building reference system for crèches** (August 2021) provides for applicable measures on the subject of summer comfort. But it only concerns early childhood care institutions opened since 2022.

For existing establishments, operations promoting summer comfort and, more broadly, helping to adapt to the challenges of sustainable development are strongly encouraged and financially supported by the Family allowance fund (Caf). These operations may in particular take the form of works contributing to the deceilng and greening of outdoor courtyards, the development of natural shade (planting of trees, installation of a vegetated pergola) or promoting access to nature. New arrangements for financing the renovation of crèches in terms of energy performance and summer comfort entered into force in January 2024. An management agreement between the family branch and the State runs until 2027 and defines, in particular, the multiannual budgetary resources intended to support crèches in their adaptation to the challenges of sustainable development. The aid granted is increased if the works are part of an ambitious building renovation project, aimed at obtaining an eco-responsible label, the list of which can be communicated by the Caf and can be consulted on the [website caf.fr](https://www.caf.fr).

NEW ACTIONS

1. Accelerate the improvement of summer comfort in schools
2. Anticipate hot weather as part of pedagogical continuity plans
3. Identify at the level of each prefecture the schools that are particularly threatened by coastline retreat, rising waters, floods or other extreme climatic risks

ACTION 1

Accelerate the improvement of summer comfort in schools

1.1 - Create a resource centre for renovation project managers and develop a charter to provide clarity on the criteria of projects for summer comfort

For public schools, local and regional authorities can benefit from end-to-end support, from engineering to the co-financing of works, based on the diversity of actors involved in the school renovation plan: the Banque des Territoires *via* its EduRénov' programme, the ACTEE programme and its so-called Chêne fund, the State services *via* the allocations and the Green Fund. In this context, the creation of a resource centre will allow project promoters to have all the relevant documentation throughout their project. In particular, it will make available information on engineering and financing aid, guides to good practice, standard terms of reference and other recommendations, including on summer comfort.

1.2 - Promote renovation works improving summer comfort that are eligible for the Green Fund

As part of the school renovation plan, the implementation of summer comfort works, now eligible to the Green Fund, will be promoted in accordance with the requirements set out in the relevant specifications. The actions that can be supported are:

- the installation of external sunscreens on the windows;
- installation or replacement of ceiling fans;
- the installation of sun shields for the walls;
- Underfloor refreshment of interior spaces;

- Renaturation of school classes.

To be eligible, a project must include the installation of sun shields or external sun protection if no window protection is already installed.

This type of work makes it possible in the short term to significantly improve the comfort of children and staff, without contradicting an overall renovation of schools thereafter. The implementation of such works is the responsibility of local and regional authorities, which necessarily implies a decision on their part, including for requesting, where appropriate, funding from the Green Fund.

This operation will also promote the shading of buildings and schoolyards. Solutions involving renaturation should be preferred (debitumisation and greening of schoolyards, installation of shade areas, installation of water points in outdoor areas, etc.). Those can be supported through the Green Fund renaturation measure.

Apart from any renovation or laying-out work, summer comfort also depends, and this is essential for health, on the provision of drinking water terminals for pupils and staff.

1.3 - In the medium term, consider whether to introduce the obligation to have a refreshed room in schools or to open up the possibility of relocating courses to an existing cool place

The obligation to have a refreshed room in schools in the medium term, for new buildings and in case of total modernisation of ventilation systems, will be studied. In particular, this approach will have to be examined in partnership with associations of local and regional authorities and, where appropriate, requires the adoption of legal support for this obligation. This room would obviously not accommodate all the pupils and staff of the establishment and is not in a perspective of pedagogical continuity, but it could accommodate those who need it for a refreshing moment in the day. As an alternative to the requirement for a refreshed room, the possibility of mobilising an existing cool place capable of accommodating pupils and staff will be explored. This reflection will also have to take into account the respect of professional and medical secrecy if the wish was expressed that the room be reserved primarily for certain persons.

PILOTES	DGALN and SG of MENESR
BUDGET	1.1. No additional need 1.2. Estimated budget of up to 15% of the pre-identified envelope for schools as part of the Green Fund 1.3. To be defined
TIMETABLE	1.1. Last quarter 2024: Publication of the EduRénov' Charter including adaptation to climate change 2nd quarter 2025: Opening of the resource centre dedicated to the renovation and adaptation to climate change of schools for local and regional authorities 1.2. Second half of 2024: Launch of the promotion campaign on summer comfort works targeted to local and regional authorities 2024 - 2034: Renovation/arrangement of schools and establishments under the Green Fund 1.3. 2025: Launch of the reflection on the possibility of an obligation to set up refreshed rooms in connection with local and regional authorities From 2027: Gradual implementation of the obligation where applicable

INDICATORS	1.1. Number of Resource Centre users 1.2. - Number of schools globally renovated through the Green Fund while taking into account summer comfort or thermal comfort overseas - Number of schools and educational establishments that have benefited from at least one work items dedicated to summer comfort or thermal comfort overseas thanks to the Green Fund - Number of schools that have benefited from renaturation solutions under the Green Fund - Estimated number of pupils concerned 1.3. Launch of the reflection

ACTION 2

Anticipate hot weather as part of pedagogical continuity plans

On a daily basis, depending on the temperature conditions, teachers spontaneously change their teaching practices in case of high heat. Physical and sports activities are specifically subject to adjustment. Institutions will be encouraged to anticipate these periods by thinking about how to alleviate the impact of high heat.

Since the health crisis linked to the Covid-19 pandemic, schools must draw up a pedagogical continuity plan that applies to any situation requiring targeted collective measures to close or limit access to schools and establishments. Therefore, the plan already applies, in particular in the event of an episode of high heat which would lead to closing or restricting access to schools. It is proposed that this issue be brought to the attention of school heads and principals in particular through the distribution of a fact sheet which will gather the points of vigilance. This fact sheet will encourage the use of all existing possibilities to adapt school rhythms and exams, in the event of episodes of high heat.

As regards exams, every year, the rectorates will ensure, in liaison with the heads of establishments and with the local authorities, that the exam reception rooms are adapted in the event of high heat (maintaining a maximum indoor temperature level) and will identify suitable alternative rooms that could accommodate exams if necessary. The practical arrangements for the tests can be adapted on the basis of the national recommendations (<https://www.education.gouv.fr/recommendations-to-directors-d-ecole-et-chefs-d-etablissement-pour-prevenir-les-effets-de-la-10454>), which are reminded each year to the rectors and heads of institutions, and adapted according to their constraints to ensure that the exams run smoothly. In particular, instructions concerning the location of the test rooms, the ventilation of the rooms, the closing or opening of the windows early in the morning may be given to improve the conditions for the conduct of the tests.

In addition, the CESCEs (health, citizenship and environmental education committees), whose scope was extended by the Climate and Resilience Law of August 2021, could be mobilised to combine projects within the framework of the School promoting health programme and projects within the framework of education for sustainable development (food education, planning and greening of spaces, etc.) in order to better cope with heat, in particular by making the link with the One Health approach.

PILOTE	DGESCO
BUDGET	To be defined
TIMETABLE	2025: Dissemination of a fact sheet

INDICATOR	Dissemination of the fact sheet

ACTION 3

Identify at the level of each prefecture, in connection with the rectorates, schools that are particularly threatened by coastline retreat, rising waters, floods or other extreme climatic risks

For coastline retreat, schools particularly concerned are those located in the municipalities of the Decree-List of 10 June 2024 which lists the municipalities whose urban planning action and development policy must be adapted to hydro-sedimentary phenomena leading to coastal erosion.

With regard to floods and other extreme events, these issues are taken into account by the National Education Service in conjunction with local authorities, as part of the prevention and management of major risks:

- Development of special safety plans (PPMS), which are civil safety plans put in place since 2002 in schools in the event of a disaster alert, and made mandatory in all schools since 2015;
- Implementation of a unified PPMS in all schools before the start of the school year in September 2028, to deal in a single document with both major risks (natural and technological) and the risks of attack / intrusion (merging of the PPMS major risks and the PPMS intrusion attack by the circular of 8 June 2023, accompanied by a guide for school heads and school directors);
- Development of education on major risks: steering and provision of teaching resources at national level (<https://eduscol.education.fr/3691/eduquer-et-information-sur-les-risques-majeurs>) and relays in each rectorate by academic correspondents on major risks;
- In addition, dissemination of awareness-raising about life-saving skills and first aid training (<https://eduscol.education.fr/946/sensitisation-aux-gestes-qui-sauvent-et-formation-aux-premiers-secours>);
- Participation in the National Resilience Day "All Resilient to Risk", every year on October 13, since its national establishment in 2022.

PILOTES	Prefects
BUDGET	To be defined
TIMETABLE	To be defined, in connection with sheets 3 to 7
INDICATOR	Number of establishments identified



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3 Third French National Adaptation Plan

MEASURE N°29

Accompanying the impact of climate change on our health care system

CATEGORY OF THE MEASURE

**2. Ensuring the resilience
of territories,
infrastructure and
essential services**

BACKGROUND

The objective of this measure is to sustainably improve the health of the population by anticipating all the consequences of climate change on our health system, and proposing solutions to adapt it now and in a long-term vision. This work complements the work carried out under the national health strategy, which is currently being finalised, and the ecological planning of the health system. As climatic conditions change, there are more frequent and intense weather and climate events, including extreme heat, floods, droughts and forest fires. These weather and climate hazards affect health (including mental health), increasing the risk of death, non-communicable diseases, emergence and spread of infectious diseases, water- or food-related health emergencies.

Some **impacts of climate change on health are already visible** with an increase in the number of signals to be tackled:

- More heatwaves: necessary and ongoing adaptation of the follow-up of these episodes;
- More clusters/epidemics of arbovirolos in France;
- More drought phenomena, with direct impacts on the supply of drinking water to sensitive establishments and more generally to the population.

Climate change also has an impact on health workers, supply chains (energy, health products, etc.) and health infrastructure - an impact that is still poorly characterised and taken into account in public policies.

In its latest report, *State of Climate Services*, published on 2 November 2023 and focused on health, the World Meteorological Organization (WMO) states that "climate change threatens to wipe out decades of progress towards better health and well-being, especially among the most vulnerable communities.

ACTIONS ALREADY UNDERTAKEN

Reflections are under way, particularly in the context of the revision of the national health strategy and the ecological planning of the health system, to ensure the ecological transition of the health system.

NEW ACTIONS

1. Launch a prospective study on the consequences of climate change on our health system and identify the means and recommendations to adapt it and ensure the continuity of healthcare services throughout the territory
2. Plan adaptation within each health facility and territory

ACTION 1

Launch a prospective study on the consequences of climate change on our health system and identify the means and recommendations to adapt it and ensure the continuity of healthcare services throughout the territory

The measure aims to conduct a **prospective study** on the consequences of climate change on our health system and identify the means and recommendations to **adapt it and ensure the continuity of healthcare services** throughout the territory in the short, medium and long term.

This prospective study will take into account the **reference warming trajectory** for adaptation to climate change (TRACC) and should in particular:

- Address the issue of healthcare provision:
 - Training of health professionals to recognise and treat climate change-related diseases (prevention, adaptive measures) and enable them to adapt clinical management, advise patients and prevent complications in relation to these climate change challenges.
 - Possible adaptation of human resources (additional needs in certain medical specialties in particular).
 - Adaptation of the organisation of healthcare provision (e.g. working conditions of carers, way of receiving patients).
 - Continuity of supply chains of health products (including impact of climate change on pharmaceutical production), energy (in case of massive cooling, load shedding), water, food, linen, etc.
- Propose tools to carry out a comprehensive inventory of the building stock of the health, social and medico-social (ESMS) establishments in order to analyse the capacity of buildings to cope with the consequences of climate change: limiting the rise in temperature in buildings during heat waves, risk of flooding, disruption of drinking water supply, taking into account the health risks linked to the proliferation of bacteria, risks linked to damage to the

built environment, maintaining an energy resource for healthcare providers (electricity generators in the event of a cut-off), etc.

- Develop an indicator on health-promoting real estate and furniture investments with the best return on investment.
- Propose tools to organise feedback to monitor the adaptation of the ESMS building stock to climate change and have an estimate of the overall financing needs (including the adaptation of buildings to energy transition and decarbonisation).
- Outline terms of reference for the launch of a vulnerability study for health, social and medico-social facilities located in areas at risk of climate change.

The study will be able to draw on ongoing initiatives supported by the European Union (Life resystal) with vulnerability diagnoses drawn up for certain sites in France and will have to give an initial estimate of all the measures to be put in place over the entire duration of the PNACC-3 to adapt the health system to climate change. It should also identify concrete solutions to be implemented now, so as to prepare our health system for the upheavals identified in the short, medium and long term. A benchmark could usefully feed this work. The findings of this study will inform and guide the research and the consolidation of monitoring arrangements under measure 17 of the PNACC.

At the end of this prospective study, it is proposed to:

- Launch a **vulnerability study of health, social and medico-social facilities**, prioritising those that are most exposed to the risks of climate change and/or located in urban areas. 14,245 medical and social facilities should be targeted.
- Based on the findings of the vulnerability study, direct **the financial means** to support investments of health, social and medico-social institutions, in order to make their buildings more resilient to climate change.
- This funding must focus on improving thermal envelopes in order to guarantee nominal thermal comfort (summer and winter) while limiting the use of complementary thermal systems and energy consumption.
- In particular, the energy performance contracting scheme could be mobilised to improve the operation of buildings.

If renovation works are planned, the issue of summer comfort will be integrated, taking into account the TRACC.

The existing network of Health Energy and Ecological Transition Advisors (CTEES) will also be asked to identify actions that are simple and quick to implement.

PILOTES	DGOS, DGCS and DGS, with the support of DGEC and the National Performance Support Agency (ANAP)
BUDGET	Figures in progress
TIMETABLE	Prospective study launched after publication of PNACC-3. At the end of this reflection, launch of a vulnerability study, the conclusions of which will be submitted within six months.
INDICATOR	Release of the findings of the vulnerability study on the targeted establishments

ACTION 2

Plan adaptation within each health establishment and territory

A focus on adaptation of the health system to climate change should be integrated into regional health patterns or their orientations at the level of Regional Health Agencies (ARSs), building on the work carried out at national level under Action 1. This means identifying health and medico-social facilities and areas most at risk, and stepping up measures to prepare for and manage environmental risks.

At the level of the various groups and establishments, the aim is to include climate adaptation in the various projects (cooperation groups or establishment) by:

- Reinforcing knowledge of the environmental risks to which each structure is exposed on its territory, in connection with the Regional Health and Environment Plans.
- Specifying the diagnosis of the exposure to environmental risks of each structure and the actions carried out.
- Training/informing staff on the environmental risks to which the structure is globally exposed, and the right actions to be taken in the event of a crisis.

PILOTES	ARS and health and medico-social structures
BUDGET	Figures in progress
TIMETABLE	Work begins after the publication of PNACC-3, for a period of four years.
INDICATOR	Number of regional health schemes including a focus on climate change adaptation by 2029



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3 Third French National Adaptation Plan

MEASURE N°30

Ensuring the resilience of transport and mobility

CATEGORY OF THE MEASURE

**2. Ensuring the resilience
of territories,
infrastructure and
essential services**

BACKGROUND

The objective of this measure is to determine the vulnerability of our transport infrastructure and services to climate change, to draw up adaptation plans accordingly, and to update the technical standards for the design, operation and maintenance of transport infrastructure to anticipate the effects of climate change.

Recent climatic events have shown the extent of the consequences of the breakdown of transport routes in terms of traffic disruption but also reconstruction costs (Alex storms in 2020 and Aline storms in 2023 in the Roya and Vésubie valleys, floods on the A9 motorway in 2021, fires in Gironde in 2022, landslide in the Maurienne valley in 2023, floods in the Hauts de France between November 2023 and February 2024, etc.).

In recent years, heat waves have also shown the importance of addressing the issue of summer comfort in transport, both for users and staff, in a context where heat waves will become more frequent and intense with climate change.

Recent droughts have also shown the importance of monitoring the evolution of low water levels, which have an impact on navigation, but also more broadly on the services provided by water to other users via withdrawals (hydroelectricity, cooling of nuclear power plants, agriculture, drinking water, etc.). Waterway operators, through their role as water distributors, thus have a key role in monitoring water levels.

ACTIONS ALREADY UNDERTAKEN

Several **vulnerability studies** have already been carried out since 2018 in the transport sector, for all modes: [roads within the perimeter of the Interdepartmental Directorate of Roads \(DIR\) of the Mediterranean](#) (2018), the national rail network (2023), the department of Nièvre on the climate exposure of its road network (2020), railway axes (the [Seine axis](#) and the Languedoc arc), railway buildings (2023), the Paris suburb train (RER) and metro network by the public transport operator RATP (2019-2024, including an in-depth study on rain runoff conducted with the SNCF on the RER, Orlyval and the T2), [Grand Paris Express](#) (2021) by the Société des Grands Projets (SGP), the major seaports (Guadeloupe, [Bordeaux](#), La Réunion, Martinique, Dunkirk), on the stations of the national rail network, downstream part of the Seine (the banks of Suresnes, Chatou and Bougival, as part of the first national climate change adaptation plan), etc.

As regards **development projects¹, including in the transport sector**, since 2016 the Environmental Code (Article R. 122-5) requires to take into account as part of impact assessments 'the impact of the project on the climate and the vulnerability of the project to climate change'.

These projects and their studies can be consulted [on the dedicated website](#).

Other vulnerability studies have also been under way since 2023: a study of the vulnerability of the national road network, together with an estimate of the cost of inaction, was launched in September 2023, rail vulnerability studies are under way on axes (Nord and Dijon Modane high-speed lines), on maintenance centres or at regional level (Bretagne-Pays-de-la-Loire), several major seaports have launched vulnerability studies (La Rochelle, HAROPA, Nantes-Saint-Nazaire; as part of a regional study: Marseille). At territorial level, the [Provence-Alpes-Côte d'Azur region has also taken a resilience approach](#), involving all transport infrastructure managers of regional or national interest, as well as in the Ile-de-France region in the rail mode.

Recommendations and strategic guidelines on adaptation to climate change were also sent by the Ministry in charge of transport in March 2024 to each of the ten major seaports (GPM), concerning the framing of vulnerability studies to be launched or the necessary updates of past vulnerability studies (in particular to integrate the impacts of the reference warming trajectory for adaptation to climate change).

As regards the rail network, in February 2024 the Board of Directors of the national railway infrastructure company SNCF Réseau adopted a **climate change adaptation strategy** including a 2024-2026 roadmap, drawn up on the basis of vulnerability analyses and engineering work already carried out as well as internal and external feedback. A [strategic note on the adaptation of SNCF Réseau to climate change](#) was published in August 2024, accompanied by a [summary of the strategy](#) in September 2024.

For aerodromes, the Ministry of Transport has developed a methodology and a tool for analysing the vulnerability of metropolitan aerodromes. At the end of 2023, around seventy platforms asked the civil aviation technical service for access to the 'VULCLIM' tool, which allows them to visualise their vulnerability for each climate hazard/area or type of airport infrastructure.

Updating technical standards to take into account the impacts of climate change is essential for the success of transport adaptation. This subject has been identified since the first PNACC, with the review by Cerema of technical standards for the design, operation and maintenance of transport infrastructure (including standards and internal standards for certain managers,

¹ The list of projects concerned is set out in the table annexed to [Article R. 122-2 of the Environment Code](#).

e.g. SNCF Réseau). This led, in 2015, to a list of standards to adapt to climate change and led to a first action: the adaptation to climate change of the Road Remediation Technical Guide, which is ongoing.

To continue this work, at the road level, a steering committee for technical road doctrine (CoDoT) has been set up with all strata of road managers. The committee is led by the Ministry in charge of transport. In particular, twelve thematic groups of specialists (public and private road actors) have been set up, per area of expertise. The adaptation of road standards to climate change is part of the scope of these groups of specialists that have identified, qualified and prioritised standards with a climate parameter, which would require revision.

For guided transport, the standards to be modified, identified in 2015, are mainly international standards on which France has no power of direct modification. Their modification will take place gradually over the course of their reviews.

For ports, the 2015 list provided a basis for analysis for the identification of standards to adapt to climate change carried out in early 2024.

As far as the active modes are concerned, and more particularly on communication with users: work has begun to develop communication tools for cycle tourists on the reflexes to adopt in the face of climate risks. In particular, the cycling and walking network, in collaboration with the 'La Vélodyssée' route, produced posters and leaflets (project labelled National Resilience Day with the support of the Ministry of the Interior).

For other transport modes, the PNACC-3 will provide an opportunity to take up this work on the adaptation of technical standards more broadly, using the 2015 census as a basis for standards that are not obsolete.

As regards the airport sector, the regulatory framework covers three levels: International (ICAO), European (EASA), and national. Work has been carried out at ICAO level and is ongoing at EASA level (GT EN-ICCA). At national level, the civil aviation technical service is carrying out experiments to analyse the impact of warming on pavements in order to draw up new recommendations.

NEW ACTIONS

1. Draw up adaptation plans for transport infrastructure and services for operators and infrastructure managers
2. Adapt transport and mobility to climate change in the territories
3. Adapt public transport services to hot weather by making recommendations to the authorities organising mobility and possibly to operators
4. Set up a timetable for updating transport-related technical standards
5. Facilitate a network on adapting transport and mobility to climate change

ACTION 1

Draw up adaptation plans for transport infrastructure and services for operators and infrastructure managers

The action consists of developing adaptation plans based on vulnerability studies of all transport networks (see details below). To do so, the Reference Warming Trajectory for Adaptation to Climate Change (TRACC) will be used as a baseline scenario in future or ongoing

studies enabling it. For the structuring studies already carried out, the operators and infrastructure managers concerned (e.g. SNCF Réseau, SNCF Gares et Connexions, major seaports) will have to carry out at least a gap analysis between the assumptions chosen in the initial study and TRACC, in order to ensure consistency of their adaptation plan with TRACC. Adaptation plans will have to propose solutions to ensure the resilience of infrastructure according to service level scenarios to be determined.

For the national road network:

- Continuation of the vulnerability study of the entire licensed and unlicensed national road network (NRN) (including overseas). This study is based on the TRACC and is accompanied by a study on the cost of inaction on climate change (study launched in September 2023, results expected in 2025);
- Development of an action plan to adapt the unlicensed national road network to climate change on the basis of the results of the vulnerability study: the first results of the study may inform the preparation of the 2026 programming with:
 - the identification of priority sectors for in-depth studies
 - the identification of sectors where preventive work should be carried out as a matter of priority in response to the consequences of the natural risks already known.
- As regards the licensed network, it is part of the scope of the study since the motorway concession companies co-finance it at 40% (up to their linear on the NRN). It will be up to each concessionaire to carry out its own adaptation plan on the basis of the results of the study, subject to the provisions of the concession contracts.
- The methodological elements resulting from the vulnerability study of the NRN can be made known to the local authorities through the decentralised services of the Ministry.

For rail transport:

- **Adaptation of the rail network to climate change:**
 - SNCF Réseau's macroscopic vulnerability study is currently being updated according to TRACC. Several local studies are also underway, according to TRACC (Dijon-Modane link, Nord, Bretagne-Pays de la Loire high-speed lines). New needs for vulnerability studies may be identified to refine locally the results of the macroscopic study. These new vulnerability studies will be carried out using TRACC as a climate scenario;
 - The 2024-2026 roadmap on adaptation to climate change adopted by SNCF Réseau in August 2024 will be updated annually. The implementation of the nine priorities of the Roadmap will provide a detailed plan for adaptation to climate change. The identified adaptation actions cover both the adaptation of assets, maintenance and monitoring, operation and functionalities of the network.
 - In accordance with this roadmap, the topic of adaptation to climate change will be included in the next revision of the performance contract between the State and SNCF Réseau;
 - The human aspect, with the challenge of ensuring safety and health at work in a context of increasing bad weather, has been identified as a priority and is included in the programme's roadmap: it relates not only to the vulnerability of outdoor workers, but also to all employees with different angles of approach: journeys, personal protective equipment, work organisation, etc.
 - The costs of climate change and the necessary investments will also be further explored as part of the PNACC-3. The current observation is that the impact of climate change is mainly reflected through pressure on monitoring and maintenance costs linked to weather conditions and vegetation control. This last item represents, in 2024, 230 million euros of annual expenditure with a strong upward trend. The cost of weather-related claims is now between €19

million and €27 million per year. The company aims to refine these figures to come up with the most complete possible estimate of the current costs of bad weather, including indirect costs, notably through the construction of a cost-benefit assessment tool for adaptation actions. In order to avoid these rising costs, the priority identified is to increase investment in the regeneration of the rail network. In this context, SNCF Réseau will propose a detailed trajectory of investments contributing to climate change adaptation. Finally, in order to ensure the resilience of its investments, SNCF Réseau has also taken up the issue of their vulnerability: the analysis of the vulnerability of projects to natural hazards is already included in the impact assessments, and a review of the adaptation approach will be put in place on the occasion of the appearances before the National Committee on Investments and Commitments (CNIE) for all major projects. The 2024-2026 roadmap also provides for the creation of an internal 'for tomorrow' label for climate-resilient investments.

- **Adaptation of railway stations to climate change:**

- The national company responsible for train stations management, SNCF Gares & Connexions, developed a roadmap for adapting stations to climate change in 2024, based on vulnerability study of stations carried out in 2023 (3,000 stations) and on the analysis of the strategic criticality of its assets. The roadmap will be detailed by the end of 2025. This plan incorporates a six-pronged 2025-2030 roadmap, which covers the adaptation of assets, maintenance and operation:
 - Analysis: continue to invest in knowledge of current and future climate impacts on stations
 - Awareness-raising: develop and implement an awareness plan to train staff on the subject
 - Tools: develop and make available resources dedicated to the adaptation of stations to climate change to operational teams (e.g. a catalogue of adaptation solutions)
 - Implementation: programme and conduct adaptation work, in particular by analysing the multi-annual programming of investments to identify projects with high adaptation stakes
 - Funding: Programming and financing the necessary CAPEX/OPEX trajectory
 - Governance: Establishment of national-to-local governance to steer the adaptation of stations.
- Adaptation to climate change will be included in the next revision of the performance contract between the State and SNCF Gares & Connexions.

- **Adaptation of the rail transport service to climate change:**

- Adaptation plans can gradually be put in place by carriers, both on strategic assets and on operating processes. In particular, SNCF Voyageurs will share the axes and measures of its adaptation plan at the end of 2025.
- Work has been initiated by the SNCF group to measure the costs and gains associated with efforts to adapt the rail system to climate change. The objective is to assess the interdependencies between the different assets and entities of the group, the functional impacts on rail traffic, on a restricted rail perimeter with high vulnerabilities, in order to draw a balance sheet of the financial and socio-economic losses and gains that could result from these vulnerabilities, service scenarios and investment choices. The results of this work are expected to be available by the end of 2025.

Adaptation of guided transport:

- **Public industrial and commercial establishment (EPIC) RATP:**

- Update of the physical vulnerability study already carried out by RATP Infrastructures in-house on an experts' judgment basis, to integrate the new TRACC data and identify existing or to be developed solutions to mitigate climate impacts on network components. The results, expected in Q2 2025, will complement previous vulnerability studies conducted on suburban trains RER A, RER B, Orlyval and Tram T2.
 - A systemic climate resilience diagnosis according to TRACC will assess the impact of climate change on business, value chain, supply chains and employees. The results are expected by the end of 2025.
 - A second cross-sectional vulnerability study by 2030, 2050 and 2100, based on the 'ASAIT' method, developed by Cerema and data from Météo-France at the French level, will be available by September 2025.
 - Based on these studies, RATP will produce an adaptation plan by the end of 2025 covering both the adaptation of the RATP network and the operation of the company to address climate change.
 - The analysis of the vulnerability of investments will be dealt in depth by RATP, in the impact studies but also by strengthening the CSR sheet required for projects over €15 million, which must already include an assessment of exposure to climate change and makes it possible to calibrate investments on assets exposed to climate change according to various criteria: lifetime, maintainability over time, impact on operation (railway safety).
- **Société des Grands Projets (SGP):** The Société des Grands Projets (SGP) identified points of vulnerability on the Grand Paris Express (GPE) in a study conducted in 2021, which made it possible to implement first actions. Beyond this study, the SGP also worked on adaptation through the integration of summer comfort elements in the design of its rolling stock, the plan for the environmental reinforcement of station squares put in place in 2023 to limit the risks of urban heat islands, the update of the flooding strategy (which aims to apply to the extension of line 18 as a first step, since the design, or even construction, are already finalised for most of the GPE). Finally, adaptation to climate change will be included in the new GSP calls for tender from 2025 onwards, systematically requiring climate change vulnerability studies to be carried out as part of the new projects. In addition, projects of new suburb trains in agglomerations other than Paris (SERMs) that are accompanied by the GSP will have to integrate a climate change vulnerability study in the same way as all SERMs (see sub-action 1). The GSP must finalise an adaptation roadmap by the end of 2025, including all adaptation actions already under way or carried out.
- **With regard to other guided transport networks in the territories,** the identification proposed in Action 2 will improve the state of knowledge on their maturity with regard to climate change adaptation.

For ports:

Continuation of the ongoing vulnerability studies or updating of the vulnerability study of each major seaport (GPM), in accordance with the guidance notes sent by the General-Directorate for Infrastructure, transport and mobility (DGITM) in March 2024; five GPMs have already consolidated data (Bordeaux, La Rochelle, Guadeloupe, Réunion and Martinique), three studies are expected soon (Nantes-Saint-Nazaire, Dunkirk and Guyana) and two studies are announced for 2025 (Haropa, Marseille).

- For each GPM, inclusion of a climate change adaptation component in the next update of its strategic project and presentation of the adaptation approach within the governance bodies;
- Integration of climate change adaptation issues into the flagship guidelines of the update of the national port strategy at the beginning of 2025, which is addressed to all actors in the port system (large seaports, decentralised ports, port authorities, etc.).

For inland waterways:

- Inland waterways of France (VNF):
 - VNF will implement the study programme drawn up at the end of 2024, integrating the vulnerability of inland waterway infrastructure (excluding the Seine Nord Europe Canal), inland waterway services (ecosystem services for biodiversity, regulation of water levels, optimisation of abstractions, transport), maintenance and operating equipment. The study programme provides for the inventory and analysis of data on more than 16 topics (e.g.: infrastructure, feedback from climate events), as well as the mobilisation of technical expertise on more than 15 topics. The inventories identified in the study programme aim to provide a synthesis and place-based view of the data, indicating any gaps in data and/or their degree of reliability of knowledge. These inventories will feed into vulnerability studies since risk assessments will be carried out on each family of heritage objects. The identified expertise aims to qualify with more precision hazards and impacts that are specific to certain heritage objects in order to feed the risk assessments of vulnerability studies, in particular for the definition of impact grids.
 - A mapping of VNF investments to strengthen infrastructure resilience is also planned.
 - This comprehensive and ambitious curriculum was developed with DGITM and shared with the General-Directorate for land-planning, housing and nature (DGALN) and the General-Directorate for Risk Prevention (DGPR). DGITM and DGALN will participate in the quarterly steering committees. The analysis methodology for vulnerability studies will be that of Cerema (ASAIT method), which will provide project management assistance throughout the duration of the studies. The studies will be based on TRACC as a working hypothesis for climate parameters, so the progress of the studies will depend on the availability of data produced under the Explore 2 study on the future of water;
 - The adaptation plans that will be proposed following these studies will be territorialised at the scale of major hydrographic basins and routes as defined in VNF's Objective and Performance Contract. They will include an investment component, adaptations of the institution's internal organisation methods and the human dimension (awareness-raising, upgrading of skills, analysis of the working conditions of staff in degraded climatic conditions);
 - Adaptation to climate change has indeed been taken into account in the 2023-2032 Objective and Performance Contract between the State and VNF and will be completed in terms of objectives at the next three-yearly update;
 - The proposed adaptation plans will be complementary to the investments and maintenance programmes already planned by the institution under the Multiannual Investment Plan. An implementation deadline will be proposed for each of the actions;
 - Given the time needed to study and consult external providers for the implementation of the entire programme, the place-based adaptation plans will be delivered by the end of 2026. A formalised progress report will be sent to the services at the end of 2025.
- **Compagnie Nationale du Rhône** (national company in charge of navigability on the Rhône river): Compagnie Nationale du Rhône is to develop a vulnerability study methodology for the first quarter of 2025. The resulting adaptation plan will focus on energy issues and will be steered by the General-Directorate for Energy and Climate (DGEC), but navigation aspects will also be integrated, with the involvement of the DGITM.
- **Other managers of inland waterways in the public domain:**
 - Inland waterways managed by the GPMs: these routes fall within the scope of port vulnerability studies (see "Ports")

- Decentralised inland waterways: these waterways, which are small in size, mainly raise a hydraulic management issue, particularly in the event of flood events or low water levels. They will therefore have to be integrated into adaptation measures linked to territorial water management.

For active modes:

- **Managing and adapting cycle routes to climatic hazards:** cycling mobility is also vulnerable to climatic hazards, as evidenced by the closure of several sections of the French part of [EuroVelo 1](#) connecting Roscoff to Hendaye, impacted by the fires of summer 2022. The association Vélo & Territoires is experimenting with a climate risk prevention and crisis management system on cycle tourism routes. The aim is to design, draft and disseminate a set of good practices to anticipate the risks associated with climate hazards and prepare the appropriate responses.
- This measure will be complemented, in the [National Strategy for Cycling Tourism](#), by Measure 1, the objective of which is to draw up a white paper on the adaptation of cycle tourism routes and practices to climate change. On the basis of an assessment of the exposure to climate risks and the impact that these risks may have on a cycle path, the aim will be both to support the regions in the reflections and investments to be made, both in terms of the infrastructure and facilities to be provided, the services to be offered and the implementation of awareness-raising measures or communication plans.
- As far as **cycling infrastructure in general** is concerned, its challenges will have to be integrated when the roads supporting it are being adapted.

For aerodromes, the operators of the following airports will submit, in 2025, a climate risk assessment according to TRACC and a draft quantified action plan including an initial estimate of the costs to be incurred: Aéroports de Paris, Aéroports de la Côte d’Azur, Lyon Saint-Exupéry, Bordeaux-Mérignac, Réunion Roland Garros, Guadeloupe-Maryse Condé, Martinique Aimé Césaire, Strasbourg-Entzheim, Montpellier-Méditerranée, Marseille-Provence and Toulouse-Blagnac. Detailed climate change adaptation plans with precise and quantified adaptation proposals are expected by the end of 2025. When airport concessions are renewed, the obligation to carry out a vulnerability study will be introduced in the contracts.

For the aviation sector, it will be necessary to launch a reflection at international level to ensure the continuity of services and operators under the conditions laid down in TRACC and consistency with the international safety requirements imposed on aviation.

PILOTES	DGITM and DGAC, infrastructure managers, operators, local authorities
BUDGET	The cost of vulnerability studies will be borne by each contracting authority, i.e. operators for their networks and infrastructure (rail network, major seaports, inland waterways, motorways) and the State for the unlicensed national road network. After submission of the vulnerability studies and associated adaptation options, the financial needs to carry out the adaptation actions will be assessed.

TIMETABLE

National road network:

- **2025:** Results of the vulnerability study of the national road network
- **2026:** Production of the action programme for the national road network; before that date, the first results of the study could inform the preparation of the 2026 programming with the identification of priority sectors where to conduct in-depth studies from 2026 and sectors where to carry out priority preventive work in response to the consequences of the natural risks already known.

Rail transport:

- **End of 2025:** Update of SNCF Réseau's roadmap on adaptation to climate change (including additional costing elements); Details of SNCF Gares & Connexions sheet; SNCF Voyageurs adaptation plan; Results of the SNCF Group study on the adaptation of the rail system to climate change
- **From 2024:** Discussion between the State, SNCF Réseau and SNCF Gares & Connexions on the inclusion of a climate change adaptation planning objective in the next performance contract

Guided transport networks:

- **End of 2025:** RATP Adaptation Plan covering both the adaptation of the RATP network and the operation of the company to address climate change
- **End of 2025:** Consolidated GSP Adaptation Plan

Ports:

- **2024-2026 :** Update of the strategic projects of the major seaports, with an adaptation component, in line with the guidance notes sent by the DGITM to the major seaports in March 2024. It should be noted that five GPMs already have consolidated data (Bordeaux, La Rochelle, Guadeloupe, La Réunion and Martinique), three studies are expected soon (Nantes-Saint-Nazaire, Dunkirk and Guyana) and two studies are announced for 2025 (Haropa, Marseille).
- **Early 2025:** Mainstreaming climate change adaptation challenges in the flagship orientations of the update of the national port strategy in early 2025

Inland waterways:

- **End of 2025:** State of play of VNF in the implementation of its study programme
- **2026:** Results of VNF vulnerability studies, with a focus on each catchment area, from which an adaptation action plan with a territorial variation will follow.

Aerodromes:

- **2025 :** Climate vulnerability study for listed airports
- **End of 2025:** Detailed adaptation plans for listed airports

INDICATORS	- Conducting a national risk assessment by mode/actor - Drafting a roadmap of actions by mode/actor - Levels of progress in implementing roadmap actions by mode/actor (indicator to be specified on a case-by-case basis depending on the content of the roadmaps)

ACTION 2

Adaptation of transport and mobility to climate change in the territories

Building on the framework provided in the adaptation component of the territorialisation of ecological planning through the local COPs, the mobility organising authorities (AOMs), in particular the Regions, are encouraged to continue the process of identifying and reducing the vulnerability of their territories, in particular their transport systems (infrastructure and services, passengers and goods).

To do this, it is recommended to **start by identifying ongoing or planned adaptation actions by AOMs, infrastructure managers or territorial operators.**

A non-exhaustive list of actions that could be identified is provided below:

- Vulnerability studies in progress/conducted;
- Carrying out internal awareness-raising/training activities on the subject of adaptation;
- Existence of a post dedicated to the theme (full-time or part-time), an internal working group (where appropriate, clarification of its mandate and outputs), consideration of the theme "adaptation of infrastructures" in strategic documents of the manager (management document, planning document according to the managers);
- Climate-resilient urban development;
- Renovation of rolling stock;
- Specific budget dedicated to the adaptation or evolution of budgetary operations to take into account the adaptation (e.g. increase in the number or frequency of maintenance operations);
- Connecting technicians and climatologists/meteorologists, in order to develop knowledge and connect scientific research and technical application (vocabulary, data exchange);
- Use of climate data collected to improve knowledge of the links between meteorological elements and malfunctions.

The actor in charge of implementing each action identified could also propose an assessment of its relevance , as well as areas for improvement.

Thereafter, the census may give rise to a debate at territorial level on how **to structure the adaptation of transport to climate change in the territory**, with a view to answering in particular the following questions:

- What additional measures should be put in place to adapt transport infrastructure and services on the territory? In particular, which of the actions on the list that are not implemented would be the most relevant? (See for example the multimodal vulnerability study of the Provence-Alpes-Côte d'Azur region below)
- What adaptation governance should be put in place in the transport sector at territorial level? A relevant example is the model of the Provence-Alpes-Côte-D'azur region, a multi-partner approach *via* a charter whereby the stakeholders undertake to work together on the subject of adaptation, specifying joint actions such as cooperation in the context of a vulnerability study.

This governance should facilitate the analysis of vulnerabilities of territorial transport systems. The objectives of PNACC-3 are as follows:

- **For the regions:**
 - Continue to support the experimental approach of the Provence-Alpes-Côte d'Azur region, launched in 2023, around the resilience of its transport system (roads, railways, inland waterways, ports, airports). This includes **a study of the vulnerability of transport infrastructure and the development of an action plan, with the ambition of adopting a unified plan for all regional transport infrastructure managers**. This should be completed in the second half of 2025;
 - Facilitate and encourage each Region to undertake such a study, on the model of the Provence-Alpes-Côte-D'azur Region's approach, adapted to the local context of each territory and based on the feedback gathered over time on the study of the Provence-Alpes-Côte-D'azur Region. The timetable for the seventeen regions is to be defined, but the aim is for the first ones to take action do it in 2025. The [Île-de-France Region](#) has already initiated a multi-partner vulnerability study, focusing on the rail mode, with a governance model similar to that of the Provence-Alpes-Côte-D'azur Region. The DGITM will follow this study over the duration of the PNACC, in particular by participating in the steering committee.
 - In the territorial studies that will be launched, it is necessary to get closer to the various local managers, as has been done at regional or departmental level in order to bring all the relevant stakeholders within the geographical scope of the study.
- **For public institutions for inter-municipal cooperation (EPCI):** at the level of the EPCIs, it is proposed to target a specific point on transport infrastructure and services in the vulnerability study of the territorial climate-air-energy plan (PCAET); this point must be consistent with the actions carried out at the level of the EPCIs in the context of the territorial COPs.

In addition, for **metropolitan regional express services (SERMs)**, an adaptation issue note is required for the granting of SERM status. In addition, studies of SERM projects will include a functional vulnerability assessment on corridors supporting mass transit services. The support document for the preparation of the SERMs, sent in April 2024, recalls the need to conduct this study and its expectations. The vulnerability study of each SERM will be co-led by the Region and the metropolis and co-financed by the State. In order to equip SERM project leaders in carrying out these studies, Cerema was entrusted with the drafting of a methodological guide to the ASAIT methodology for SERMs, with the aim of publishing it in the first quarter of 2025.

PILOTE	DGITM
BUDGET	Estimating the cost of a study at €600,000 for the remaining 17 regions and 26 SERM projects ² , the necessary budget for the mobility organising authorities would be €25.8 million.

² Number of SERMs certified in February 2025

TIMETABLE	Communities: • The vulnerability study of the transport system of the Provence-Alpes-Côte d’Azur region will provide its first results in 2024 and its final results in the second half of 2025. The deployment of the same type of approach in other regions can therefore be envisaged from 2025 onwards, depending on the gradual feedback; • At the level of the EPCIs, the inclusion of a transport component in the vulnerability studies prior to the PCAETs will take place during the update of the PCAET decree scheduled for 2025; • SERMs must provide a methodological note on adaptation with a view to obtaining their status; Methodological guide to the ASAIT methodology for SERMs by Cerema, published in Q1 2025.
INDICATORS	- Number of mobility organising authorities that have carried out a mapping of adaptation actions in their territory - Number of Regions with governance in place for transport adaptation to climate change - Number of Regions that have launched a multimodal vulnerability study - Number of SERM vulnerability studies carried out

ACTION 3

Adapt public transport services to hot weather

In order to ensure a coherent adaptation of rolling stock throughout the territory, the DGITM will develop a decision support guide for OMAs, to help them adapt their transport services (including their rolling stock) to climate change, *via* recommendations. The aim of the approach is to establish a public benchmark for thermal comfort. The construction of this guide is based on a working group set up in 2024 by the DGITM and involving the Union of Public and Rail Transport (UTPF), the Groupe of Authorities in charge of Transport (GART), the National Federation of Passenger Transport (FNTV), the central purchasing body for public transport (CATP) as well as around 20 voluntary authorities organising mobility and transport operators. In addition to drawing up the guide, this working group also provides a forum for mobility authorities, transport operators and their representatives to discuss issues relating to the adaptation of rolling stock to hot weather and possible solutions.

Further work by the working group may take into account new hazards, in particular climatic ones, in order to enrich the recommendations.

The guide for organising authorities will include a number of recommendations relating in particular to:

- The inclusion of **summer comfort requirements for rolling stock in the specifications of the AOMs**, so that summer comfort is guaranteed when the equipment is renewed (for example, new railway equipment is designed for a period of at least 40 years). These requirements, which may be adapted to the local context, must, in particular, define:
 - The set temperature in the passenger compartment. This includes reconciling passenger comfort, the technical constraints of rolling stock and our energy-efficiency objectives. Indeed, in addition to the energy consumption generated by air conditioning, choosing a temperature setpoint that is too demanding can lead to

oversoliciting air conditioning equipment in the event of extreme heat, and to exposing it to a greater risk of breakdown;

- The technical solutions to be used to meet these requirements. This includes encouraging the use of passive methods to limit the need for air conditioning (e.g. filters on windows reducing UV warming or athermic paints). Depending on the progress of ongoing experiments by operators, recommendations on the characteristics of air conditioning or for maintenance operations may be made.
- the inclusion in the AOM specifications of **summer comfort requirements relating to waiting areas for users or places where rolling stock is parked**, for example by providing shades at bus stops or stations to prevent equipment from overheating;
- **Increasing users' awareness of summer comfort issues and providing support to all audiences during periods of high heat** (e.g.: nudge communication campaign, locking windows when a refresher is activated).

This guide will take into account both the climatic conditions per territory, the diverse needs of users and the constraints related to available technologies and sobriety requirements (including to preserve autonomy, in the case of electric buses and coaches).

The guide will provide a set of recommendations for local authorities in general, and should be taken into account in the case of SERMs in particular.

PILOTE	DGITM
BUDGET	A communication budget may be defined in order to disseminate the decision support guide to the actors concerned (OMA, operators).
TIMETABLE	July 2024: Launch of a working group to develop the roadmap and investigations with operators and manufacturers 1st quarter 2025: Co-writing of the guide by the members of the working group 2nd quarter 2025: Publication and dissemination of the guide
INDICATOR	Production, publication and dissemination of a guide on the adaptation of public transport services

ACTION 4

Set up a timetable for updating transport-related technical standards

In the road sector, future work will be structured as follows:

- Adaptation of the five standards identified by the steering committee of the technical road doctrine (CoDoT) as to be modified as a matter of priority. These standards are:
 - Road sanitation (Technical guide to road sanitation, Cerema guide): specifications relating to the sizing of hydraulic structures to their resilience in the context of climate change – 2025/2026
 - Dimensioning of pavements (French standard):
 - Freezing of roadway structures (2025)
 - Impact of temperature changes on structural design assumptions (2025/2027)
 - Winter sustainability (Cerema Guide): Impact of change on HV policies 2025/2026

- Rocky hazards: National project C2ROP (axis "Areas in a context of climate change") 2025/2026
- Gantries, stems and high masts (PPHM) and engineering works: expertise prior to a resumption of the benchmarks (guide, standard) based on post-storm Ciaran findings and the results of vulnerability studies.
- For the other standards, their identification and updating will be monitored as part of the CoDoT twice a year. This system will make it possible to integrate all the new evolutionary needs that will be identified during the vulnerability studies.

In the railway sector:

- For railway infrastructure, managers will use their already existing internal organisation to update the technical standards, while carrying out regular points with the State to check that their work is consistent with national objectives.
 - In particular, SNCF Réseau already has expert committees working on the revision of its internal technical standards that will integrate, according to the state of technical knowledge, climate change adaptation issues over the period of the PNACC-3. In addition, SNCF Réseau's roadmap on adaptation to climate change includes updating the technical standards: In particular, it is planned to translate the TRACC into a national reference system integrated into the SNCF Réseau reference system, to update the technical reference systems to strengthen the resilient eco-design of components and to work with the railway sector on the issue of component resilience. An identification of the most priority standards to be revised should be carried out in 2025;
 - For its part, SNCF Gares & Connexions plans to integrate adaptation issues into its internal standards and processes between 2025 and 2027, as does SNCF Immobilier. It should be noted that SNCF Gares & Connexions is also subject to national and European standards related to the construction sector, which will also have to evolve;
- As regards railway rolling stock, work may be carried out with foreign partners on the issue of adaptation standards at European or international level, in particular in the context of opening up to competition and the risk posed by the circulation on national territory of rolling stock unsuitable for climate change. It should be noted that SNCF Voyageurs and Rail Logistics Europe are already involved in the work on the development of European standards concerning the adaptation of rolling stock in consultation with manufacturers.

In the port sector:

- As regards the regulations applying to ports (Transport Code), an analysis carried out by the DGITM concluded that no text mentions climate data;
- As regards the technical standards, the actions identified are as follows:
 - Involvement of Cerema in the drafting or revision of Eurocodes and their French transcriptions, in particular: *NF EN 1991-1-4 general actions – wind action* and *NF EN 1991-1-5 general actions – thermal actions*, under revision, as well as *EN 1991-1-8: Swell and current actions on coastal structures*, under development. In particular, the French mirror group for the EN 1991-1-8 project was relaunched. Standard *NF EN 1991-1-3 general actions – snow loads* under revision and already identified in 2015 as having to adapt to climate change is also important for ports and inland waterways but less specific because it concerns all transport infrastructure;
 - At the French level, update of the "actions" booklet of ROSA 2000 (Recommendations for the calculation of limit states of works in aquatic sites). This should also be complemented by a methodology for obtaining the representative values of actions taking into account climate change (which in fact are place-based). This would require mobilising the providers of data and projections on sea states, water heights and winds;
 - In the absence of progress in European work, the experimental standard *XP CEN/TS 17440 - Evaluation and renovation of existing structures* should be continued and

translated into port and river areas. This will provide the keys to re-engineering existing structures in the face of climate change;

- With regard to specific or sectoral thematic works, the theme of adaptation to climate change should be integrated over time into the revision/update of the technical reference frameworks to which Cerema is a party, in particular for the guide on maritime mooring (Cerema guide) and the international guide on dykes (of which Cerema, INRAE and the State are stakeholders), which will be updated following the new INRAE hydrological projections.

In the inland waterway sector:

- Some of the river technical standards are common to the port standards which should be revised by Cerema, in particular the experimental standard *XP CEN/TS 17440* and the international guide on dykes;
- As the inland waterway sector by nature brings together several types of actors, other standards of a varied nature are also applicable: Transport Code, Environmental Code and Energy Code. Therefore, it seems more appropriate to integrate inland waterway transport into a sectoral approach to the adaptation of river technical standards, not limited to transport and taking into account factors other than navigation (protection of populations against floods, vital water supplies, flows reserved for the safeguarding of biodiversity and ecological continuity, energy production, etc.). With regard to the standards specific to inland waterways, each operator has its own technical standards, which constitutes a heterogeneous corpus between the various network operators. It will therefore be up to each of the managers to review their own benchmarks to identify those that need to be adapted to climate change and update them. This review will be based on the inland waterway classification order, currently being drawn up by the DGITM and Cerema, with a target of publication in 2025. It will be applicable to the entire navigable network, irrespective of the operator, on the basis of the characteristics of the various existing gauges.

PILOTE	DGITM
BUDGET	The means of the Cerema-DGITM annual study agreements for updating the Cerema standards.
TIMETABLE	• Road reference systems: - Papers relating to the sizing of hydraulic structures to their resilience in the context of climate change: 2025/2026 - Freezing of roadway structures: 2025 - Impact of temperature changes on structural design assumptions: 2025/2027 - Impact of change on winter sustainability policies: 2025/2026 - National C2ROP project on rock risk (axis 'Aleas in a context of climate change'): 2025/2026 - Gantries, stems and high masts (PPHM) and engineering works: expertise prior to a resumption of the benchmarks (guide, standard) based on post-storm Ciaran findings and the results of vulnerability studies to be developed from 2025 - For the other benchmarks, their identification and updating will be monitored as the CoDoT progresses twice a year; • Railway benchmarks: - Identification of priority benchmarks by SNCF Réseau in 2025

	- Adaptation of SNCF Gares & standards; Connections: 2025/2027 • Port benchmarks: - The timetable for drawing up and revising the Eurocodes and their French transcriptions is not consolidated at this stage; - The technical guide on maritime mooring should be published for the first half of the implementation period of the PNACC 3; - The update of the international guide on dykes will take place after the publication of the new INRAE projections scheduled for the 2nd quarter of 2025; - As regards the other technical standards, they will be updated over the period covered by the PNACC-3 and the timescales identified are as follows: • Revision of ROSA 2000 and development of a methodology for obtaining representative values for actions taking account of climate change: one to two years from the initiation of the update; • Continuation and translation to port and river areas of experimental standard <i>XP CEN/TS 17440 - Evaluation and renovation of existing structures</i>: two years from the initiation of the update; • Benchmarks applicable to inland waterways: objective of publishing a decree on the classification of inland waterways in 2025, on which the update of the technical reference standards specific to inland waterways can be based
INDICATORS	- Setting a timeline for updating the priority standards for each mode - Qualitative indicator of progress of the timetable (to be specified according to the timetables defined)

ACTION 5

Facilitate a network on adapting transport and mobility to climate change

The DGITM will lead a working group (WG), initially with infrastructure managers involved in adapting to climate change, with the aim of sharing experience, pooling knowledge and harmonising practices, identifying synergies and common problems. The following topics could be examined in more detail (non-exhaustive list):

- Need for climate data and indicators aligned with TRACC (linked to Météo-France);
- Methods for assessing the costs and benefits of adaptation actions;
- Vulnerability assessment methodology (in particular functional vulnerability of transport infrastructure)
- Methodology for prioritising adaptation actions.

In order to benefit both from the various vulnerability studies initiated on the territory and from the dynamics of launching the PNACC, the objective is to start this action before the summer of 2025.

In addition, this action will facilitate dialogue between mobility authorities and transport service operators. To this end, in the continuity of Action 3, exchanges may be extended to other themes than adaptation to hot weather in order to mobilise OMAs and operators more broadly on the resilience of transport services. In addition to analysing the impact of hazards other than heat on rolling stock (e.g. sharing best practices on the prevention of infiltration), exchanges should, more generally, help AOMs and operators to work together on adapting their transport services to climate change. In particular, these exchanges will deepen the issue of responsibility sharing between OMAs and operators on climate change adaptation. The work may cover:

- Arrangements for the Organising Authority to take early account of the adaptation (integration in the design of maintenance facilities, in the purchase and renovation of rolling stock, etc.)
- The mechanisms put in place by the operator to demonstrate its preparedness and responsiveness to climate challenges.

Finally, the DGITM will organise an annual seminar on climate change adaptation of transport and mobility, open to all transport actors involved in climate change adaptation (infrastructure managers, transport service operators, mobility organising authorities), inviting international or national experts (Météo-France, Cerema, BRGM, etc.). The aim is to make the most of the adaptation approaches that have already been launched and to encourage other actors to launch a similar approach.

PILOTE	DGITM
BUDGET	Existing resources for network animation and an annual event will be mobilised.
TIMETABLE	WG with infrastructure managers: Q1 2025 (post-publication of PNACC-3) WG with AOMs and operators: already launched in 2024, will be continued Seminar on adaptation to climate change: from the end of 2025, to capitalise on vulnerability studies carried out and associated adaptation plans
INDICATORS	- Launch of a Working Group (WG) on adaptation with transport infrastructure managers - Indicator relating to the production of deliverables by the WG of infrastructure managers (to be defined after the establishment of the WG) and the implementation of the guidelines concluded in WG - Indicator relating to the production of deliverables by the WG with operators and mobility organising authorities, and the implementation of guidelines concluded in WG - Organisation of one seminar per year open to all transport stakeholders involved in climate change adaptation



GOVERNEMENT

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PNACC

3 Third French National Adaptation Plan

MEASUREME N°31

Ensuring the resilience of the energy system

CATEGORY OF THE MEASURE

2. Ensuring the resilience of territories, infrastructure and essential services

BACKGROUND

The objective of this measure is to put in place actions to ensure the resilience of the energy system as a whole. The main effects of climate change on each component of the energy system are described below.

Oil and gas systems:

The International Energy Agency examined the effects of climate change on oil and gas supply in its latest 'Climate resilience for energy security' report of November 2022. It discusses the effects of sea level rise and tropical cyclone intensification on coastal refineries, forest fire risks for refineries, and the effects of droughts on shale production. However, this analysis does not include the effects of climate change on transport routes.

The pipelines are designed to operate over a wide range of temperatures, far above what could happen with global warming. The main climate change phenomena that can affect oil and gas pipelines are the increased frequency of flooding and associated land movements.

Fuels are also supplied by river barge in some regions. However, particularly in the east, where the Rhine is particularly affected by repeated episodes of drought or flooding, this may lead to the total cessation of barge traffic or reduced tonnage traffic. Alternative fuel supply solutions exist but, if the inability to sail continues, other solutions, such as the release of strategic stocks, may also be necessary.

Electrical production:

Climate change has direct consequences on production levels (see below for nuclear and hydropower, photovoltaics - lower efficiency with high temperatures - and wind - depending on wind

regimes) and consumption patterns (increased use of air conditioning in summer, etc.).

The priority challenges for the **nuclear reactor fleet** in the light of climate change and the associated risks are as follows:

- rising air and water temperatures;
- Drought leading to a decrease in river flows (including low water);
- Rising sea level (risk of marine submersion).

The main impact of climate change on **hydroelectric infrastructure** is the change in hydrology caused by rising temperatures and changing rainfall patterns. Climate change also has an impact through extreme events to which hydroelectric installations are subjected, such as heat waves, droughts, extreme rainfall and floods, not to mention, in non-interconnected areas, cyclones with torrential rains. Nature-based solutions can help to adapt hydroelectric installations.

Climate change could have consequences on the operation and economic performance of the park, but also on water management (conciliation of uses), the environment and safety. Hydraulic production is dependent on the availability of water resources and therefore highly dependent on precipitation (snow and rain) and temperatures (and their influence on the evaporation of lakes).

Studies should be necessary to assess the possible need for additional pumping stations for non-energy purposes. Since reservoirs are used for uses other than hydroelectric production, the implementation of pumping systems to replenish a water stock and thus make the resource more available could be studied in certain sectors.

Electricity transmission and distribution networks:

Networks are doubly confronted with the challenges of climate change. On the one hand, physical infrastructure needs to be adapted to take better account of environmental changes linked to global warming (higher temperatures, changes in hazards). On the other hand, climate change directly influences consumption and production patterns, and needs to be taken into account in modelling electricity system developments and multiannual energy programming.

Rising summer temperatures may lead to parts of transport structures with low distribution temperatures being outside normal operating conditions, requiring them to reduce their transit capacity or even switch them off. As regards the distribution network, HTA underground cables insulated with impregnated paper installed until the early 1980s are particularly sensitive to heatwaves.

The risk of flooding (overflow, runoff, mudslides and marine submersion, rising water tables) also threatens certain transformer stations at very high voltage, or source stations that provide the interface between the transmission and distribution network. High winds can cause significant damage to grids, including distribution networks, often due to falling trees on the lines.

Improving the resilience of this electricity infrastructure requires, in particular:

- Appropriate sizing of infrastructure, when it is built or renewed;
- If necessary, changes in the regulations or standards in force for the sizing of future or renewed facilities;
- Renewal policies consistent with the challenge of adapting to climate change and, where relevant, targeted at existing infrastructure identified as most sensitive to climate risk;
- Adapting the operation of existing, non-resilient structures to climate change, taking into account the sizing of the infrastructure (the operating levers are not the same for structures sized for future temperatures and for those that are not);
- The quality (geographical accuracy, treatment of extremes, etc.) of climate data taken into account in forecasting and network operation, and the improvement of scientific knowledge and models.

Special feature of non-interconnected areas (NIAs):

- NIAs have more fragile electrical systems due to their small size and the lowest number and variety of solutions available. Particular risks are present: in particular, in Overseas France, cyclones whose intensity could increase.

The effects of climate change on energy consumption and production are integrated into the modelling of the Multiannual Energy Programming (PPE) and the National Low Carbon Strategy (SNBC). The PNACC provides for specific actions to reduce the vulnerability of our means of energy production, transmission and distribution.

ACTIONS ALREADY UNDERTAKEN

Energy sobriety efforts undertaken over several years are a first key element contributing to our energy resilience. More specifically, the consideration of climate change in the management of our energy system is a major concern of stakeholders and is already the subject of various measures described below.

Oil and gas systems:

The good practices defined by the inter-branch organisation are summarised in the GESIP guides (technical guides for industrial safety). In the "pipeline" category, there are fifteen GESIP guides, but none deal with adaptation in particular. Climate hazards are dealt with in some guides concerning pipeline hazard studies or the one on the methodology of the impact study. However, studies/guides are mainly based on known and mapped natural hazards/phenomena or historical studies to find out what happened in the past.

Risks related to land movements are included in hazard studies, which are reviewed periodically, as sources of potential damage. Pipelines are also regularly inspected. In addition, the risk of flooding can potentially affect pumping or compression stations.

As regards installations classified as SEVESO, a mission on their adaptation to climate change has just been completed (see measure 19 of the PNACC).

Electrical production:

Needs analyses, which arise from the impacts of climate change and are necessary to maintain security of electricity supply at a nominal level, are integrated into the **Multiannual Energy Programming (PPE)** exercises. In NIAs, each PPE will have to take this resilience aspect into account, to ensure that in extreme conditions the systems can provide electricity at all times.

The existing nuclear fleet is the subject of an in-depth investigation, taking into account recent feedback, in conjunction with the Nuclear Safety and Radiation Protection Authority (ASNR). In particular, the fifth periodic review of the 900 MWe nuclear reactors must lead to greater account being taken of the effects of climate change on those reactors.¹

In addition, the design of the new reactors integrates well the issues related to climate change. The studies for the nuclear reactors with EPR2 technology, and in particular those for the Tricastin and Bugey sites that were most affected by the heat waves of summer 2022, take into account the future climate over the expected duration of operation, i.e. at least 60 years from their planned commissioning from 2035. These studies aim at sizing the cooling and safety systems to ensure the maximum availability of reactors under anticipated climatic conditions.

Estimates of the impacts of climate change on water production can be refined by the results of the Explore 2 study, which updated the knowledge on the impact of climate change on hydrology.

The State launched two missions in 2022 to the Adour-Garonne and Loire-Bretagne basins to study the optimisation of uses in the management of hydroelectric reservoirs for the benefit of other uses of water resources. The mission on the Adour-Garonne basin makes concrete recommendations, several of which are being implemented by State services and stakeholders. This includes undertaking feasibility studies and financing lifting pumps to support low water flow rates, initiating consultations to define the desirable evolution of low water target flows due to the expected decrease in flow rates, gradually changing the price of water paid by users so that it corresponds in the medium term to the cost of water management and announcing the trajectory several years in advance, so that all stakeholders can anticipate this new direction.

When renewing the operating permits of hydroelectric installations, it is expected that the evolution of water resource issues will be taken into account in a global territorial and economic equilibrium approach. The GEDRE listening approach (Balanced and sustainable management of water resources), which can be organised by the State in accordance with Article R. 521-4 of the Energy Code, makes it possible to identify the needs of stakeholders concerning water resources (including low-water support).

With regard to the natural risks to which dams are exposed, climate change is implicitly included in the hazard studies that the managers of the most important dams (class A and B)

¹ <https://www.asn.fr/information/archives-des-actualites/l-asn-prend-position-sur-les-orientations-du-5e-reexamen-periodique-des-reacteurs-de-900-mwe>

must draw up every ten years for the former, and every fifteen years for the latter. This study is based on a characterisation of the natural hazards likely to endanger the structure, in particular with regard to the floods, which must be dischargeable in order to avoid exceeding the strength of the structure and thus leading to its rupture. If the hazard study shows that the dam does not comply with these requirements, it must propose compliance measures, possibly accompanied by precautionary measures pending the return to standard levels.

Electricity transmission and distribution networks:

The influence of climate change on consumption and production patterns is comprehensively addressed in the prospective studies on supply-demand balance and in the network development plans that the network operators draw up periodically.

Thus, from 2001 to 2016, RTE carried out an extensive mechanical safety programme to protect a minimum network from flooding (representing approximately 50% of the network) in order to supply each pocket of consumption, evacuate energy from the most important generating stations and secure each major road or rail network crossing.

In addition, RTE launched the Resilience project in 2021 to assess the impact of the expected increase in the frequency and intensity of heatwaves and floods on network design and operation. Models with current climate and by 2050 have been carried out at a fine geographical scale to identify areas at risk. The draft ten-year network development plan (SDDR) published on 13 February 2025 aims to allocate €20 billion by 2040 to adapt 80% of its existing network to climate change by 2040.

A key element of the resilience of electricity grids is the establishment of the Rapid Electricity Response Force (FIRE), a crisis mechanism created in the wake of the 1999 storm. FIRE consists in mobilising material and human resources in less than 24 hours in case of a major meteorological event and can be projected into NIAs if necessary.

NEW ACTIONS

1. Oil and gas system: study supply and logistics vulnerabilities and update infrastructure hazard studies
2. Electrical system: improve the resilience of the nuclear power park, hydro, wind and solar power plants as well as the grid

ACTION 1

Oil and gas system: study supply and logistics vulnerabilities and update infrastructure hazard studies

While the share of fossil fuels in the French energy mix is set to decline sharply, certain infrastructures are intended to be used for several decades to come, in particular to allow transit to neighbouring countries.²

The International Energy Agency (IEA) published a study on climate resilience for energy security in November 2022. In addition, the European Union published a study on climate risk assessment for Europe in January 2024. Based on these assessments, knowledge of the potential risks on the oil and gas sectors will be deepened in order to determine their vulnerabilities, while taking an international approach. A national variation will be made with a

² <https://www.cre.fr/actualites/toute-lactualite/la-cre-publie-son-report-sur-l-avenir-des-infrastructures-gazieres.html>

focus on inland waterway transport, which, particularly on the Rhine, is experiencing hazards that are already disrupting the supply of fuel.

The following actions cover only continental France and must be adapted to the climatic challenges of the Overseas Territories and Corsica.

1.1 - Study on vulnerabilities in international oil and gas supply and logistics

1.2 - Study on the vulnerability of national oil logistics to climate change

1.3 - Study on the navigability of rivers and in particular the Rhine for different levels of global warming, including TRACC, and on the solutions to be implemented

1.4 - Possible adaptation of transport infrastructure hazard studies depending on the update of the definition of hazards

PILOTE	DGEC
BUDGET	€50k (tbc) for the study, €30k/year for a 1/2 FTE in charge of studies and follow-up of the subject
TIMETABLE	2026: Study on international supply and logistics vulnerabilities 2026: National logistic study 2026: Study on navigability
INDICATORS	- Launch and publication of the studies - Update of hazard studies

ACTION 2

Electrical system: improve the resilience of the nuclear power generation fleet, hydro, wind and solar power generation facilities, as well as the grid

2.1 - Update the assessment of the impact of climate change on the electricity system

On the occasion of the update of the Energy Futures 2050 report scheduled for 2026, which will integrate the objectives of the third PPE, RTE will update its climate models in its assessments of the impact of climate change on the electricity system, ensuring consistency with the Reference warming trajectory for climate change adaptation (TRACC). These developments will make it possible to comply with the most recent scientific standards in collaboration with various energy and climate actors at European level (ongoing work on the Pan-European Climate Database carried out with Copernicus and ENTSO-E) and will aim in particular to move to a multi-model approach and to consider an evolving climate according to the time horizons studied. In particular, RTE will update:

- studies of exposure to climate change and vulnerability of production across sectors, and in particular wind and photovoltaic energy sectors, based on climate scenarios taking into account the full spectrum of possible contingencies at different time horizons, including by assessing the consequences of low-probability scenarios;
- studies on the prospects for the evolution of the availability of water resources and its consequences for electricity production, taking into account the results of the Explore 2 study.

The above actions cover only continental France and must be adapted to the climatic challenges of the Overseas Territories and Corsica.

PILOTE	RTE
BUDGET	To be defined
TIMETABLE	End of 2026
INDICATOR	Publication of the study

2.2 - Integrating the consequences of changes in consumption and production into energy programming exercises

Changes in consumption and production and the transformation of the electricity mix are changing the nature of the risk to the security of electricity supply. These factors will play a key role in determining the need for flexibilities in summer and winter, both on the demand and supply side. Stress tests modelling extreme situations (heatwaves or cold waves combined with periods without wind) will allow to estimate the resilience of the electricity system. The trajectories proposed in the future multiannual energy programming will be consistent with the trajectories proposed by RTE in its 2023 provisional assessment published in July 2024 and subject to climate stress tests. The modelling will be carried out by RTE as part of the preparation of the forecast balances and trajectories proposed by the future multiannual energy programming.

The above actions cover only continental France and must be adapted to the climatic challenges of the Overseas Territories and Corsica.

PILOTE	DGEC, with the support of RTE
BUDGET	To be defined
TIMETABLE	First quarter 2025
INDICATOR	Carrying out "stress tests"

2.3 - Actions to maintain the resilience of the nuclear power generation fleet

Pursue the necessary studies and investments by integrating the latest knowledge on water management and the consideration of hazards, according to TRACC, including by taking into account the possible extremes at 3°C of global warming and not only the median, in particular on the occasion of authorisations for the creation of new installations and on the occasion of periodic reviews of existing installations.

PILOTES	DGPR, DGEC and ASNR
BUDGET	Studies and corresponding works financed by EDF
TIMETABLE	The necessary modifications to existing plants will be integrated, where appropriate, during the 10-year visits to the reactors.

INDICATOR	Process of restarting reactors after maintenance and authorisation of EPR2 taking into account climate issues

2.4 - Actions to ensure the resilience of hydropower installations while maintaining a high level of production

- 1 - Further integration by operators of studies to estimate the impacts of climate change on hydrology (Explore2 and its derivatives)
- 2 - Continue to take into account the effects of climate change on the safety of structures, in particular through regular updates of hazard studies and bringing hydraulic structures into compliance
- 3 - Integrate other issues around water resources into hydroelectric reservoirs, with studies on the subject of multi-purpose pumped energy transfer stations (STEPS)

The above actions cover only continental France and must be adapted to the climatic challenges of the Overseas Territories and Corsica.

PILOTES	DREAL Occitanie, DGEC and dealers
BUDGET	0.5 additional FTE for DREAL Occitanie
TIMETABLE	Works from 2026, commissioning by 2030
INDICATORS	Additional volumes (Mm ³) and additional MW made available by investments in multi-purpose STEPs

2.5 - Improving the resilience of wind and solar power plants, particularly in Overseas France

- 1 - Conduct a study on the ability of wind farms located in offshore areas to withstand cyclones, and make recommendations to adapt the parks and guide the design of future parks
- 2 - Instruct the appropriateness of adding technical specifications to improve the resilience of the system in the specifications for new means of production, particularly offshore wind and solar.

2.6 - Actions to improve the resilience of the electricity grid

- 1 - Integrate into the planning exercises of network operators the consequences of climate change according to TRACC on the transmission and distribution system.

Transmission network:

- **Adapt the technical characteristics of overhead and underground lines** in order to increase the minimum distribution temperature for new or rehabilitated works in the case of overhead connections, and establish, where appropriate, a hierarchy of existing works to be renewed as a matter of priority. This measure will be part of the investment and network renewal policy provided for by RTE in its 10-year network development plan, the draft of which was published on 13 February 2025.
- **Provide for the structures to be sized and operated at future temperatures according to TRACC on the occasion of their construction/renewal.**

Distribution network:

- **Pursue the policy of targeted replacement of paper pulp HV cables** (approximately 20,000 km remaining). A programme to renew these old-generation cables has been under way since 2010. Feedback from the summer of 2022 showed that these networks have eight times more heat wave incidents than non-heat wave incidents. The sections to be renewed are prioritised according to their risk of incidents (Big Data methods), in particular in regions significantly exposed to the risk of heat waves, and their impact on customers.
- **Continue Enedis' programmes to strengthen the resilience of overhead HV networks (CAP - Climate Hazards Plan and RP – Planned Renovation):**
 - The CAP aims to bury networks directly exposed to climate risks (particularly through forested areas) which represent a stock of around 47 000 km.
 - The RP aims to maintain the reliability of other networks (270,000 km) at the level of new networks, replacing the elements identified as having a risk of failure following diagnostics.
- **In low voltage, accelerate the policy of resorption of bare wires and the burial of lines identified as being the most critical.** Overhead LV networks with bare wires are particularly exposed to strong winds. In coordination with the authorities in charge of electricity distribution, it is planned that these networks will be virtually eradicated by 2040 (50 000 km).

2 - Actions to improve the resilience of the network to floods

This involves locating and designing future or renewed posts on the basis of information provided by flood risk prevention plans (PPRIs) and flood risk modelling (overflow) by 2040/2050. Among the existing stations, technical solutions will be implemented as a priority for the stations that are both the most exposed to this risk and the most critical for the network. These solutions include, for example, building low walls, installing watertight low-voltage enclosures, installing watertight doors or "aqua barriers" for low-intensity floods, and enhancing sensitive parts for high-intensity floods.

The above actions cover only continental France and must be adapted to the climatic challenges of the Overseas Territories and Corsica.

PILOTE	DGEC
BUDGET	To be defined. The costs associated with the necessary investments are covered by the Tariff for the Use of Public Electricity Networks (TURPE), after approval by the regulator.
TIMETABLE	The objective is to renew by 2040 the majority of the structures most sensitive to the risk of heat waves (underground LV paper pulp technology and bare wires). For the transport network, the adaptation of existing drivers to rising temperatures and the adaptation of existing substations to flooding will at least be carried out as the transport network parts are renewed. The adaptation strategy was proposed in the draft 10-year framework in 2025 .

INDICATORS	For reasons of consistency, the indicators may be updated according to the adaptation strategies adopted by the regulator and financed by the network tariffs. - Number of kilometres of lines whose distribution temperature meets the new standards chosen - Number of kilometres of paper pulp HV cables replaced per year and stock (target: 85% of the current stock (21 000 km) replaced by 2040) - Number of posts reinforced in relation to flood risk protection - Amounts of investments dedicated to the global and targeted renewal of assets - Total linear of LV bare wires (target: quasi-eradication by 2040)



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3 Third French National Adaptation Plan

MEASURE N°32

Ensuring resilient electronic communications services

CATEGORY OF THE MEASURE

**2. Ensuring the resilience
of territories,
infrastructure and
essential services**

BACKGROUND

The purpose of this measure is to adapt electronic communications networks to climate change: strengthen their resilience to extreme weather events, limit the risks of interruption of electronic communications services, in particular emergency calls, and speed up the reactivation of networks when needed. The aim is to highlight the risks faced by networks, the associated costs of responding to them and the levers to ensure the adaptation of electronic communications networks to climate change, ensuring the economic rationality of actions with regard to the investments to be produced and the associated risks.

ACTIONS ALREADY UNDERTAKEN

Work has already started on adapting electronic communications networks to extreme events, in particular to limit the risk of interruptions of emergency calls during power shedding operations, or any other power outage.

NEW ACTION

Develop a long-term strategy for telecommunications networks to ensure continuity and quality of service

The objective is to define targets for the continuity of service of electronic communications networks in the event of extreme events (prioritisation of the uses to be maintained or restored, in particular for emergency calls and sovereign uses, identification of the fragilities of the infrastructures to be strengthened, etc.).

The economic rationale of this strategy will have to be established according to elements relating to the costs that will have to be objectified, and put into perspective with regard to the economic costs linked to a lack of budgetary intervention. In addition to measure 24 of the PNACC, if a need to modify standards related to the deployment of electronic communications networks is identified as part of the feedback on winter 2023-2024, that will be integrated into the work programme of this strategy.

Since the resilience of electronic communications networks is by nature inter-ministerial, the strategy will have to be shared between the various administrations and stakeholders concerned, in order to ensure that the actions already under way are properly coordinated, namely:

- The project to update the 'ORSEC Retap Network Plan', which organises the arrangements for mobilising and coordinating civil security actors in the event of a crisis (end of 2025 – coordination by the Ministry of the Interior). Updating the ORSEC plan should lead to optimising crisis management by enabling the Prefect to identify in advance the key players;
- Drafting a guide for decentralised services on the application of Article L.732-2-1 of the Civil Security Code, which allows prefects to request a vulnerability diagnosis from all operators and issue recommendations to strengthen the resilience of their equipment (mid 2025 – coordination by the Ministry of Ecological Transition). The use of these provisions by the Prefect should encourage operators to make their infrastructure more secure;
- Support for electronic communications operators and local authorities carrying out fibre-optic public initiative network projects in the implementation of local resilience plans, business continuity plans and business recovery plans.

In addition, the following actions will be studied:

- Open meteorological data from Météo-France to electronic communications operators in order to enable them to anticipate, manage and position their resources more efficiently upstream of/during a climate event;
- Enable electronic communications operators to obtain from electricity suppliers (i) an annual update of the references of energy delivery points and (ii) the operational status of those delivery points in real time.

PILOTE	DGE, in conjunction with the Commissariat aux communications électroniques de défense, the Agence nationale de la cohésion des territoires and the Autorité de régulation des communications électroniques
BUDGET	Under appraisal

TIMETABLE	May 2024: Feedback (load shedding events, bad weather, etc.) on winter 2023-2024 End of 2024: Proposals for resilience targets, concrete measures to be deployed and structuring of inter-ministerial work Spring 2025: Launch of work between operators and electricity suppliers to (i) update the references of Enedis' delivery points and (ii) share their operating status in real time (Ministry of the Economy coordinating) June 2025: Publication of a guide for decentralised services on the application of Article L.732-2-1 of the Civil Security Code, which allows prefects to request a vulnerability diagnosis from all operators and issue recommendations to strengthen the resilience of their equipment (Ministère de la transition écologique coordinating) End of 2025: Update of the ORSEC RETAP Network plan (Ministry of the Interior coordinating) Early 2026: Organisation of crisis exercises to test the new operational modalities
INDICATORS	- Number of electronic communications outages affecting more than 1,000 households compared to a geographical area of more than XX km² for more than 4 hours - Number of outages of emergency call support services affecting more than 100 households compared to a geographical area of more than XX km² for more than 4 hours - Average recovery time of emergency call support services - Average recovery time for electronic communications services



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3 Third French National Adaptation Plan

MEASURE N°33

Mobilising all economic sectors: integrating climate change adaptation into business strategies

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

The objective of this measure is to help companies effectively take climate change adaptation issues into account in their strategies.

While the failure of economic actors to take these issues into account makes them vulnerable, their mobilisation is essential. The State will support companies by disseminating tools (see measure 41 of the PNACC) and providing technical support. This support must be based on benchmarks and joint work to identify and lift constraints.

Support for the most affected sectors is covered by specific sectoral measures (agri-food – measure 36, tourism – measure 35, wood processing industry – measure 38, communication networks – measure 32 of the NAP).

In addition, the mobilisation of all economic sectors on water sobriety is the subject of dedicated actions by sector (measure 21 of the PNACC).

NEW ACTIONS

1. Encourage companies to develop their adaptation plan, in order to sustain their activity
2. Include adaptation issues in awareness-raising and training activities on the ecological transition carried out by the CCI (Chambers of Commerce and Industry) and CMA (Chambers of Trades and Crafts) and targeted to SMEs

3. Integrate adaptation into the tasks of the regional Economic, Employment, Labour and Solidarity Directorates
4. Ensure a massive use by SMEs and VSEs of the digital platform Green transition of companies
5. Facilitate an inter-sectoral working group within the National Council of Industry to facilitate the appropriation of generic and sectoral adaptation tools, the sharing of experience and the definition of work to be carried out jointly
6. Building a methodology to determine the resilience of supply chains to climate change

ACTION 1

Encourage companies to develop their adaptation plan, in order to sustain their activity

In order to reduce impacts in the event of extreme events and avoid unprofitable investments that can sometimes jeopardise an entire business model, it is essential that companies develop adaptation plans based on studies of the vulnerability of their business to climate change.

Ministers responsible for the economy and the green transition have therefore asked large energy and transport companies to carry out a climate change vulnerability study by the end of 2024 and to submit an adaptation plan in 2025.

With regard to vitally important operators (OIVs), the transposition into French law of Directive (EU) 2022/2557 on the resilience of critical entities will make it possible to integrate these challenges into entity planning through the revision of national security directives.

For other companies, consideration will be given to the gradual introduction of an obligation to carry out a vulnerability study and to draw up an adaptation plan in the light of the first reviews of the application of the CSRD (see measure 40 of the NAP). This obligation could initially only apply to companies applying for certain public aid in order to channel such aid towards long-term resilient actions, in particular in the context of the reindustrialisation of France (see measure 34 of the NAP on financial support to companies).

Companies that are not subject to this obligation will be encouraged to adopt an adaptation plan through support from the operators Ademe and Bpifrance.

PILOTES	DGEC and DGE, with the support of Ademe and Bpifrance Office of the Senior Defence and Security Officials of the Ministries concerned for the OIVs
BUDGET	To be defined from 2027
TIMETABLE	End of 2024: Vulnerability study and draft action plan for large energy and transport companies 2025: Detailed adaptation plan for large energy and transport companies From January 2027: Instruction to strengthen obligations, following the Government's second assessment of companies' adaptation strategies under the CSRD (see measure 40 of the PNACC)
INDICATOR	Percentage of target companies with a vulnerability study and adaptation plan

ACTION 2

Include adaptation challenges in awareness-raising and training activities on the ecological transition carried out by the CCI (Chambers of Commerce and Industry) and CMA (Chambers of Trades and Crafts) and targeted to SMEs

The CCI-CMAs shall integrate adaptation to the consequences of climate change into their awareness-raising and business training programmes. Ademe provides expertise support for the development of this component. To this end, Ademe has been carrying out the 'adaptation' component of the training of CCIs and CMAs sustainability advisers. The aim of these awareness-raising and training activities is to inform companies about the challenges of the ecological transition and to direct them to the support programmes that are appropriate to their sector of activity and size (Ademe, Bpifrance, CCI, CMA measures).

PILOTES	DGE, Ademe, CCI and CMA
BUDGET	No additional need
TIMETABLE	Adaptation strand developed in 2024 , dissemination in the network of CCIs and CMAs in 2025 and 2026
INDICATOR	Number of enterprises that have benefited from adaptation awareness-training by CCIs and CMAs

ACTION 3

Integrate adaptation into the tasks of the regional Economic, Employment, Labour and Solidarity Directorates (DEETS/DREETS)

The aim is to integrate adaptation into the tasks of the DREETS, in particular with regard to the development of sectors and support for businesses, economic change, competitiveness and the safeguarding of businesses, and to develop territorial actions involving all local, public and private actors. Important levers for this action include the work of the regional COPs, the strategies of the central administration directorates coordinating the DEETS/DREETS, and the actions carried out by the territorial networks of business representative organisations and CMAs CCIs.

PILOTES	DGE, DGEFP and DREETS/DEETS, in cooperation with DGPR, DREAL and Ademe.
BUDGET	No additional need
TIMETABLE	Gradual consideration of adaptation challenges from 2025 onwards
INDICATOR	Percentage of DREETS/DEETS implementing actions related to business adaptation

ACTION 4

Ensure a massive use by SMEs and VSEs of the digital platform Green transition of companies

This platform, deployed in beta version by a State start-up incubated at Ademe, aims at directing companies to the appropriate support schemes and recommending actions to be implemented. Launched at the end of 2023, it was improved in 2024 based on feedback from small and medium-sized users. Several proposed actions focus on improving the resilience of companies to climate change: water savings, thermal insulation of buildings and development of an adaptation strategy. This platform has integrated a "biodiversity" theme and will enrich its content on this subject and the subject of natural resources. In 2025, it will be gradually incremented with new measures (in particular those of the water agencies and local and regional authorities) and the user route will be refined by sector of activity. A communication plan will raise awareness among VSEs and SMEs to help them engage in adaptation actions.

PILOTES	Ademe, SGPE, DGE, CGDD, Bpifrance and Consular Chambers, in cooperation with professional organisations
BUDGET	No additional need
TIMETABLE	In 2025: - a communication plan from the first half of the year aimed at increasing the use of this tool and allowing better visibility of the aid available - integration of regional aid - a sectorisation of the user path - integration of sectoral and local support.
INDICATORS	- Number of consultations of the platform - Number of requests for an accompanying or support scheme

ACTION 5

Facilitate an inter-sectoral working group within the National Council of Industry (CNI) to facilitate the appropriation of generic and sectoral adaptation tools, the sharing of experience and the definition of work to be carried out jointly

In addition to raising awareness of the challenges of adapting companies, the first area of work proposed to the CNI sectors is the production of sectoral guides (see measure 41, action 2, of the PNACC).

PILOTE	DGE
BUDGET	No additional need

TIMETABLE	Launch of the working group in Q4 2024 (awareness of the challenges of adaptation for companies and definition of the first workstream) 2025: Achievement of points in Comex CNI and CSF offices on the implementation of the economic resilience actions included in the NAP and on the adaptation actions carried out by the sectors
INDICATOR	Indicator of measure 41 action 2 of the PNACC

ACTION 6

Build a methodology to determine the resilience of supply chains to climate change

Supply chains are an essential link for a well-functioning economy. To cope with the risks of increased disruption of supply chains caused by climate change, it is necessary to be able to assess the resilience of chains in the face of climate hazards. To this end, a general methodology will be developed to characterise the challenges of the resilience of supply chains in their entirety (transport, storage and transshipment) at the level of economic sectors and territories. These analyses, enriched by the work undertaken by infrastructure managers on the vulnerability of their infrastructure, will make it possible to identify the most critical axes whose resilience needs to be strengthened.

As regards the sectors, this methodology will be based on the work carried out with two pilot sectors (cereals and another sector to be defined). The analysis will be organised in two stages, starting with the characterisation of resilience challenges in the current context and then projected in the medium and long term to take into account the specific and future impacts of climate change. It will also feed from feedback from previous climatic events in the sector.

As regards territories, the General Directorate for infrastructure, transport and mobility (DGITM) will draft and disseminate a list of elements necessary for freight transport to be taken into account in territorial vulnerability studies (mentioned in measure 30 – action 2) by the **second quarter of 2025**. This first work will then be consolidated through the development of methodological guidelines for the analysis of the resilience of territorial supply chains, building on territorial approaches already launched and feedback from extreme events. In particular, the reflection will be informed by the work of the Provence Alpes Côte d’Azur Region (component [3](#)) aimed at identifying regional dependencies of supply chains and developing recommendations to improve regional resilience. This work, carried out with CRET-Log, could encourage other territories to launch similar studies.

PILOTE	DGITM, in collaboration with DGE
BUDGET	Completion of additional studies for a budget of approximately €165 000
TIMETABLE	2nd half of 2025: Study of the vulnerability of the supply chains of two pilot sectors (cereals and another sector to be defined) and development of a methodology based on these case studies 1st half of 2025: Dissemination of the list of infrastructures necessary for logistics to be taken into account in territorial studies 2026: Consolidation of methodological guidelines on the vulnerability of territorial supply chains

INDICATORS

- Development and publication of a method to study the vulnerability of supply chains in a sector
- Development and dissemination of methodological guidelines on the vulnerability of territorial supply chains



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3 Third French National Adaptation Plan

MEASURE N°34

Integrating adaptation challenges into business support schemes

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

The objective of this measure is to ensure that projects supported by the State are compatible with the future climate, in order to avoid inappropriate public expenditure.

NEW ACTIONS

1. Integrate or improve the consideration of climate change adaptation in public support schemes for companies
2. Support innovation in climate change adaptation
3. Support and raise awareness among companies and professional branches of the risk of suspensions of activity due to climate change

ACTION 1

Integrate or improve the consideration of climate change adaptation issues in public support schemes for companies

Adaptation issues are currently insufficiently taken into account in the design or implementation of support schemes for physical or intangible investments, as well as in supporting and advising companies on the green transition (e.g. eco-design). However, ignoring climate change can increase the vulnerability of the company or its environment, in particular when decisions triggered by such schemes have long-term consequences. Also, not taking climate change into account does not allow any adaptation co-benefits that some schemes could trigger. For example, investments in eco-design of products could at the same time increase the resilience of the business.

This measure aims to better take into account climate change and related impacts in certain support schemes where relevant. The aim is for companies to take advantage of co-benefits where they exist (for example between support schemes for decarbonisation and adaptation) and for the State to ensure that the investments it supports are adapted to climate change and do not lead to maladaptation.

Among others, the ADEME schemes, the France 2030 schemes and the BPI France schemes (including green guarantees) that must apply the European principle of 'Do No Significant Harm' will be targeted and reviewed to identify those that are most relevant to this action.

The measure may be implemented in two stages:

- **Identify the main support schemes with significant adaptation challenges**, and for which changes in design and/or implementation are relevant. The administrative burden of taking climate change adaptation into account and the potential consequences on the main objective of the scheme will be studied for each of the measures. They will be compared to the expected benefits to judge their relevance.
- For each of the measures deemed relevant, **develop and then implement modalities for taking climate change adaptation into account**. The ways in which climate issues are integrated may vary depending on the scheme.

A mission of the relevant inspectorates will be set up to (i) identify the scope of aid whose developments are relevant and, where appropriate, (ii) develop a methodology to integrate climate change into the design and/or implementation of these measures and (iii) identify the corresponding axes and training needs, taking into account the specificities of the Overseas Territories. Since this approach is new and the skills on adaptation to climate change are poorly developed, this measure will require to accompany the skill development of administrations and operators in charge of the examination of files.

This measure targets national support schemes. Local and regional authorities, in particular the regions, are invited to study the opportunity of integrating adaptation issues into their own business support schemes.

PILOTE	DG Trésor
BUDGET	Costs can be estimated on the basis of the diagnosis made by the inspection mission.
TIMETABLE	By the end of 2025: Diagnose support schemes and prioritise those that are relevant to be changed From 2026: Initiate taking into account adaptation in the support scheme for which it is relevant
INDICATORS	- Number of support schemes studied and selected - Number of schemes that have been upgraded to take adaptation into account

ACTION 2

Support innovation for climate change adaptation

Innovation is likely to play an important role in the adaptation to climate change of certain sectors (agriculture, buildings, energy, health, etc.) but adaptation challenges are not always sufficiently taken into account in innovation support measures. The report of the Supervisory

Committee for Future Investments of June 2023¹ considers that the contribution of strategic investments to the adaptation process and to the resilience of our society could be enhanced in three ways: by (i) strengthening the consideration of adaptation challenges for all the structuring projects supported, (ii) accompanying the orientation of research in this area and (iii) investing in a few large-scale adaptation projects with innovative scope and significant economic potential. The report also pointed out that in a context where new business models and adaptation technologies were the subject of global demand, and in a context of "extreme climate events" that would become more frequent and intense, adaptation actions could have a high return on investment - up to more than ten times the initial expenditure according to the Global Commission on Adaptation.

This measure aims to support innovation for climate change adaptation. These include, in particular:

- **Diagnose the innovation needs for adaptation and the limits of existing schemes** (notably France 2030). This will include (i) identifying areas where important adaptation technologies would not be sufficiently developed by private innovation and existing public support, (ii) seeking synergies between innovation for adaptation and innovation for decarbonisation, and (iii) identifying the specificities of adaptation innovation projects to be taken into account as eligibility criteria for support schemes. This last point could, for example, imply an adaptation of the funding thresholds, as in the case of the current INov innovation competition, for which the increase in the minimum cost of projects led to the *de facto* exclusion of climate change adaptation projects from this France 2030 scheme.
- **Support innovation projects addressing already well-identified technological needs.** These arrangements are presented in the relevant sectoral PNACC measures (see measures 4, 9, 12 and 20).

The pilots' knowledge and feedback may be complemented if necessary by a mission of the relevant inspectorates to identify innovation needs for adaptation, limitations of current schemes (e.g. eligibility conditions blocking innovation projects targeting climate change adaptation) or missing schemes. A methodology to ensure that publicly funded adaptation solutions are not themselves drivers of biodiversity erosion or unsustainable use of natural resources can also be produced.

PILOTES	Ministries concerned by public innovation policies and SGPI
BUDGET	To be defined
TIMETABLE	2025: Diagnose innovation needs for climate change adaptation and possible limitations of support schemes Initiate the consideration of adaptation to climate change on a significant part of the schemes identified
INDICATORS	- Number and amount of innovative projects contributing to adaptation under the PNACC - Number of adaptation projects with an innovative scope and significant economic potential (either in terms of resilience of the productive tool or in terms of demand) - Scientific publications on adaptation - Number of patents for adaptation technologies and evolution

¹ Comité de surveillance des investissements d'avenir, "France 2030 Controlled launch of a major impact investment plan", First *in-itinere* assessment, June 2023

ACTION 3

Support and raise awareness among companies and professional branches of the risk of suspensions of activity due to climate change

Recurrent episodes of heatwaves, drought or falling snow levels in mountain resorts have a strong impact on the French economy and may lead to temporary reductions or suspensions of activity in certain sectors of activity and/or geographical areas.

3.1 - Condition the coverage of the partial activity in case of climatic events

Faced with these events, the frequency and severity of which are increasing, many companies are seeking to have their reduction in activity covered by the partial activity scheme. However, partial activity, which is a tool to support companies in the face of a cyclical and unpredictable shock, financed by the State and Unédic (association in charge of managing unemployment insurance), does not appear to be the appropriate response to support these companies and sectors of activity in the face of the economic consequences of climatic phenomena, which in most cases are recurrent and structural. The current partial coverage of the structural declines in activity linked to climate change is moving away from the spirit of the scheme and can generate windfall effects by discouraging companies from making the necessary investments, reorienting their activities or changing their work organisation to adapt to the new climate context.

It is therefore proposed that, in the short term, the cost of the effects of climate change on companies in partial activity be made conditional on the company making specific commitments. These commitments would be co-designed by the company and the departmental prefect in charge of examining requests for partial activity (by delegation the departmental directorates for employment, labour and solidarity - DDETS), and could relate in particular to:

- the evolution of the company's business model to adapt to the new challenges brought about by climate change;
- training for employees in partial employment in order to adapt their skills and enable them, where appropriate, to retrain for activities with a high employment prospect;
- adapting the working conditions of employees;
- fitting-out of the premises and the work tools.

More broadly, partial activity needs to be mobilised as a last resort by companies to address the economic consequences of climate change. When their application is examined by the decentralised services, companies could therefore be encouraged to make greater use of other measures such as the recovery of lost hours due to bad weather or the use of leave.

3.2 - Launch a consultation with the social partners on the adaptation of companies

It also seems imperative to involve the social partners in the reflection on the adaptation of companies to the consequences of climate change, so that they accompany changes in economic activities, beyond the mobilisation of the partial activity scheme. The economic and social consequences of global warming could be the subject of social dialogue at industry or cross-industry level. A consultation process with the social partners, carried out at interministerial level, could thus lead in the medium term to sectoral plans to support employees and companies.

3.3 - Set up sectoral schemes to take charge of suspensions of activity

This consultation could lead to the establishment, particularly at branch level, of sectoral schemes allowing suspensions of activity to be covered. Such private schemes would compensate, according to the specific rules and needs of the profession or sector, for periods of suspension of activity caused by climate change.

The social partners could therefore be invited to negotiate in order to set up such sectoral schemes either at the level and by each of the occupational branches, like the existing scheme in the construction sector ("BTP intempéries"), or at the level of several branches sharing the same nature of risk. Coverage could be mandatory or optional.

PILOTE	DGEFP
BUDGET	The first part of that measure does not involve new direct expenditure in so far as it is intended to strengthen the commitment of undertakings which already benefit from the general scheme of partial activity. The establishment of any sectoral schemes at the level of the occupational branches to cover suspensions of activity would be based on private schemes, the scope of which would remain in the hands of the social partners.
TIMETABLE	1st quarter 2025: Expertise on the typology of commitments that can be requested from companies to benefit from partial activity in cases of suspensions of activity caused by the effects of climate change 2nd quarter 2025: Implementation of the conditioning of the partial activity coverage of the suspensions of activity caused by the effects of climate change 2nd half of 2025: Initiation of the dialogue
INDICATORS	- Number of companies using partial activity for reasons related to climate change that have made specific commitments to adapt to the consequences of climate change (change of business model, training of employees, etc.): the target is 100% - Number of sectors covered by a sectoral scheme for dealing with the consequences of climate change



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3 Third French National Adaptation Plan

MEASURE N°35

Supporting the adaptation of tourism

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience, food, economic and energy sovereignty

BACKGROUND

The aim of this measure is to initiate a transition to ensure the balance between local economic development through tourism and the preservation of sites and natural resources, as well as adaptation to climate changes that will change the attractiveness of certain areas and the activities that can be carried out.

Tourism, especially in the mountains and on the coast, is dependent on the preservation of sites and natural resources that make it attractive. However, tourist areas are particularly vulnerable to the effects of climate change (falling coastline, reduced snow cover, etc.).

For the mountains, the actions will integrate the work carried out in measures 6 "Protecting the population from natural risks in the mountains, including glacial risks and periglacial" and 43 "Fostering the adaptation and resilience of natural environments and species to climate change".

For the coastline, the actions will take into account the work carried out in measures 3 "Protecting the population from floods by adapting the risk prevention policy" and 4 "Protecting the population from the consequences of coastline retreat".

ACTIONS ALREADY UNDERTAKEN

Special attention is already being paid to the tourism sector. ADEME published in 2024, based on field experiments, a sectoral methodology to help all tourism stakeholders build their climate change adaptation strategy. A methodological guide and a diagnosis tool, a module

for territories and another one for organisations are available free of charge on the ADEME Bookshop webpage. They detail the methodology step by step and document the main climate risks for the sector.

Support for mountain areas is at the heart of the State-led sustainable tourism transition policy, in particular with the implementation of the 'Future Mountains' plan. This plan, which is complementary to the actions carried out at local level by private operators and public authorities (massive commissions), articulates the State's action around the concept of diversifying tourism activities in mountain areas.

The National Coastline Committee (CNTC) was installed in March 2023. In parallel with its work, an inter-ministerial inspection mission led by the inspection services of the ministries in charge of Environment and Internal Affairs (IGEDD and IGA) issued its report.¹ It led to the identification of economic activities threatened by coastal erosion and rising waters.

NEW ACTIONS

1. Integrate the topic of adaptation to climate change into the Sustainable Tourism Commission of the Tourism Sector Committee
2. Draw up a report in 2026 on the investments co-financed by the "Future Mountains" ("Avenir Montagnes") fund that have been involved in adapting to climate change in mountain areas and, on this basis, study the advisability of replenishing it for investments in support of climate change adaptation
3. Carry out a state-of-the-art of existing publications, studies and experiments on the impacts of climate change on tourism activities and the action plans already in place, particularly in mountain and coastal areas
4. Support mountain commissions in their process of defining, developing and facilitating strategic plans for adaptation to climate change, and define one or more adaptation plans for coastal territories, taking into account the specificities of the Overseas Territories
5. Set up an observatory of vulnerabilities in mountain areas
6. Consolidate the census of the real estate stock in mountain areas
7. Condition any public support for investment in massifs on the content of the strategic plans for adaptation to climate change of their mountain commissions
8. Conduct a study on the impact of climate change on cultural tourism, and by extension on cultural actors, leading to the writing of an evolution plan

ACTION 1

Integrate the topic of adaptation to climate change into the Sustainable Tourism Commission of the Tourism Sector Committee

The Commission on Sustainable Tourism will aim to share and facilitate the adoption of existing tools, including the sectoral methodology developed by the State operator ADEME to help

¹ Coastline projection and analysis of issues at national level, IGEDD-IGA, February 2024

tourism stakeholders build their climate change adaptation strategy. It could also be used to share best practices and feedback. It may request experts or a scientific committee, e.g. GRECs - regional climate expert groups, who have already worked on tourism in their region. It will then be able to draw on the state of the art of existing studies, publications and experiments to go further in the adaptation procedures to be put in place.

PILOTE	DGE, with the support of the members of the Committee on Sustainable Tourism
BUDGET	No additional need
TIMETABLE	2 nd semester 2025
INDICATOR	

ACTION 2

Draw up a report in 2026 on the investments co-financed by the "Future Mountains" ("Avenir Montagnes") fund that have been involved in adapting to climate change in mountain areas and, on this basis, study the advisability of replenishing it for investments in support of climate change adaptation

PILOTE	ANCT, with the support of DGE and MTEBFMP
BUDGET	To be defined
TIMETABLE	1 st half 2026
INDICATOR	Number of projects supported by the "Avenir Montagnes" fund

ACTION 3

Carry out a state of the art of existing publications, studies and experiments on the impacts of climate change on tourism activities and the action plans already in place, particularly in mountain and coastal areas

The state of the art, in particular the studies carried out and the measures deployed, among others, by ADEME or Cerema, will make it possible to identify possible additional needs on key topics such as the geographical and temporal redistribution of tourist flows, the risks of maladaptation of tourist activities, nature-based solutions for adaptation that are relevant to tourism, or even to go beyond the framework of physical risks to address the issue of the sector's transition risks. Particular attention will be paid to the Overseas Territories, particularly with regard to the impacts of climate change on coral reefs (underwater activities) and coastal areas (location of hotel resorts, etc.).

3.1 Carry out a state of the art of existing studies on the impacts of climate change on mountain tourism activities and, depending on this, carry out new studies to complete the information.

PILOTE	ANCT, with the support of DGE, MTEBFMP and ADEME
BUDGET	To be defined
TIMETABLE	2025
INDICATOR	Realisation of the state of the art

3.2 Carry out a state of the art of existing studies on the impacts of climate change on coastal tourism activities.

PILOTE	CEREMA, with the support of DGE, MTEBFMP, ANCT and ADEME
BUDGET	To be defined
TIMETABLE	2025
INDICATOR	Realisation of the state of the art

ACTION 4

Support mountain commissions in the process of defining, developing and facilitating strategic plans for adaptation to climate change, and define one or more adaptation plans for coastal territories, taking into account the specificities of the Overseas Territories

Under the 2021 Climate and Resilience Law, *the mountain commissions are responsible for drawing up 'a strategic plan for adapting to climate change, identifying, in particular, ways of diversifying economic and tourist activities in the face of rising average temperatures in mountain areas'*. Support will be offered to enable them to implement and support the work undertaken, on the basis of existing studies and possible new studies, on the impacts of climate change in the various massifs.

These plans will build on opportunities to enhance the natural heritage in order to propose a diversification of business models. The use of nature-based solutions will be considered, in particular in the context of the dismantling or reorientation of certain tourism infrastructures that have become obsolete. These plans will take into account the hydrological projections of the territory.

Faced with the current and future difficulties of coastal territories, an identical commitment through one or more climate change adaptation plans seems essential.

4.1 With regard to mountain areas, on the basis of existing studies and possible new studies, support mountain commissions in the process of defining, drawing up and implementing strategic plans for adapting to climate change.

PILOTE	ANCT, with the support of DGE, MTEBFMP and ADEME
BUDGET	To be defined
TIMETABLE	2025-2027
INDICATOR	Number of adaptation plans accompanied

4.2 With regard to the coastline, on the basis of the inspection report and the state of the art, define one or more climate change adaptation plans for coastal territories, taking into account the specificities of the Overseas Territories.

PILOTE	CEREMA, with the support of DGE, MTEBFMP, DGOM, ANCT and ADEME
BUDGET	To be defined
TIMETABLE	2025-2026
INDICATOR	Number of adaptation plans developed

ACTION 5

Set up an observatory of vulnerabilities in mountain areas

Given the difficulty of accessing transparent and standardised information to underpin public action, the Court of Auditors, in its report on mountain resorts², recommends that the State set up an observatory gathering all mountain vulnerability data, accessible to all local stakeholders.

In a compartmentalised sector where there are few data producers, it is essential to offer consolidated data based on a transparent and standardised methodology to all socio-economic actors in order to objectivise the transition of mountain areas and justify the emergence of another economic and social model.

The objective of the observatory is therefore to provide stakeholders with *'more precise information on the socio-economic impact of their decisions and public spending, particularly since ski areas are threatened in the short or medium term by climate change'*.

While tourism is at the heart of this measure, it will also be necessary to collect data on value chains and other economic activities in mountain areas (crafts, trade, small-scale industry, pastoralism, etc.), in order to avoid reproducing or consolidating mono-activity models such as skiing. The project could usefully capitalise on ongoing initiatives at the level of the National Agency for Territorial Cohesion (ANCT) regarding permanent housing and the national agency for the promotion of tourism Atout France with the data-hub France Tourisme Observation, which will deploy indicators on sustainable tourism.

Given the complexity of the exercise, it is proposed in advance to convene a working group under the guidance of the ANCT, whose task will be to draw up the specifications of the observatory, which will be able to build on an existing structure.

² Report of the Court of Auditors "Mountain resorts facing climate change", February 2024.

PILOTE	ANCT, with the support of the DGE, MTEEBFMP, the Ministry of the Interior, CEREMA and Atout France
BUDGET	300 k€ over three years
TIMETABLE	2026-2028
INDICATORS	- Creation of a national observatory integrating all the massifs - Impact indicators to be built into the Specific Technical Specifications

ACTION 6

Consolidate the census of the real estate stock in mountain areas

With the same objective of steering public action, means will be reinforced to improve knowledge of the building stock, both on the actual quantity of beds available and on the quality of these accommodations.

this information gathering work has already initiated by the State operator CEREMA and Atout France, as part of the CONITIFF programme (Knowledge of tourist real estate based on land and tax information). It requires human and financial resources to be deployed throughout the country. Mountain accommodation is a central topic to address climate change adaptation. Indeed, a good distribution between seasonal housing, permanent housing and tourist accommodation is necessary to rebalance territories and allows economic actors to consider more serenely their economic activities in the medium and long term, whether tourism-related or not. Similarly, a significant part of the building needs to be renovated to meet current environmental requirements, which is an important source of employment. Finally, the sustainability of the CONITIFF programme must make it possible to guide public action at the right scale (municipality, association of municipalities, massif, etc.) in the implementation of property and land management programmes.

PILOTE	CEREMA, with the support of MTEBFMP, DGE, ANCT and Atout France
BUDGET	100 k€
TIMETABLE	2026. The CONITIFF module is in full evolution, so it is necessary to wait for the stabilization with IMOPE/URBS before continuing.
INDICATOR	Increase in the number of territories monitored by CONITIFF

ACTION 7

Make any public support for investment in massifs conditional on the content of the strategic climate change adaptation plans published by their mountain commissions

To operationalise this measure, it is necessary to set an example by putting an end to State support for investment projects that in the short, medium and long term are threatened by climate change.

It will also offer support to local actors who so wish, to analyse all future investment projects in the territories from a climate change adaptation perspective, while prioritising nature-based solutions. The success of this action is also dependent on compliance by all public and private actors with the strategic adaptation plans drawn up by each of the mountain commission (currently being drafted) provided for by the Climate and Resilience Law, referred to in Action 3, the finalisation of which will be supported by 2026.

A model impact statement will be produced and disseminated to mountain and coastal stakeholders to encourage them to ask the right questions, together with substantive work to raise awareness, for example through the efforts of the new Mountain Vulnerabilities Observatory, and in line with measures 34 and 41 of the PNACC.

PILOTE	DGCL, with the support of MTEBFMP, DGE and ANCT
BUDGET	To be defined for the creation of a model impact statement "tourism investments in the face of climate change" and the creation of a training session on tools.
TIMETABLE	2027
INDICATORS	- Number of investment projects analysed on a yearly basis - Number of actors sensitised through the impact statement - Amount of public investment support allocated taking into account climate change adaptation

ACTION 8

Conduct a study on the impact of climate change on cultural tourism, and by extension on cultural actors, leading to the writing of an evolution plan

Cultural tourism, linked to heritage, festivals and more broadly to cultural places and activities, accounts for a major share of tourism (40% of world tourism is cultural; in France, cultural tourism generates at least €15 billion in economic benefits and employs 100,000 people). It is exposed to many climatic hazards that can jeopardise its existence and, by extension, threaten the related tourist and economic attractiveness.

It is therefore proposed to carry out a study on the impact of climate change on cultural tourism, and by extension on cultural stakeholders, leading to the drafting of an evolution plan. This study may be combined with complementary measures such as strengthening the consideration of climate risks in the training of professionals, the implementation of adaptation measures for cultural actors or the facilitation of consultations with the professional sector.

PILOTES	Ministry of Culture, IGAC, IGEDD with the support of Atout France and, where appropriate, other relevant stakeholders (e.g. Afdas, CNM, CNPS, ADEME, CEREMA, France Assureurs, ANCT)
BUDGET	No additional need
TIMETABLE	2025-2026
INDICATOR	Report of the study



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3 Third French National Adaptation Plan

MEASURE N°36

Developing knowledge, training and anticipating the impacts of climate change in the agricultural and agri-food sectors

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

The impacts of climate change on agricultural and aquaculture productions are numerous and are linked, in particular, to increases in temperature, scarcity of water resources and changes in rainfall patterns, changes in soil fertility and the proliferation of bioaggressors.

As regards to offshore agriculture, changes in rainfall patterns, but also the intensification – but not the increase in frequency – of extreme climatic events, such as cyclones or hurricanes, El Niño and La Niña events, soil salinisation or coastal retreat and the regular submersion of coastal areas are already being observed and are expected to increase.

These impacts can also be significant for the downstream link of agri-food processing, whose adaptation will be crucial to accompany changes in the upstream agricultural sector.

In this respect, three challenges have been identified in terms of developing knowledge training and anticipating of the consequences of climate change throughout the national territory.

First, a question of knowledge. Yield modelling shows that the impact of climate change varies widely by region, crops and adaptation options and does not take sufficient account of the effects of extreme events such as drought. Further research is needed to:

- **Detail characterisation of the effects of climate change in France and the expected impact of adaptation practices**, in order to assess and develop the best possible technical routes in the context of climate change;
- **Develop tools to simulate the impacts of climate change, including cumulative impacts**, at farm, regional or national level;
- **Develop a medium- to long-term vision of the opportunities and risks of climate change** for many sectors, and consider different paths for the development of production areas and associated agri-food industries.

Second, the issue of conserving and mobilising genetic resources for resilient production. Evidence of accelerating loss of genetic diversity, whether natural or cultivated, and climate change are major threats to the future of humanity, its economic activities and its environment. In the area of cultivated biodiversity, the conservation and sustainable use of genetic resources is therefore one of the key challenges for preserving cultivated biodiversity and ensuring the resilience of production systems based on living material such as agriculture, aquaculture, forestry, food systems and the bio-economy. To achieve this goal, the Seeds and Plants for Sustainable Agriculture Plan proposes a series of actions to address these challenges.

Thirdly, there is the issue of training agricultural and aquaculture professionals in agro-ecological and climate transitions. The 'Teaching to produce differently' plan 2014-2018 was an essential component of the agro-ecological project for France, organising its implementation in agricultural education. The processes of exchange of experience and evaluation of this first plan have shown the profound changes that have been initiated, but also that much remains to be done to consolidate and strengthen this dynamic.

Although it is not systematically specified, the vast majority of the planned actions will be implemented in France and the Overseas Territories.

ACTIONS ALREADY

A. Developing knowledge on climate change impacts, adaptation pathways and tools to anticipate climate hazards

INRAE, study on the water requirements of crops: knowledge of the water requirements of crops, under strict rainfall conditions or with supplemental irrigation, and the corresponding yields, taking into account a diversity of irrigation practices, soil types, climates or varieties, is crucial in a context of climate change and water scarcity. The results of the various models

generated by the Optirrig software (crops according to the target yield, diversity of soil types, climates, varieties, irrigation practices) are available in a "raw" format (.csv files) that is not easily accessible to a farmer who wants to estimate the water needs of crops according to a yield target and several fixed variables. Work needs to start on making this database freely and transparently searchable, with the aim of providing a solid and sustainable discussion medium for developing, comparing and evaluating resource management strategies.

Arvalis, Climodif Project (development of a **methodology for the assessment of climate change adaptation strategies** ensuring sustainable multi-performance of cropping systems for the wheat, rape, pea and barley sectors). The objective of this project is to build a robust and generic methodology to support agricultural actors in the agro-ecological transition of cropping systems and technical routes in the context of climate change: assessment of climate change adaptation strategies, translated into technical levers to be activated at the level of the technical route or rotation, ensuring the sustainability and multi-performance of the associated cropping systems (following the reference warming trajectory for climate change adaptation – TRACC).

PHENO PASTO research programme: aims to use of climate change adaptation traits in breeding programmes for lactating and dairy sheep breeds. Through the implementation of two innovative phenotyping platforms connected to genetic and research tools, the PHENO PASTO project aims to create the conditions for integrating of adaptation traits to climate change and agro-ecological transition into the objectives of the selection programmes for local dairy and lactating sheep breeds. This project is funded by PIA4 France 2030 in the call for projects "Innovating to succeed in the agro-ecological transition" Acceleration strategy "Sustainable agricultural systems and agricultural equipment contributing to the ecological transition".

French Chamber of Agriculture, action "Transversal animation of the PNDAR on climate change (ATClimA 2023-2025)": aims to (i) strengthen coordination between R&D actors by providing a vision of all the results achieved with the aim of improving the coherence of all projects and programmes on the subject and creating new synergies and partnerships; ii) identify the knowledge needs of farmers that are not (fully) covered by completed or ongoing projects; iii) identify and highlight operational solutions for farmers to adapt to climate change in order to facilitate the emergence or mass adoption of these solutions by farmers; iv) communicate on the results obtained and their possible impacts through wide dissemination both internally and externally to different strategic targets (institutions, local actors, sectors, etc.).

FINRES / I4CE study Agriculture: economic assessment of warming trajectories to measure the costs and benefits of adapting to climate change in the agricultural sector.

Study on shellfish farming in the face of climate change (CocoriCO₂): an interdisciplinary project aimed at increasing the resilience, sustainability and competitiveness of all French shellfish farms by taking into account environmental changes, in particular ocean warming and acidification (2020-2023).

2020 study on aquaculture in the face of global warming and the risks of antimicrobial resistance, carried out by IRD and CIRAD.

CIRAD, INRAE and IRD, Study 4 per 1000, overseas component (2020-2022): Recommendation of five research actions aimed at contributing to the implementation of agricultural and forestry practices contributing to climate change mitigation and adaptation in the overseas departments.

ODEADOM and the French Chambers of Agriculture, Seminar on ultra-peripheral agriculture and climate change (2023): State of play of current knowledge and resources mobilised on the impact of climate change on agriculture in the overseas territories. The results of the seminar are available online:

<https://www.odeadom.fr/agricultures-ultramarines-et-changement-climatique/>

Météo France, BRIO projects in Réunion in the south-west Indian Ocean and C3AF in the Caribbean (climate change and its consequences for the French Antilles), 2023: aims to refine and regionalise climate projections in these departments.

Research Innovation Transfer Unit (RIT): Accelerating the agro-ecological transition of local actors (2020). Created in 2018 by the Acta partnership, CDAF and INRAE, the RIT unit aims to accelerate the dissemination and uptake of actionable knowledge on priority issues for farmers and sectors.

The ClimA Joint Technology Network brings together a collective of research, training and development experts to accelerate the implementation and transfer of R&D work on farms adaptation to climate change. The RMT ClimA was launched in 2021 for a period of five years.

INRAE – LACCAGE programme. Given the economic importance of the vine and wine sector in France, the specificities of viticulture in terms of climate change, technical innovation and specific links to the geographical area, the LACCAGE project (LACCAGE 1.0 and LACCAGE 2.21) has been interested since 2012 in the impacts and adaptation strategies to climate change for vine and wine production in France.

B. Preserving and mobilising genetic resources for resilient production and healthy, safe and sustainable diets

Contribute to France's international positioning on the conservation and sustainable use of genetic resources

The International Treaty on Plant Genetic Resources for Food and Agriculture (TIRPAA) recognises the specificities of the agricultural sector and provides for a multilateral system (SML) for the sharing and exchange of plant genetic resources between the contracting parties to the Treaty. In the negotiations to improve its functioning, France will continue its action in particular in favour of extension of Annex I to all species used for food and agriculture and its support for the model of the Plant variety certificate (COV) as a legal mechanism for the protection of varieties.

C. More training for agricultural and aquaculture professionals on agro-ecological and climate transitions

Implementation of the EPA2 plan: 'Teaching to produce differently for transitions and agro-ecology'.

A new action plan "Teaching to produce differently, for transitions and agro-ecology" (EPA2) has been launched to mobilise all actors in agricultural technical education, public and private, at national, regional and local level. Its general aim is to reconcile support for transitions and the French agro-ecological project with the missions of agricultural education. To meet the challenges of the 21st century: it is essential to carry out a profound transformation of agricultural production systems at the level of farms, transformation processes and modes of distribution and consumption, food systems and systems of interaction between actors. These transitions require a major change in mindsets, ways of acquiring knowledge and practices. This development is at the heart of agricultural education and enables it, by taking full advantage of the challenges associated with transitions and agro-ecology, to strengthen and develop its specific features in order to be more attractive to young people: the link between man and life, the return journey between a systemic approach and detailed observation, the management of uncertainties, individual and collective commitment, integration in territories, etc.

NEW ACTIONS

A. Develop knowledge on climate change impacts, adaptation trajectories and climate hazard anticipation tools

1. Carry out a prospective study and mapping on "what could resilient and low-carbon agricultural and aquaculture production look like in France in 2050?"
2. Launch a study on the impact of sea-level rise on agriculture

B. Preserving and mobilizing genetic resources for resilient production and healthy, safe and sustainable diets

3. Implementation of the Seeds and Plants Plan for Sustainable Agriculture 2

C. More training for agricultural professionals in agro-ecological and climate transitions

4. Implementation of the follow-up to the EPA2 plan, to be assessed in 20245.
Continue to adapt agricultural education training to the challenges of agro-ecological and climate change (Action 8 of the Policy Pact for Generational Change in Agriculture)
6. Turning agricultural education farms into incubators for innovative projects (action 12 of the Policy Pact for Generational Change in Agriculture)
7. Carry out accelerated training in agro-ecological and climatic transitions for agricultural professionals in France (action 14 of the Policy Pact for Generational Change in Agriculture)
8. Integrating climate change adaptation issues and methods into the aquaculture and Forestry curricula training pathways of maritime and agricultural college

A. Develop knowledge on climate change impacts, adaptation trajectories and climate hazard anticipation tools

ACTION 1

Carry out a prospective study and mapping on "what could resilient and low-carbon agricultural and aquaculture production look like in France in 2050?"

Following on from study carried out by CGAAER and CGE, carry out a prospective study on the evolution of agricultural, aquaculture and fish production up to 2050. This study will be accompanied by a mapping of crop rotations, processing industries, and possible collection infrastructures in order to maintain France's food sovereignty - and with less impact on biodiversity and water resources. The study and mapping will be carried out in accordance with TRACC and could be carried out by INRAE.

In order to ensure better ownership of the results of the study among agricultural and aquaculture stakeholders and policy makers, a special meeting will be organised to share the results. This meeting should also make it possible to operationalise the conclusions of the study or even to consider drawing up territorial roadmaps.

PILOTES	MASA and MTEBFMP
BUDGET	

TIMETABLE	
INDICATOR	Publication of the foresight study and the mapping of production areas

ACTION 2

Launch a study on the impact of sea-level rise on agriculture.

The aim is to study the hydrogeological impact of the rise in average sea level and the retreat of the coastline on water resources at the level of coastal areas (water resources of the population and agricultural activities) (in relation to measures 4 and 21 of the PNACC).

These data must be managed and shared by local authorities and trade unions in order to ensure maximum food security for the population by allowing professionals (market gardeners, breeders and irrigators) to adapt over time to this scarcity of resources by redirecting their technical production routes.

PILOTES	MTEBFMP and MASA
BUDGET	To be defined
TIMETABLE	Results by 2030
INDICATOR	Publication of the study

B. Preserving and mobilizing genetic resources for resilient production and healthy, safe and sustainable diets

ACTION 3

Implementation of the Seeds and Plants Plan for Sustainable Agriculture

This plan is structured around four main axes:

1. Varieties and species diversity

ACTION 1: Encourage a greater diversity of species placed on the market

ACTION 2: Promote a diversified range of varieties

ACTION 3: Contribute to the use of plant material adapted to a complex canopy crop (mixtures, associations, etc.)

ACTION 4: Organise the management of plant genetic resources in the natural environment and in collections

2. Quality food that respects the environment

ACTION 12: Strengthen the evaluation of the efficiency of the use of mineral elements by varieties

ACTION 13: Strengthen the evaluation of water use efficiency by varieties

ACTION 14: Acquire information on the resilience of new varieties to climatic hazards

ACTION 15: Promote the registration of varieties suitable for organic farming
 ACTION 16: Contribute to the development of organic seed and plant production

3. Participatory approaches and the use of new techniques

4. Scientific expertise at the service of public authorities and society

As part of the plan and in addition to the actions carried out by the stakeholders, the Permanent technical Committee for the Selection of Cultivated Plants (CTPS), an advisory body responsible for providing advice and technical support to the Minister of Agriculture and to the bodies responsible for preparing and implementing the policy on varieties and seeds and plants, was consulted in order to inform the CTPS on how to speed up the consideration of climate change adaptation in varietal evaluation work.

PILOTE	MASA
BUDGET	The 'Seeds and plants for sustainable agriculture 2' plan is managed by the Permanent Technical Committee for the Selection of Crop Plants, an advisory body at the service of the Ministry of Agriculture, and is implemented by stakeholders in the agricultural sector, particularly in the seed sector (GEVES, SEMAE, technical institutes, etc.). There are no specific financial resources.
TIMETABLE	The 'Seeds and Plants for Sustainable Agriculture 2' plan was launched in November 2021 and is currently being implemented.
INDICATORS	Indicators of the plan "Seeds and Plants for sustainable agriculture 2" plan

C. More training for agricultural and aquaculture professionals on agro-ecological and climate transitions

ACTION 4

Implementation of the follow-up to the EPA2 plan, to be assessed in 2024

PILOTE	MASA

BUDGET	EPA2 specific device: Global allocation plan "EPA2 referent" Device not specific to EPA2 but contributing to it under Programme 143: - Global allocation plan "Development project" + 300 k€ - Global Allocation "RMT Correspondent" plan Device not specific to EPA2 but contributing to it under P142: Project and Partnership managers (11 FTE in total in 2024 and 2025) Dedicated thematic network (10 agents in EPLEFPA) with 100 k€ operation Network of ADT/ADEI staff partially dedicated (13 staff in DRAAF/SRFD) National Training Programme (PNF) National Support Scheme (DNA): support for the National Support Schools (CEZ, Institut Agro, ENSFEA): €275 000 in 2023 Specific call for projects financed by the special allocation account for agricultural and rural development (CASDAR – programme 776), aimed at supporting the initiatives of organisations making a significant contribution to the agro-ecological transition: 540 k€ in 2019 on 11 projects then 375 k€ on 7 projects. In 2021-2022, new funding of €200,000 was granted to agricultural education to support 13 schools in the objective of phasing out glyphosate.
TIMETABLE	The EPA2 plan was established for the period 2020-2024. Between December 2023 and November 2024, it was subject to an <i>ongoing evaluation</i>. At the end of this period, the plan will be continued on the basis of this evaluation and the work that carried out in 2024.
INDICATORS	The indicators are defined in the circular DGER SDRICI 2020-68 of 30 January 2020 as amended by the memo DGER/SDRICI/2021-286 of 19 April 2021.

ACTION 5

Further adaptation of agricultural education training to the challenges of agro-ecological and climate change (Action 8 of the Policy Pact for Generational Change in Agriculture)

The mobilisation of additional human resources will make it possible to renew all initial training frameworks by the end of 2025, by integrating the challenges and skills of the agro-ecological transition.

PILOTE	MASA
BUDGET	To be defined
TIMETABLE	2025
INDICATOR	Proportion of updated standards that integrate the challenges of the agro-ecological transition

ACTION 6

Turning agricultural education farms into incubators for innovative projects (action 12 of the Policy Pact for Generational Change in Agriculture)

France 2030's 'Skills and jobs for the future' (CMA) programme will mobilise at least of €20 million for innovative training programmes and the equipping of farms with the aim of strengthening tomorrow's skills and developing innovative training services.

This will reinforce the demonstration role of farms in local public agricultural education and vocational training institutions in order to disseminate even more widely a set of levers to increase the use of agro-ecological practices, including organic production and the reduction of the use of plant protection products. Agricultural education is maintaining its ambition to turn the farms in its establishments into reference farms in terms of ecological transition and innovation. In fact, 30% of the agricultural areas of holdings of local public agricultural education and training establishments are currently certified in organic farming, compared to an average rate of 10.7% for the entire French agricultural area at the end of 2022. The remaining areas are certified as "High environmental value" or are intended for production under an official quality label. 75% of establishments have at least one certified organic workshop and 60% of farms are partners in at least one Ecophyto scheme (DEPHY, Group 30 000).

PILOTE	MASA
BUDGET	France 2030 (agricultural component of 'Skills and jobs for the future' call for interest)
TIMETABLE	Deployment with targets 2027
INDICATOR	

ACTION 7

Accelerated training in agro-ecological and climatic transitions for agricultural professionals in France (action 14 of the Policy Pact for Generational Change in Agriculture)

The three-year national accelerated training programme for the acquisition of skills in agro-ecological and climatic transitions aims to achieve a 'skills shock' by targeting first and foremost those who train and advise agricultural assets and future assets. Specifically, the aim is to provide these training and advisory professionals with a high-level common foundation on agro-climatic (adaptation and mitigation) and engineering levers (training or technical advice) adapted to the diversity of situations, projects and territories.

PILOTE	MASA
BUDGET	To be defined
TIMETABLE	2026
INDICATOR	Number of professionals trained

ACTION 8

Integrating climate change adaptation issues and methods into the aquaculture and forestry curricula pathways of maritime and agricultural college

PILOTE	DGAMPA, in liaison with DGER and DGPE
BUDGET	Pedagogical frameworks to be adapted
TIMETABLE	From 2025
INDICATOR	Number of adapted/created training courses



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3 Third French National Adaptation Plan

MEASURE N°37

Supporting farms and the agri-food industry in the face of climatic hazards and initiating the transition to resilient, low-carbon models

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

The impacts of climate change on agricultural and aquaculture productions are numerous and are linked, in particular, to increases in temperature, scarcity of water resources and changes in rainfall patterns, changes in soil fertility and the proliferation of bioaggressors.

As regards offshore agriculture, changes in rainfall patterns, but also the intensification – but not the increase in frequency – of extreme climatic events, such as cyclones or hurricanes, El Niño and La Niña events, soil salinisation or coastal retreat and the regular submersion of coastal areas are already being observed and are expected to increase.

These impacts can also be significant for the downstream link of agri-food processing, whose adaptation will be crucial to accompany changes in the upstream agricultural sector.

In this respect, four challenges have been identified in terms of supporting farms and sectors in the face of climate change throughout the national territory.

First, the issue of protecting farms and aquaculture in the face of climatic hazards. Protecting farms and improving their resilience is one of the key priorities of the Varenne (stakeholders' conference) on agricultural water and climate change adaptation, in order to promote adaptation at farm level. These are:

- **Protect farms against climatic hazards** through a well-functioning insurance system;

- **Identify resilience levers and deploy them through diagnostics and technical support for farmers** in connection with the climate transition;
- Put in place **support schemes for changes in practices and investments** enabling farm adaptation.

Secondly, the issue of supporting the development and transformation of agricultural sectors by crossing approaches by sector and by territory, as part of collective approaches and involving several stakeholders in the food chain. The commitment of the agricultural sectors to draw up climate change adaptation roadmaps at the end of the Water Varenne, or the implementation of the Sovereignty and Transitions Fund, are fully part of this dynamic.

Thirdly, the challenge relating to health protection, pest control and the welfare of farmed animals. The increase in temperatures causes many problems for the livestock sector (over-mortality, difficulty in maintaining a good level of health, problems with animal transport, problems with watering and feeding herds, production losses). To limit the effects of global warming on livestock farming and the impact of livestock farming itself on the climate (via greenhouse gas emissions, soil pollution, resource use, etc.), we must undertake a real adaptation of our production organisation and support long-term development efforts to preserve our livestock farming, their economy and animals' welfare and health.

Fourthly, the challenge of adapting agricultural and aquaculture production and improving its resilience to the risk of water scarcity and changing rainfall patterns by mobilising a combination of solutions to be adapted locally. Agriculture is particularly exposed to hydrological changes linked to climate change; it is therefore important to reduce its vulnerability to an increased risk of water shortage. To adapt agriculture and aquaculture to the challenges of water scarcity, the action plan for resilient and concerted water management, presented in March 2023, is a continuation of the Varenne agricultural water and climate change adaptation, and its two pillars: adapting agricultural systems to the climate and ensuring reasonable access to water for agriculture.

Although this is not systematically specified, the vast majority of the planned actions will be implemented in mainland France and the Overseas Territories.

ACTIONS ALREADY UNDERTAKEN

A. Protecting farms and aquaculture from climate hazards and transitioning to low-carbon and resilient models

Implementation of the renewed crop insurance scheme. In line with the Government's commitments, and as provided for in the Orientation Law of 2 March 2022, the renewed crop insurance scheme entered into force in January 2023 and the rate of application of the law reached 100% as of April 2023. A universal 'three-stage' risk cover scheme was created, allowing risks to be shared between farmers, insurance undertakings and the State, in accordance with the following principles: current contingencies (1st floor) are borne by farmers, who can also rely on other tools (such as the Precautionary Savings Allowance – DEP) and aid for investment in protective equipment (such as those deployed as part of the France Relance fund), in order to improve the resilience of their holding in the face of climatic hazards; significant hazards (2nd floor) are covered by subsidised climate risk insurance for farmers who have chosen to insure themselves; lastly, exceptional hazards (3rd floor) trigger State intervention *via* national solidarity, including for uninsured farmers.

Climate risk management in agriculture in Overseas France. The order of 28 February 2024 adopted on the basis of the Law of 2 March 2022 on guidance on better distribution of crop insurance in agriculture and reforming climate risk management tools in agriculture has two objectives: it specifies the principles for intervention of the Overseas Relief Fund in agriculture and determines the conditions under which overseas farmers may access the National Agricultural Risk Management Fund (FNGRA). It opened up the possibility of co-financing by public funds of insurance premiums or contributions relating to a crop cover contract in the face of climatic hazards.

Comprehensive plan to support farms in the face of climate change (adaptation and mitigation) (2023-2025) renamed ClimaTerra – financed under the CasDAR programme and led by Chambres d'agriculture France. The aim is to design a comprehensive support plan for farmers, enabling them to transform their farms to become more resilient while reducing their greenhouse gas emissions. This plan aims to raise awareness and inform about the challenges of climate change, train advisors and test different tools and methods, guide and promote transformation processes to more than 1 000 farms, mobilise farmers' collectives in the transformation of farms by providing support.

Implementation of a climate diagnostic tool (mitigation and adaptation) adapted to organic farming (ACTT-FNAB) funded by the Ministry for Ecological Transition and the National Federation of Organic Agriculture (FNAB) (2023/2024). The diagnosis implemented in 2023 is designed to take into account the diversity of production in organic farming and its specific technical routes (systemic approach and not by workshop, addition of crops, organic fertilizers for example). The diagnosis is carried out with advisors trained by the FNAB. It makes it possible, on the one hand, to understand farm emissions and, on the other hand, by simulating changes in practices, to co-construct an action plan to improve the climate performance of the farm. The advisors accompanying the development of the action plan will be trained in 2024 to integrate the issue of adaptation to climate change as part of the levers of change. The data collected will contribute to the creation of a database to build benchmarks for organic farming.

Implementation of the 2023-2027 National CAP Strategic Plan (PSN). The PSN diagnosis identified the need to make agricultural systems more resilient by combining incentives to change production practices and systems with incentives to prevent and protect against risks. The need expressed covers the adaptation of species and varieties (which falls under research actions, dissemination), the greater diversification of farming systems and a more sober management of inputs. It also includes the demand for risk prevention and protection tools through investments, including water infrastructure, risk management tools such as insurance or mutual funds, and finally, as regards forests, optimising forestry management and encouraging forest renewal. The incentive to diversify rotations is one of the markers of the PSN, because it promotes resilience in the event of a climate accident. It involves both the

'Good Agricultural and Environmental Condition' (BCAE) 7 of cross-compliance, but also the eco-scheme through the access route to the practices of diversifying crop rotation on arable land, and certain agri-environmental and climate measures (MAEC). The PSN also sends a signal towards the extensification of livestock farming by proposing parameters for coupled beef aids and the ICHN, which set ceilings for primable animals and maximum animal loading limits depending on the forage area; more extensive livestock farming is less vulnerable to periods of drought (availability of fodder). Investments in water infrastructure as part of sustainable water resource management also address this need, which is covered in the NSP in conjunction with the mobilisation of risk management tools under need A6. In the Overseas Territories, AECMs and investment aids are the mechanisms available to make farming systems more resilient.

Implementation of the Programme of Options Specific to Remoteness and Insularity (CAP). In the Overseas Territories, the POSEI's exceptional circumstances are a mechanism for allocating aid to an operator in respect of the level of production that it would have achieved without the occurrence of a climatic hazard that affected its production and was the subject of a prefectural order declaring a loss. The POSEI programme provides for revalorised support rates once farms are certified as HVE (high environmental value) or organic. An assessment should be made of the implementation of POSEI and the changes it will need to make to meet the challenges of climate change.

Implementation of the 'Aquacultures for the future 2021-2027' plan, in particular actions relating to the management of climate, health, animal health and environmental risks, to enable businesses to be resilient to production losses and damage to infrastructure, and actions to support innovation and research projects to improve species resistance and production techniques. The Aquacultures for the Future plan also includes action to promote fish welfare through the development of research and the sharing of good practices, which also includes observing farmers' know-how, researching their innovations to protect their fish production from rising temperatures and, as such, a sociological study was carried out on the fish farming of the Dombes ponds to identify the adaptation practices deployed on the ground.

B. Supporting the adaptation to climate change of sectors and territories in an integrated approach in order to build a competitive, sustainable and resilient food system

Development of roadmaps for adaptation of agricultural sectors to climate change. At the end of the Varenne Agricole of water and adaptation to climate change, the sectors have committed themselves through a charter to develop a roadmap of their adaptation strategy and to conduct their action plans by 2025. As part of the implementation of the action plan for resilient and concerted water management, a 'water efficiency' component will also be included in the roadmaps. The follow-up of this work was entrusted to FranceAgrimer.

Implementation of the national strategy for the development of plant-based proteins: the financing of the national strategy for plant-based proteins has been endowed with €150 million from the France Relance fund (2021-2022) and should be extended from 2024, so as to support the plant-based protein sectors from upstream to downstream, as part of the implementation of ecological planning objectives (reduce the use of nitrogen fertilisers and therefore the emissions associated with land application, decarbonise feed production chains, increase the consumption of pulses as human food, diversify crop rotations for better resilience and lengthen rotations by integrating pulses, etc.).

Implementation of the Fruits and Vegetables sovereignty plan adopted in 2023, which will support the renewal and development of orchard surfaces, with resilient varieties adapted to climatic and health hazards, as well as the development of cold and decarbonised greenhouses for market gardening, in line with changes in diets, in France and overseas.

Implementation of the Overseas Food Sovereignty Plans drawn up in 2023 and setting production targets for 2030. The interministerial delegate for overseas agricultural sovereignty, appointed in March 2024, has the mission to "facilitate the action of the sectors in favor of the development of an agricultural production respectful of the environment and healthy, sustainable and quality food".

Adaptation of the agri-food industries to the challenges of climate change, in particular to support:

- a. The adaptation of the industrial tool to the evolution of inputs and their quality (ability to transform supplies in phases, ability to use sorting equipment of different varieties, etc.), as well as the prevention of the delocalisation and relocation of certain agri-food plants;
- b. The contribution of agri-food companies to the upstream agricultural transition to secure agricultural yields and agri-food supplies;
- c. Reducing their consumption of energy, water and, in general, inputs (support for diagnosis, investment and research) through the development of new processes and the introduction of more economical equipment and practices;
- d. The implementation of measures to reduce, recycle and reuse packaging accompanied by collection and deposit facilities at local level;
- e. The digitisation of their activities, in an integrated manner throughout the production, processing and distribution chain, in particular to ensure the traceability and reliability of products "from farm to fork" and even beyond, for waste management.

Adoption and deployment of the strategy for mitigating and adapting to climate change in the Overseas Territories: the Overseas Interministerial Committee of 18 July 2023 led to the adoption of several measures in favour of the Overseas Territories. This strategy will include territorial roadmaps adapted to the specific risks of each overseas region. It will define the methods of remuneration for natural amenities.

C. Ensuring animal health protection and welfare

Adopt measures to restrict the transport of live animals. During heat waves, the loading, transport and unloading of productive animals can cause respiratory distress, dehydration and heat stress, and put the animals' lives at risk.

The Ministerial Order of 22 July 2019 restricts the road transport of live vertebrate animals during heatwaves and prohibits the road transport, as part of an economic activity, of live terrestrial vertebrate animals from 1 p.m. to 6 p.m. during heatwaves published on the Météo-France website (<https://vigilance.meteofrance.com/>). The organisation of transport must be based on the last map published the day before the day of transport. Derogations are possible where the vehicle is equipped with air-conditioning systems or a dual ventilation and misting device to regulate the temperatures of the animals, where the transport involves three or fewer animals or where the transport is made necessary for veterinary or animal protection reasons. As part of the revision of European texts on animal welfare, this regulation is set to evolve following the ongoing discussions on the draft legislative text on animal protection in transport and targeting, among other things, extreme temperature conditions (cold and heat).

Develop a plan for the management of peaks of activity by rendering companies. *Action implemented under the Heat Wave Management Plan (published on 8 June 2023).* Heatwaves can lead to excessive mortality of production animals and ultimately an increase in the number of requests for the collection of cadavers and thus an extension of the time for their collection. The delay in the farmer's request for collection after the death of the animal and the conditions of storage of the cadavers on the farm (ambient temperature) may lead to an increase in the degradation of the material awaiting collection during periods of heat wave. This deterioration, which may be exacerbated by the time taken to store the materials in the rendering plant, affects the operation of the plants. The consequence is then an extension of the collection time on the farm.

The vigilance of rendering plants as part of their business continuity plan during periods of heat waves must be strengthened, in particular with regard to:

- the monitoring of pre-alert criteria for the risk of exceeding their capacity to collect, store and/or process animal carcasses,
- adaptation of the collection arrangements in terms of logistics,
- the arrangements for communicating, in a situation of pre-alert and crisis management, with the public authorities, with farmers and, if necessary, with local residents, in particular data on excess animal mortality and collection and processing capacities,

- the organisation of work in terms of human resources and working hours,
- the load shedding and alternative solutions to be implemented in the event of the plant's capacity being exceeded.

Deadline for drawing up the plan: end 2025

Review procedures for the use of on-site burial of dead animals or non-hazardous waste storage facilities. Ongoing action: the mapping of possible landfill sites is worked within the BRGM (national institute for Earth science).

If processing plants are exceeded, consideration is being given to the possible use of other rendering methods such as incineration or co-incineration, exceptional burial on the farm, in non-hazardous waste storage facilities (INSDND) or elsewhere, under conditions that prevent the spread of risks to public or animal health.

Work by the BRGM is ongoing to draw up a methodological guide and a mapping of burial sites for dead animals in the event of a crisis (overmortality linked to a health event or heat waves). The results from the guide is being tested in the Brittany region.

As the Rural and Maritime Fisheries Code does not mention the possibility of using these derogation methods (excluding unfavourable health conditions in the event of an outbreak of a regulated disease), it will have to be updated and a decree on derogation methods for landfilling will have to be published.

Organise the reporting of data from renderers and farms on the (over)mortality observed, whether in relation to the species concerned, the number of dead animals, the causes related to this mortality, data on the registration of animals buried on site, or transferred to storage elsewhere or requests for removals to be carried out by renderers. Ongoing and long-term action to be put in place in order to organise the reporting of the stabilised figures of the various national operators.

This work is already in place for rendering companies that are put on alert as soon as a heat wave is announced in order to anticipate a possible peak in activity and to be able to adapt their organisation accordingly.

In order to organise the reporting of monitoring data of (over)mortality from farms, preliminary reflection is to be conducted. Financial means will be needed to adapt or create reliable computerised data retrieval.

Run a recurring campaign to inform animal keepers and make them aware of their responsibilities in the face of the danger of heatwaves. Long-term action and implementation under the Heat Wave Management Plan (published on 8 June 2023)

Information and empowerment campaign for animal owners and keepers. In cases of high heat, animals may be exposed to conditions detrimental to their well-being and survival, due to a lack of awareness among their keepers of the adverse effects of a heat wave and the means available to limit its consequences, and due to a lack of awareness of their responsibilities as specified in Article L. 214-1 of the Rural and Maritime Fisheries Code.

A national information campaign will be carried out and targeted at professionals in the breeding of production animals or pets, animal transporters, and holders of wild animals (amateur or professional breeders, zoos, circuses in particular). Finally, it also concerns the general public for pets and equidae so that owners and keepers take preventive and management measures to ensure the welfare of their animals during heat waves.

This information campaign will be carried by the specialised press and/or by dematerialised means relayed by professional livestock organisations, integrators, chambers of agriculture, technical breeding institutes, networks of zoos, representatives of pet shops, associations of non-domestic animal breeders, the national commission for the fairground and circus professions, local authorities and State services for the target population.

This information and empowerment campaign for animal owners and keepers will consist in sending appropriate messages throughout the year, outside the summer period, in the run-up to summer, when weather conditions are normal and in the pre-alert phase and during a heat wave.

Strengthen communication, information, training, control and enforcement aspects of compliance with animal welfare rules. Long-term action to be taken on all animal welfare issues: rearing, transport (and related operations) and slaughter to cover the whole life of the animals.

Most of the measures of this action are already implemented, but some axes can be strengthened, both within the public action and with the partnership established with all actors. This comprehensive action is therefore to be developed. The latest progress in this area, for example the agreement concluded between the Ministry in charge of agriculture, the Ministry of the Interior and the Paris Society for animals' protection (SPA), partly respond to this action. Still, an important work remains to be done (for example, with the Ministry of Justice, training on justice actions in favour of animals), in particular in communication (including towards the general public to highlight public action in favour of animals), but also in information, training and the implementation of controls and sanction measures. Increasing the number of inspectorates would be an effective means of achieving this objective.

Implement monitoring of the risk of colonisation of our countryside by non-native pollinating species that would find a more favorable climate for their establishment, to the detriment of native wild bees and pollinators whose colonies are in decline. The population of European pollinators has been declining (biodiversity issues) for several years. The reasons for this decline are multiple (lack of resources, pesticides and varroa in particular), but global warming will increase certain aspects harmful to local domestic and wild bee colonies, through the increasing lack of resources (water and flowering) and the establishment of a warmer climate more adapted to pollinators and invasive alien species such as the Asian hornet who will find a climate that favours their installation in our countryside and their development, thus directly competing with the availability of resources in the territory left to our local bees and pollinators. This phenomenon risks causing the accelerated loss of our honeybees (and consequently the collapse of honey production), as well as the decline in the pollination of our arboreal production (France is the 4th European country of fruit production) and more generally of our pollinators and native insects.

In 2021, France adopted a national plan for pollinating insects and pollination for public consultation from 28 June to 20 July 2021, in order to collect the contributions that fed into the content of the plan. While it includes various levers, such as improving scientific knowledge, financial support or training, it also includes an important part on the health risk and well-being of honey bees. As such, a good practice guide was published in 2022 to help beekeepers with their first colony acquisition and a sociological study is underway to survey beekeepers and gather information on the climate impact on honeybees, as well as to track down innovations put in place to protect colonies.

Promote adaptation to climate change in livestock breeding objectives. Support for technical institutes and breed societies from CASDAR credits (€8 million/year) highlights the contribution of the animal genetics programme to the priority themes of the 2022-2027 PNDAR, of which the adaptation of animal production systems to climate change is a priority theme. IFREMER and SYSAF play a central role in the selection of aquaculture flocks adapted to climate change. In addition, it is important to ensure the durability of the CONSOM and CRECHE conservatories, financed in part by from the Directorate-General in charge of maritime affairs, fishing and aquaculture (DGAMPA), and whose costs have risen sharply as a result of increases in energy costs.

NEW ACTIONS

A. Protecting farms and aquaculture from climate hazards and transitioning to low-carbon and resilient models

1. Carry out a modular diagnosis to assess the vulnerability of farms at the time of installation and transmission
2. Evaluate and revise the 2023-2027 National CAP Strategic Plan to better address climate change adaptation challenges
3. Implement the Hedgerow Compact contributing to climate change mitigation and adaptation
4. Deploy the "Entrepreneurs du vivant" (Entrepreneurs for the living world) fund for the portage of capital and land (Measure 25 of the Policy Pact for Generational Renewal in Agriculture)
5. Promote agro-ecological practices and the maintenance of organic farming by the priority rules relating to the control of structures (measure 28 of the Guiding Pact for Generational Renewal in Agriculture)
6. Payments for Environmental Services (PES): identify indicators and deploy PES to maintain and develop grasslands, wetlands and agro-ecological infrastructure
7. Develop nature-based solutions in the aquaculture sector
8. Create a mechanism to support environmental services in aquaculture

B. Supporting the climate adaptation of sectors and territories in an integrated approach in order to build a competitive, sustainable and resilient food system

9. Sovereignty and Transition Fund measure
10. Implement the 2027 BIO (organic) ambition programme
11. Raise awareness among the Defence and Management Organisations (ODGs) of products bearing a quality or origin identification sign (SIQO) in order to incorporate climate change adaptation levers into their specifications
12. Initiate a reflection on the definition of indicators of agricultural climate risks and the implementation of adaptation measures, in order to be able to monitor the deployment of agricultural adaptation policy
13. Implement food sovereignty plans in the Overseas Territories
14. Strengthen the integration of adaptation issues into Territorial Food Projects (PATs).

C. Ensuring animal health protection and welfare

15. Develop a plan for the adaptation and continuity of the activities of livestock farms and companies with activities related to livestock farming (suppliers of food, veterinary medicines, slaughterhouses, cutting and processing, transport, hatcheries, etc.)
16. Monitor and build a strategy on the risk of emerging diseases: monitor and track the epidemiological risks to animals (terrestrial and aquatic) caused by rising temperatures
17. Develop grazing shade and allow access to the outdoors to promote animal welfare in hot weather
18. Develop a network of rescue workers and a contingency plan to help terrestrial animals that would be affected because they would be endangered by the occurrence of a major climate accident

19. For aquaculture production, promote and develop knowledge and innovation to improve animal health and welfare, with a view to developing farming methods and means of protection enabling better adaptation to climate change
20. For overseas territories, launch a CGAAER (General Council for food, agriculture and rural areas) mission to determine if and how farmers can be integrated into the health and environmental mutual fund
21. Put in place a communication plan to encourage consumers to support productions that respect animal welfare, human health, the environment and are sustainable through their purchasing choices.

D. Adapting agricultural and aquaculture production and strengthening its resilience to the risk of water scarcity and changing rainfall patterns by mobilising a combination of solutions to be adapted locally (Water Plan)

22. Measure 1 of the Water Plan: 'For all economic sectors: establishment of a water sobriety plan to achieve the objective of -10% water withdrawals by 2030. For the agricultural sector, the objective is the stability of withdrawals.'
23. Measure 4 of the Water Plan: 'For farmers: An additional €30 million per year will be dedicated to supporting water-efficient farming practices.'
24. Measure 11 of the Water Plan: It will be gradually put an end to the authorisations of withdrawal beyond what is sustainable in the watersheds considered to be in imbalance.
25. Measure 15 of the Water Plan: 'Regulatory obstacles to the recovery of unconventional water will be removed in the agri-food industry, with due regard for the protection of the health of populations and ecosystems.'
26. Measure 19 of the Water Plan: 'The recovery of rainwater from the roof of agricultural buildings (in particular livestock buildings, for the watering of animals) will be widely supported with a view to its widespread use through aid from the water agencies.'
27. Measure 21 of the Water Plan: An agricultural hydraulic investment fund will be replenished with €30 million per year to remobilise and modernise existing structures (cleaning up reservoirs, canal maintenance, etc.) and develop new projects while respecting the balance of uses and ecosystems.
28. Measure 30 of the Water Plan: Development of Nature-Based Solutions
29. Measure 48 of the Water Plan: A France 2030 water component will cover the entire value chain and water-related uses (raw resource management, water uses, data and analysis control, water treatment), as cross-cutting support for French companies' innovations.

A. Protecting farms and aquaculture from climate hazards and transitioning to low-carbon and resilient models

ACTION 1

Carry out a modular diagnosis to assess the vulnerability of farms at the time of installation and transmission

The diagnosis will help, in particular, the transfer of farms or the installation of new farmers and speed up their agro-ecological and climate transitions, in France and in the Overseas Territories. It can also be a tool for guiding and accompanying farms through the various stages of farm life.

In particular, it will include a 2050 climate stress test carried out according to the Reference Warming Trajectory for Adaptation to Climate Change (TRACC).

Consideration will be given to extending it to aquaculture farms.

PILOTE	MASA
BUDGET	Start of funding under the 2024 finance law as part of a call for projects implemented by ADEME
TIMETABLE	From 2026
INDICATOR	Number of diagnoses made

ACTION 2

Evaluate and revise the 2023-2027 National CAP Strategic Plan to better take into account climate change adaptation issues in interventions to support the transition of agricultural practices

The National CAP Strategic Plan (PSN) will be subject to a mid-term review in 2025 (for implementation in 2026). This review will take stock of the first year of application of the PSN (2023) in the light of the objectives pursued, in particular with regard to the dynamics of the progression of organic farming, the development of agro-ecological infrastructures such as hedgerows, grasslands and grass strips and the contracting of GAECs. This will help refine the evaluation work to be carried out in view of the mid-term review of the PSN in order to contribute to the achievement of the strategic objectives set, in particular on biodiversity and adaptation.

PILOTE	MASA
BUDGET	To be defined
TIMETABLE	2024: Balance sheet 2025: Revision 2026: Implementation
INDICATOR	

ACTION 3

Implement the Hedgerow Compact contributing to climate change mitigation and adaptation

The hedge pact and measure 23 of the SNB (National Biodiversity Strategy) aim to halt the loss of hedgerow shelves, develop plantations, improve management and enhance the services provided by hedgerows, in France and in the Overseas. The main objective of the Pact is to achieve a net gain of +50 000 km of hedge from 2024 to 2030.

Ecological services provided by hedgerows contribute to climate change mitigation and adaptation (increasing soil organic matter, better water infiltration and retention, greater resilience to extreme events), reducing soil erosion and preserving biodiversity. Sustainable hedge management practices are also a source of long-term economic value. The main levers activated by the Pact are as follows: creation of a hedgerow observatory, simplification and harmonisation of regulations, structuring upstream to produce seedlings in quantity and quality, support for planting and sustainable management of hedgerows, structuring of downstream bocage wood recovery sectors resulting from sustainable management, development of knowledge and training.

PILOTES	MASA and DEB
BUDGET	2024 finance law: Support for seed and plant production, planting, sustainable management, training and processing tools
TIMETABLE	2024-2030
INDICATORS	Linear of planted hedgerows (kml)

ACTION 4

Deploy the "Entrepreneurs du vivant" (entrepreneurs for the living world) fund for the portage of capital and land (Measure 25 of the Policy Pact for Generational Renewal in Agriculture)

Under the Guiding Pact, the State and institutional, local or private actors undertake to support the development of land and capital portage tools, in order to facilitate installation and transmission in agriculture, and to support the investments necessary for the redesign of production systems at farm level.

With this in mind, the State undertakes, in a spirit of complementarity with existing schemes at local level, to deploy €400 million in equity support for innovative portage solutions for agricultural holdings and the development of innovative solutions for the agro-ecological transition, as part of the implementation of the 'Entrepreneurs du vivant' fund of the France 2030 funding programme.

The management of this fund will be entrusted to the public financial institutions Caisse des Dépôts and Banque des Territoires, which will intervene by taking stakes in national or regional portage funds which, in turn, buy land to make it available to farmers gradually, and allow them to acquire it at the time of their choice. It will also intervene with funds making more global equity investments in companies to facilitate their transfer and takeover.

PILOTES	SGPI, MASA and MINEFI
BUDGET	Commitment by the State to deploy €395 million in equity support. France 2030 – mobilisation of the Caisse des Dépôts
TIMETABLE	From 2024
INDICATOR	Volume of commitment of funds

ACTION 5

Promote agroecological practices and the maintenance of organic farming by the priority rules relating to the control of structures (measure 28 of the Guiding Pact for Generational Renewal in Agriculture)

Certain particularly sensitive environmental situations must be taken into account and reconciled with agricultural activities, in order to continue to guarantee the country's food sovereignty.

Thus, the priority rules relating to the control of structures will be amended in order to:

- promote farm projects deploying agro-ecological practices on wetlands and in priority catchment feeding areas (organic, HVE, extensive livestock farming, etc.);
- promote the maintenance of organic farming land if it is already organic farming. This measure will allow to take into account the specific deadlines for conversion to organic farming and the investment, including economic investment, already made on this land.

These revisions of the control of structures must not harm the installation and in the first place it is the new farms that will be preferred. On the other hand, if no candidate for installation can meet the criteria mentioned above, the land will be able to expand, giving priority to virtuous practices as much as possible.

These provisions will be implemented by means of an infra-regulatory procedure, by modernising the technical instruction on regional master plans for agricultural holdings.

PILOTE	MASA
BUDGET	
TIMETABLE	2025
INDICATOR	

ACTION 6

Payments for Environmental Services (PES): identify indicators and deploy PES to maintain and develop grasslands, wetlands and agro-ecological infrastructure

As a first step, the aim is to identify PES indicators contributing to the resilience of farms to climate change. This involves maintaining and developing grasslands, wetlands and agro-ecological infrastructure, or preserving and improving soil health (structure and biological

activity) for their benefit in terms of water retention and filtration. The sets of indicators established will help guide project managers in their decision-making. The second step is to identify PESs contributing to "climate change adaptation" that are funded by public actors, including water agencies and local and regional authorities. A development of the PESs in Overseas France is envisaged but it remains to be built.

PILOTE	CGDD
BUDGET	Budget of water agencies and local authorities
TIMETABLE	2025 - 2027
INDICATORS	- Number of PESs built on one or more indicators contributing to the resilience of farms to climate change - Number of farmers engaged in PESs

ACTION 7

Develop nature-based solutions in the aquaculture sector

The aim is to support restorative aquaculture activities (cultivation or rearing of species to improve the condition of degraded ecosystems, conservation of endangered wild species by capture and production) by drawing inspiration from existing projects (restoration of the flat oyster) and by supporting those under construction (project in the Brest harbour).

Building in particular on the conclusions of the SEPURE project (**New strategies for the construction and operation of pond production systems for sustainable fish farming**) (2020-2023), the aim is to identify the sites of ponds intended for fish farming with a view to conservation or even upgrading in order to enable the resilience of territories (maintenance/development of biodiversity in wetlands, combating siltation, territorial integration, water reserve, low water support) while supporting extensive fish farms. A similar reflection could be carried out on the upgrading of marsh areas, in an eco-aquaculture approach.

PILOTE	DGAMPA, with the support of the DEB
BUDGET	FEAMPA – exempted scheme
TIMETABLE	From 2024
INDICATOR	Number of sites maintained or upgraded thanks to aquaculture nature-based practices

ACTION 8

Create a mechanism to support environmental services in aquaculture

The aim is to foster solutions that enable aquaculture farmers to adapt to climate change and facilitate the resilience of territories.

PILOTES	DGAMPA and Regions
BUDGET	FEAMPA – exempted scheme (ongoing estimate)
TIMETABLE	2025: Identification of environmental services and estimation of the financial valuation with regard to the opportunity and joint contributions for the territories and the aquaculture profession 2026: Proposal for an accompanying scheme
INDICATOR	Number of holdings benefiting from this mechanism, where appropriate with scientific and/or technical monitoring to promote good practices and ensure the efficiency of the system

B. Support the climate adaptation of sectors and territories in an integrated approach in order to build a competitive, sustainable and resilient food system

ACTION 9

Sovereignty and Transition Fund measure

The aim is to finance measures to structure upstream and downstream sectors, in order to enable them, in the context of food sovereignty, to adapt their business model to the requirements of decarbonisation of activities, ecological transition, reduced inputs, development of renewable energy production and adaptation to climate change.

PILOTE	MASA
BUDGET	€184 million committed in 2024
TIMETABLE	Launched in 2024
INDICATOR	

ACTION 10

Implement the 2027 BIO (organic) ambition programme

This programme will support the development of organic farming sectors, in particular through a combination of resources and actions to promote the sustainability and increase of organic areas (through the organic tax credit and CAP aid), the consolidation of organic sectors

(through the extension and strengthening of the BIO Avenir (organic future) Fund) and the boost of consumption (through the strengthening and continuity of communication credits on organic farming and support for the achievement of the objectives of the Egalim Law, particularly in the State collective catering).

PILOTE	MASA
BUDGET	To be defined
TIMETABLE	Launched in 2024
INDICATORS	PAB indicators

ACTION 11

Raise awareness among the Defense and Management Organisations (ODGs) of products bearing a quality or origin identification sign (SIQO) in order to incorporate climate change adaptation levers into their specifications

PILOTE	MASA
BUDGET	To be defined
TIMETABLE	To be defined
INDICATOR	Percentage of ODGs sensitised by INAO to sustainability measures, including climate change adaptation

ACTION 12

Initiate a reflection on the definition of indicators of agricultural climate risks and the implementation of adaptation measures, in order to be able to monitor the deployment of agricultural adaptation policy

The aim is to use the results of the agricultural census to analyse in detail:

- 1- Adaptation of livestock systems to the relevant scales, based in particular on the development of livestock farming's food autonomy. The agricultural census should lead to establishing an inventory of developments on the national territory and to identify exemplary areas or areas requiring particular attention.
- 2- Adaptation in cropping systems based on longer rotations, crop diversification, the presence of agro-ecological infrastructure, the level of security for access to water.

PILOTE	MASA
BUDGET	To be defined
TIMETABLE	
INDICATOR	

ACTION 13

Implement food sovereignty plans in the Overseas Territories

Overseas food sovereignty plans were developed and signed (except in Martinique) in 2023. They include an inventory of local production and production targets up to 2030 in order to increase coverage of local consumption needs and reduce the share of imports in local food. They identify the obstacles and levers to improve food sovereignty in each of the territories. The main tool for delineating strategies will be the programme of options specific to remoteness and insularity, as an application of the first pillar of the common agricultural policy in the Overseas Territories. The follow-up of their implementation is entrusted to the interministerial delegate to the agricultural sovereignty of the Overseas territories, whose mission is in particular to "facilitate the action of the sectors in favor of the development of an agricultural production respectful of the environment and of healthy, sustainable and quality food".

PILOTE	DISAOM
BUDGET	POSEI
TIMETABLE	Until 2030
INDICATOR	

ACTION 14

Strengthening the integration of adaptation issues into Territorial Food Projects (PATs)

In 2024 – the 10th anniversary of the inclusion of the scheme in the law – a new impetus is given to the Territorial Food Projects (PATs). Recognition criteria have evolved to ensure the systemic nature of action plans, integrating economic, environmental, health and social issues, to ensure their articulation with other schemes and plans in the territory (CRTE, PCAET, CLS, SCoT, etc.), and their ability to monitor and report on their impact.

With this in mind, it is proposed to strengthen the integration of adaptation challenges, as described in the actions of this measure, with the PATs so as to amplify the dynamic of climate adaptation of agriculture at territorial level.

PILOTE	MASA

BUDGET	Ecological planning – €15 million in 2024
TIMETABLE	To be defined
INDICATOR	Share of UAA covered by Level 2 PATs (operational phase)

C. Ensuring animal health protection and welfare

ACTION 15

Develop a plan for the adaptation and continuity of the activities of livestock farms and companies with activities related to livestock farming (suppliers of food, veterinary medicines, slaughterhouses, cutting and processing, transport, hatcheries, etc.)

All of these livestock-related activities are highly dependent on the availability of energy (electrical, fuel and gas) and the cost of raw materials and transport, making them sensitive to climatic variations, restrictions on the transport of goods, and closely linked to the availability of energy distribution networks and their market price. These companies are already taken into account when planning energy shedding measures, but if these restrictions were to be repeated and lasting, then their operation could be directly impacted and at risk of interrupting the chain of production and distribution of food to the population. An adaptation plan to the reference warming trajectory for adaptation to climate change (TRACC) must be developed and implemented in order to limit the risk of disruption.

PILOTE	MASA
BUDGET	To be defined
TIMETABLE	2025-2026
INDICATOR	Livestock adaptation plan adopted and published

ACTION 16

Monitor and build a strategy on the risk of emerging diseases: monitor and track the epidemiological risks to animals (terrestrial and aquatic) caused by rising temperatures

Surveillance of epizootic diseases is already a daily reality for the services of the Directorate-General for Food (DGAL), however, it must be adapted to the risk of emerging diseases that could multiply and / or spread with global warming, as far as animals (terrestrial and aquatic) are concerned. The epidemiological surveillance service must intensify and anticipate the risks of occurrence of tropical, equatorial diseases in the areas of our current climate that are most temperate. This action should be carried out with public research partners such as CIRAD, ANSES, IFREMER and INRAE.

PILOTE	MASA
BUDGET	Partnerships for monitoring and surveillance of epidemiological risks
TIMETABLE	To be defined
INDICATOR	Development of a strategy on emerging disease risk

ACTION 17

Develop grazing shade and allow access to the outdoors to promote animal welfare in hot weather

This includes the implementation of the hedge pact for livestock farms and the establishment of outward paths for animals.

It should be noted that the concept of shading should not be limited to the mere taking into account and presence of hedges, as they provide only partial natural shelter for farmed animals. Other natural features, such as isolated or aligned trees, groves, wood edges, provide better shelter and shading conditions for animals when they have access to them.

PILOTE	MASA
BUDGET	Financing in particular under the hedge pact
TIMETABLE	To be defined
INDICATOR	

ACTION 18

Develop a network of rescue workers and a contingency plan to help terrestrial animals that would be affected because they would be endangered by the occurrence of a major climatic accident (fire, storms, floods, landslides, avalanches, etc.)

Climate accidents are on the rise in France, and animals living with humans are not spared. The ORSEC plan (organisation of the civil security response), implemented in France, does not take animals into account and Law No 2021-1520, known as the MATRAS law of 25 November 2021, aimed at consolidating our civil security model (...) now includes the care of animals.

During natural disasters such as fires, floods or other disasters, there is often a lack of care for animals. In 2021, according to a report published by the Directorate-General for Civil Security and Crisis Management, at national level, 1 445 civil security interventions were related to animals. In addition, an IFAW report showed that in April 2022, four fires on different farms killed more than 12,900 animals. These losses, which significantly affect livestock, generate significant costs for farmers, could be avoided with the establishment of an appropriate contingency plan. This action is all the more important in view of the changing relationship between domestic animals and their keeper. The animal is now considered a full member of

the family, resulting in the owner's refusal to leave the animal in the event of a disaster. Similarly, it may happen that the owner initially agrees to leave it behind, and then change his/her mind and return to the scene of the disaster to save the animal, putting his/her life and that of the rescuers at risk. It is therefore essential to anticipate these risks, through the creation of a network of rescuers dedicated to this kind of situation, to set up training for stakeholders (breeders, firefighters, veterinary students, etc.), to establish a mapping of partners (refugees, civil security, etc.), as well as a comprehensive management and intervention plan.

PILOTE	MASA
BUDGET	To be defined
TIMETABLE	From 2025
INDICATORS	- Publication of the Disaster Animal Rescue Training and Response Plan (PFISAS) - Number of training courses provided

ACTION 19

For aquaculture production, promote and develop knowledge and innovation to improve animal health and welfare, with a view to developing farming methods and means of protection enabling better adaptation to climate change

This includes, for example, pumping to recirculate water during periods of low water, developing integrated multi-trophic aquaculture, promoting the farming of climate-resilient aquaculture species, setting up recirculation water systems coupled with renewable energy systems, etc.

PILOTES	DGAMPA, DGAL and Regions
BUDGET	FEAMPA / exempted scheme – Food Sovereignty Fund
TIMETABLE	Long-term action
INDICATOR	Number of technical routes developed integrating climate change adaptation challenges for aquaculture production

ACTION 20

For overseas territories, launch a CGAAER (General Council for food, agriculture and rural areas) mission to determine if and how overseas farmers can be integrated into the health and environmental mutual fund.

Overseas farmers are faced with the emergence and spread of diseases affecting their herds. Climate change can lead to increase the pressure of bioaggressors. Similarly, crop production is under high health pressure, especially in a context of reduced use of plant protection products. In this context, a mission will be entrusted to the General Council for Food, Agriculture and Rural Areas to issue proposals aimed at better taking into account the health and environmental risks faced by farmers in the Overseas Territories, in particular by determining the conditions that would allow overseas farmers to participate in and benefit from the national agricultural fund for the mutualisation of health and environmental risks.

PILOTE	MASA
BUDGET	No additional need
TIMETABLE	2025
INDICATOR	

ACTION 21

Put in place a communication plan to encourage consumers to support productions that respect animal welfare, human health, the environment and are sustainable, through their purchasing choices

Farmers expect more remunerative prices and consumer support for French production, and consumers expect better information on animal products on the shelves. However, a majority of the information is given on the labelling of the products, the vast majority of French farms are human-sized farms that use grazing and are highly technical; collection and processing industries are subject to strict measures to comply with health rules, and state services are responsible for compliance with European and national regulations, but in the end few consumers are aware of this.

It therefore seems useful to put forward a communication plan to inform consumers of the advantages of buying locally and thus to support producers and their production, which is intended to be respectful of animal welfare, from human-sized and family-run farms geared towards grazing and quality production with a high level of sanitary control.

This will include, for example, an advertising campaign on the reading of labels, the code number of eggs in terms of animal welfare and farming method, or what it means to commit to a product specification under Label Rouge or in Organic Agriculture, in order to explain to consumers, the meaning of the written indications on the labelling of animal or plant foods.

The ongoing revision of animal welfare texts (BEA) will produce a text on animal welfare labelling in animal food – in preparation for this revision, the national agency in charge of health and safety, ANSES, took up the subject and published a report on the main guidelines

for BEA labelling in May 2024 – DGAL also carried out a traineeship on the subject in order to take stock of the current situation in France. This is a topical issue shared by all stakeholders.

PILOTE	MASA in connection with DGS
BUDGET	To be evaluated
TIMETABLE	2026
INDICATOR	Number of advertisements and/or articles in the general public press and/or on the web

D. Adapting agricultural and aquaculture production and strengthening its resilience to the risk of water scarcity and changing rainfall patterns by mobilising a combination of solutions to be adapted locally (Water Plan)

ACTION 22

Measure 1 of the Water Plan: 'For all economic sectors: establishment of a water sobriety plan to achieve the objective of -10% water withdrawals by 2030. For the agricultural sector, the objective is the stability of withdrawals.'

For the agricultural sector, the objective is not to increase water extraction by 2030 at national level. Given climate change and the need to collectively anticipate the need to irrigate more land, particularly in areas where irrigation is not currently in practice, this objective allows for an increase in irrigated land, resulting in a reduction in average water consumption per irrigated hectare.

The agricultural sectors have committed under the "Varenne agricole de l'eau" conference to carry out their climate change adaptation action plan by 2025. A "limitation in the use of water" component will be integrated into these plans with support from the national institute FranceAgriMer.

PILOTES	MASA and MTEBFMP
BUDGET	The sobriety component will build on the governance set up under the Agricultural Water Varenne for the establishment of climate change adaptation roadmaps. In addition, FranceAgriMer continues to support this approach.
TIMETABLE	Measure already initiated in 2023 and to be implemented by 2025
INDICATOR	Number of sectors that have defined and implemented their action plan (target 17)

ACTION 23

Measure 4 of the Water Plan: 'For farmers: An additional €30 million per year will be devoted to supporting water-efficient agricultural practices'

These are investment aids that will be managed by the Water Agencies.

PILOTE	Water agencies
BUDGET	Investment aid managed by the Water Agencies
TIMETABLE	Set up from 2024
INDICATOR	

ACTION 24

Measure 11 of the Water Plan: It will be gradually put an end to the authorisations of withdrawal beyond what is sustainable in the watersheds considered to be in imbalance.

In accordance with Article R. 211-21-1 of the Environment Code and the instruction of 14 December 2023 on the implementation of Decree No 2021-795 of 23 June 2021 and Decree No 2022-1078 of 29 July 2022 on the quantitative management of water resources, withdrawal volumes must be defined and authorised in the light of the available resource and its quantitative balance.

PILOTE	MTEBFMP
BUDGET	To be defined
TIMETABLE	As authorisations are renewed (until 2027)
INDICATOR	

ACTION 25

Measure 15 of the Water Plan: 'Regulatory barriers to the recovery of unconventional water will be removed in the agri-food industry, with due regard for the protection of the health of populations and ecosystems.'

Regulatory texts (decrees) allow the implementation of projects for the reuse of non-conventional water within the agri-food industries from 2024. An observatory dedicated to the reuse of treated waste water will also be set up to improve knowledge of the use of such water.

PILOTES	MASA, MTEBFMP and MSAS
BUDGET	To be defined
TIMETABLE	Regulatory texts published in January and July 2024 Observatory in the process of being set up as from 2nd semester 2024
INDICATORS	- Decree and Order made - Number of non-conventional water projects in the agri-food industries (objective for all sectors combined: 1000 projects by 2027)

ACTION 26

Measure 19 of the Water Plan: 'The recovery of rainwater from the roof of agricultural buildings (in particular livestock buildings, for the watering of animals) will be widely supported with a view to its widespread use through aid from the water agencies.'

PILOTES	Water agencies
BUDGET	Investment aid managed by the Water Agencies
TIMETABLE	Set up from 2024
INDICATOR	Number of projects supported

ACTION 27

Measure 21 of the Water Plan: "An agricultural hydraulic investment fund will be replenished with €30 million per year to remobilise and modernise existing structures (cleaning up of reservoirs, canal maintenance, etc.) and develop new projects while respecting the balance of uses and ecosystems" in France and the Overseas Territories.

The Hydraulic Fund aims to finance solutions for the modernisation and development of water infrastructure capable of providing the necessary water to farms, with the aim of making them more resilient. Particular attention will be paid to improving the efficiency of water distribution networks, the development of alternative projects, over time and/or between water bodies, as well as water saving projects or projects aimed at making its use as efficient as possible in rural areas, in a context of scarcity of resources.

Facilitation of multi-purpose projects (combining uses such as: drinking water, low water support, irrigation, hydroelectricity, navigation, other uses) should be sought.

PILOTE	MASA

BUDGET	To be defined
TIMETABLE	Set up in 2024
INDICATOR	Number of Projects Funded and Project Amounts

ACTION 28

Measure 30 of the Water Plan: Development of Nature-Based Solutions

Seventy flagship operations projects (ten per major river basin) labelled as Nature-based solutions will be launched for drought demonstrators, in particular for wetland restoration, renaturation or river restoration. In the Overseas Territories, ten nature-based solutions projects addressing the small and large water cycle will be implemented.

PILOTES	MTEBFMP
BUDGET	To be defined
TIMETABLE	To be defined
INDICATOR	

ACTION 29

Measure 48 of the Water Plan: A France 2030 water component will cover the entire value chain and water-related uses (raw resource management, water uses, data and analysis control, water treatment), as cross-cutting support for French companies' innovations.

The Innov'eau call for projects, with a budget of €100 million, was launched in 2023 and runs until the beginning of 2025. This scheme aims to support innovations in the water sector in order to speed up future market launches of solutions aimed at removing barriers to water management, control of uses and treatment.

Projects proposing innovations in water management in agriculture are eligible for this call for projects: work will be carried out on the monitoring by satellite methods of irrigated surfaces and the filling of certain large water reservoirs. Non-conventional water use projects are also supported, as well as the optimisation and management of water storage.

PILOTE	MTEBFMP
BUDGET	A total budget of €100 million from France 2030 is planned for this call for projects.
TIMETABLE	Call for projects running from 2023 to 2025

INDICATOR	



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3 Third French National Adaptation Plan

MEASURE N°38

Ensuring the resilience of forests, related services and the forest-based economic activities

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

The aim of this measure is to make our forests more resilient to climate change and to prevent its consequences for the downstream sector and the timber industry.

Climate change slows down tree growth and accelerates tree mortality: episodes of very intense heat and drought, forest fires, declines linked to pathogens such as bark beetles on spruce, are all phenomena that make our forests more vulnerable. However, forests are an essential link in the fight against climate change: they are an important carbon stock to be renewed, a sustainable resource for low-carbon construction and the wood-energy sector, they conserve biodiversity and soils, and they play a key role in the water cycle.

Ensuring the resilience of forests and their economic functions to climate crises is a key challenge to be met by 2050. The effects of climate change can be progressively mitigated through more resilient and diversified species. These impacts of climate change will also be felt downstream in the sector and will require the adaptation of markets and industrial capacity, particularly in terms of supply, production tools and industrial practices. The adaptation of downstream forest-based industries can therefore only be designed in conjunction with the forest adaptation.

Overseas territories are characterised by specific challenges specific to each territory, which will have to be taken into account in all the actions to be implemented.

ACTIONS ALREADY UNDERTAKEN

The National Forest-Wood Programme (2016-2026), the National Strategy for the Mobilisation of Biomass (2018), the Roadmap for the Adaptation of Forests to Climate Change (2020), the Forest and Wood Conference (2022), the Forest Roadmap for Ecological Planning (2023), and the National Biodiversity Strategy 2030:

- Set targets to meet the expectations of all stakeholders who want to contribute to the sustainable management and conservation of our forests. The achievement of these objectives is based in particular on the investment programmes: Plan de relance, then France 2030 and, more recently, on Ecological Planning – France Nation Verte;
- Highlight the need to increase the use of wood from our forests, strengthen the resilience of forest ecosystems, conserve forest biodiversity and soils and the services provided by forests, and adapt the processing industry. The France 2030 and France Nation Verte investment plans address these needs by supporting the capacity and competitiveness of the forest-based industries.

The Forest renewal financing scheme aims to support forestry investments by public and private forest owners to restore forests affected by disasters such as drought and heat damage, bark beetle attacks or fires, to adapt forests identified as vulnerable to the effects of climate change and to improve the quality of existing stands. Until June 2024 for the submission of applications, the Forest renewal plan was successively included in the Plan de relance and then in France 2030.

PEPR <https://anr.fr/fr/france-2030/programmes-et-equipements-prioritaires-de-recherche-pepr/> FORESTT is an ambitious interdisciplinary research programme on the socio-ecological transition of forest systems in temperate and tropical forest areas. This programme is part of the [France 2030](#) investment plan. With a budget of €40 million over 7 years (2024-2030), it mobilises the entire French scientific community around four challenges dedicated to increase knowledge and address (1) the societal challenges of the socio-ecological transition of forests, (2) the development of a circular and agile wood-based bioeconomy, (3) the adaptation and resilience of forest ecosystems to mitigate the negative effects of global change, and (4) the use of intelligent monitoring systems to promote scientific discovery, and guide forest management and policy decisions.

NEW ACTIONS

1. Establish a national strategy for forest adaptation to climate change
2. Extend Forest Renewal Funding
3. Produce forest risk maps at the scale of test sites, integrating climate and soil data to assess their extrapolation to larger scales
4. Develop production, conservation and diversification of forest genetic resources (seeds/plants)
5. Amplify the production and wider dissemination of sylvo-climatic services to support changes in the practices of owners and managers
6. Establish guidelines for the adaptation of forest habitats in protected areas
7. Develop and implement the National Action Plan on Old-growth Forest and Subnatural Forest
8. Restore the balance between forests and game to promote successful forest renewal
9. Take better account of the challenges of forest soils: publish and implement the Action Plan for the Preservation of Forest Soils

10. Carry out a study on forest diversification and stand diversification methods: Carrying out a collective scientific expert study on forest diversification (ESCo DIV)
11. Extend the network of forest monitoring by instrumented plots in mainland and Overseas France
12. Strengthen monitoring of ultramarine forests and restore degraded ecosystems
13. Develop an action plan for the adaptation of the wood industry and the processing industry (linked to Action 1)
14. Manage the harvesting and use of crisis wood in the context of climate change (linked to Action 1)
15. Promote continuity of logistic supply between forest and wood processing units in the context of weather-related skidding interruptions (linked to Action 9)

Forest sector

ACTION 1

Establish a national strategy for forest adaptation to climate change

An evaluation of the implementation of the PNFB will be carried out. On the basis of this assessment and the "Objectif Forêt" report of July 2023, a national strategy for adaptation to climate change, supported by the State, will be developed, including the renewal component and extended to the improvement-resilience-biodiversity levers, and integrated into the new PNFB. Ultramarine forests will also be included (where possible).

PILOTE	DGPE, in liaison with DGALN/DEB and DGEC
BUDGET	Forest budgets allocated to forest renewal and the resources of State operators
TIMETABLE	2025-2027
INDICATORS	- Publishing the results of the PNFB balance sheet - Publishing the new PNFB

ACTION 2

Extend Forest Renewal Funding

The financing of forest renewal will be extended within the framework of Ecological Planning, including a permanent fund for private and communal forests and agreements with the National Forestry Office (ONF) for metropolitan state forests and forests managed by the ONF in Overseas France. The scheme must incorporate structuring environmental criteria with the aim of diversified and resilient forest renewal. This scheme includes the overseas territories.

PILOTE	DGPE in liaison with DGALN/DEB and DGEC
BUDGET	Upstream forest finance for ecological planning

TIMETABLE	- Opening of the counter on 5 November 2024 - Revision of the specifications of France Nation Verte in 2025
INDICATORS	- Renewed forest area - Number of healthy trees with a target of at least 1 billion over the decade - Local forest species richness (IGN indicator 4.1.1 – Proportion in basal area of the main species) - Financial envelope for forest renewal and adaptation - Presence in the specifications of silvicultural and structuring environmental criteria favourable to the resilience of reforestation

ACTION 3

Produce forest risk maps at the scale of test sites, integrating climate and soil data, in order to assess their extrapolation to larger scales

At identified sites, vulnerability analyses of current stands will be conducted by cross-referencing data from forest station catalogues, soil data, stand maturity stage, which can be approximated by stand diameter or structure, and health status. Climate compatibility (approach for a more distant horizon) will be approached by crossing the reference warming trajectory for climate adaptation (TRACC) and the probability of survival per species with the useful soil reserves. These vulnerability analyses, translated into maps, are an essential element for reasoning and prioritising forest adaptation actions. This data will be useful for forest owners and managers as well as local and regional authorities to anticipate mortality risks and plan renewal, harvesting and adaptation actions. These vulnerability maps will provide a valuable contribution to the updating and revision of development and management plans. The test phases will be carried out by the ONF in 2024/2025 in the Burgundy-Franche-Comté region, which has a diversity of forest types.

PILOTE	DGPE, with the support of DGALN/DEB and DGEC
BUDGET	The resources mobilised for the test phase are 3 FTE for two years at the ONF. The resources needed for extrapolation will depend on the outcome of the test phase.
TIMETABLE	2024 to 2029
INDICATORS	- Go/no-go step or evolution of the method after the first tests - Areas covered by these vulnerability maps in hectares - Publication of the results of the test phase

ACTION 4

Develop production, conservation and diversification of forest genetic resources (seeds/plants)

Species diversity and tree genetic diversity are key components of biodiversity that contribute to the proper functioning, resilience and adaptability of forests to climate change. In order to ensure resilient afforestation and reforestation projects, the availability of diversified forest reproductive material adapted to future climatic conditions should be increased while conserving these resources in the long term. To this end, it is necessary to develop several axes in parallel: (i) ensuring the supply of seeds and seedlings to better manage production capacity and permanent needs; (ii) improving the exploitation of forest genetic resources of interest in the face of climate change in France and abroad; (iii) research into species of the future. Each axis must be developed jointly to ensure the success of the approach.

4.1 The classification of stand areas for seed harvesting will be accelerated and strengthened (INRAE) and the programme for the creation of seed orchards will be continued (ecological planning – France Nation Verte). In addition, production capacities in seed nurseries and drying plants will be modernised and increased, and storage capacities for the conservation aspect of genetic resources will be developed. A first call for projects to support the seeds and plants sector will be launched in 2024. The roadmap for the production of Forest Reproductive Materials (FRM) for the adaptation and renewal of forest stands drawn up by the Standing Technical Committee on Selection (CTPS) will serve as a guide to optimise all actions, ensure proper coordination of actors, and mobilise the necessary resources, and will be regularly updated.

4.2 It is necessary to identify and qualify seed and plant resources of interest in the face of climate change, to assess harvesting capacities, to set up a distribution channel, particularly for species found abroad, and to develop know-how on the conservation of these future species. To this end, the Conservatoire de Ressources Génétiques Forestières Méridionales (CRGFM), part of the Conservatoire Génétique des Arbres Forestiers (CGAF) will be used. To ensure the sustainability of the work on future species, the Scientific Commission on future species, which will be set up in autumn 2023, will meet twice a year to raise awareness of these species and provide its expertise in the context of research on future species stands. For ultramarine forests, the relevance of the establishing conservatory stands to conserve forest material of species vulnerable to climate change will be assessed.

4.3 Extending public funding for the Joint Technology Network (RMT) on Adaptation of Forests to Climate Change (AFORCE). The network brings together 16 partners from the forest sector, including research, development, management, education and training organisations. The network partners are working on an applied research programme to help foresters prepare forests for climate change.

PILOTES

DGPE and DGER

BUDGET	(i) Ensuring the supply of seeds and seedlings: • Call for projects in 2024 and 2025 open to nurseries, seed companies and agroforestry planting companies as part of ecological planning - France Nation Verte • Creation of seed orchards by the ONF as part of the mission of general interest for climate change or the ONF/MASA agreement: 400 k€/year • Additional funds to develop an ambitious seeds and seedlings stock supply plan (ii) Improve the conservation of seed source stands and the exploitation of future species (support for the PNRGF and financing of Conservatory Units) as part of the mission of general interest on climate change or the ONF/MASA agreement: 250 k€/year (iii) Develop an applied research program on adaptive forestry (INRAE-ONF-CNPF)
TIMETABLE	2024-2029
INDICATORS	- Actions of the Strategy for the Conservation of forest genetic resources completed/ on-going / not initiated of - Number of seed orchards created - Amount of State aid granted to the seeds and seedlings sector - Number of seedlings marketed and species diversity

ACTION 5

Amplify the production and wider dissemination of sylvo-climatic services to support changes in the practices of owners and managers

The aim is to develop, update according to TRACC and continue the deployment of large-scale sylvo-climatic tools (Bioclimsol, Climesences, etc.) which help determine which tree species to favour depending on the geographical area, taking into account the future climate.

PILOTE	DGPE
BUDGET	2 FTEs (1 NFB and 1 CNPF) for updating sylvo-climato-genetic tools
TIMETABLE	2025 to 2029
INDICATORS	- Sylvo-climatic tools (Bioclimsol and Climesences) integrating TRACC - Number of forest managers and experts trained in the use of sylvo-climatic tools

ACTION 6

Establish guidelines for the adaptation of forest habitats in protected areas

The aim is to reconcile the **conservation** objectives of natural habitats set by the Wildlife Habitats Directives, the **restoration** objectives set under the Nature Restoration Regulation and the **adaptation** needs of forest habitats threatened or degraded by climate change, which are located in Natura 2000 areas or in areas of strong protection.

To this end, elements of doctrine will be adopted to help actors and local administrations define adaptation strategies for forest habitats of Community interest that are degraded or vulnerable to the effects of climate change. This will be supported by a national working group and a network of pilot protected areas that are representative of the main forest contexts already affected by climate change. The specificities of the Overseas Territories will be taken into account.

PILOTE	DGALN/DEB, with the support of DGPE
BUDGET	Call for applications for pilot territories representative of major forest regions to be launched
TIMETABLE	2025-2026
INDICATOR	Publication of guidelines

ACTION 7

Develop and implement the National Action Plan on Old-growth Forest and Subnatural Forest

In order to encourage the movement of species, a corridor of old-growth forest will be developed (natural forests under strong protection, old-growth management, habitat trees, etc.) as part of the development and implementation of the national old-growth action plan and subnatural forests.

PILOTE	DGALN/DEB, with the support of DGPE
BUDGET	National old-growth and subnatural forest action plan (measure 1 - action 2 and measure 22 - action 3 of the National Biodiversity Strategy)
TIMETABLE	2024-2030
INDICATORS	- Mapping of potential semi-natural forests (IFN methodology) in the 1st half of 2025 - Publication of a national plan of "old-growth forest and subnatural forests" actions at the end of 2025 - (from 2026) Percentage of subnatural forests proven under strong protection with a target of 100% by 2030

ACTION 8

Restore the balance between forests and game to promote successful forest renewal

In case of imbalance between forests and game, forest renewal by planting or natural regeneration is compromised. As part of the establishment of the National Technical Committee of the balance between forests and game, experiments of actions proposed by the actors and aimed at a rapid return to balance will be encouraged. These experiments will be able to build on the results of the paragoning mission with Germany conducted by the inspectorate administrations IGEDD and CGAAER in spring 2024. These experiments will be documented and monitor effects on vegetation, and may contribute to proposals for new levers, including the adaptation of regulations to restore balance or ensure its maintenance by 2030. The national diagnosis of imbalanced areas, which will be established in 2025, will focus on monitoring situations of return to balance in order to deploy the solutions that will have allowed this return.

PILOTE	DGALN/DEB, with the support of DGPE
BUDGET	To be defined
TIMETABLE	2025: Launch of the work of the National Technical Committee of the balance between forests and game
INDICATOR	Status of the barometer between forests and game in forest massifs in renewal

ACTION 9

Take better account of the challenges of forest soils: publish and implement the Action Plan for the Preservation of Forest Soils (PASF)

The Action Plan for the Preservation of Forest Soils (PASF) set up by the Assises de la Forêt et du Bois, the "forest" Ecological planning and the National Biodiversity Strategy (SNB 2030), is being drawn up by the Ministry responsible for the environment and forests with the support of the public operator ADEME. To the plan aims to fill knowledge gaps and strengthen networks for monitoring forest soils, to promote low-impact practices and equipment, to train professionals in the sustainable management of these soils but also to propose new economic and regulatory levers to promote the transition towards practices that better preserve the quality of forest soils.

PILOTE	DGALN/DEB, with the support of DGPE
BUDGET	Appropriations from programmes 113, 149 and ADEME
TIMETABLE	- Public consultation launched on 25 February 2025 - Publication of the plan in 2025

INDICATORS	- Publication of the Action Plan for the Preservation of Forest Soils - Growing surface area of forested areas benefiting from a system of farm partitioning - Other indicators identified under the plan

ACTION 10

Carry out a study on forest diversification and stand diversification methods: carrying out a collective scientific expert study on forest diversification (ESCo DIV)

Forest diversity is often presented as an asset for the medium- and long-term adaptation of forests to ongoing and future changes. It can result from the genetic diversification of each species, the diversification of species (natural or induced) and the spatial and temporal management modes of forest massifs. The objective is to increase the resilience of forest ecosystems to hazards as well as to maintain the expected multifunctionality of forests by best identifying trade-offs between ecosystem services, in space and time, and to ensure the socio-economic viability of the timber sector.

One of the objectives of ESCo will be to look at the effects of forest diversification on stand productivity, biodiversity and forest resilience.

PILOTE	INRAE with the support of DGPE and CGDD
BUDGET	700 k€
TIMETABLE	2025-2028
INDICATORS	- Publication of an ESCo scientific report - Publication of a summary of the scientific report - Organisation of a launching event

ACTION 11

Extend the network of forest monitoring by instrumented plots in mainland and Overseas France

Networks of instrumented plots are used to monitor and better understand the evolution of forest ecosystems in a changing climate context.

In France, the RENECOFOR network will be extended (i) geographically with the establishment of fifteen new plots instrumented to monitor the evolution of ecosystems dominated by Mediterranean species and on the front line in the face of drought hazard, (ii) thematically with the establishment of automatic soil moisture monitoring systems, in order to better assess the water balance and drought constraints in its most intensive subset of plots.

In Overseas France, the GUYAFOR network currently installed in French Guiana will also be (i) reinforced by the establishment of high-frequency monitoring systems for temperature, soil moisture and variations in increments at a few sites that are monitored more intensively, and

(ii) extended by the installation of new plots to better cover the diversity of forest stands and contexts.

PILOTES	DGPE, DGALN/DEB and DGEC, with the support of the ONF
BUDGET	- €160k/year for components i and ii of the €320k/year to be provided for in the financing of RENECOFOR for 2025-2029 - In the process of being defined for the Overseas component, in connection with the projects CIRAD/CNRS/IRD/ONF already committed and under submission for the reinforcement of GUYAFOR in French Guiana and the establishment of a network of plots in other overseas territories
TIMETABLE	2025-2029
INDICATORS	For RENECOFOR: - Creation of 15 new plots in the Mediterranean (component i) - Publication of soil water monitoring data (component ii) For GUYAFOR: Creation of new plots and definition of a siting methodology (iii)

ACTION 12

Strengthen monitoring of ultramarine forests and restore degraded ecosystems

A sustainable forest inventory will be set up by the IGN and the ONF for Overseas France in order, in particular, to assess the state of health of ultramarine forests under the effect of climate change over time. The 2024 credits of the Ecological Planning programme can finance the design of a method of inventory of the Overseas forests and the realisation of the cartography of the plant formations.

As part of the sustainable renewal plan and in line with the roadmaps for the implementation of the nature restoration regulation that will be established in the overseas territories, degraded ultramarine forest ecosystems will be restored. Specific attention will be paid to protected areas, in line with the guidelines planned under Action 6.

PILOTE	DGPE
BUDGET	Overseas Forest Financing of Ecological Planning for 2024 and 2025
TIMETABLE	2025-2029
INDICATORS	- Development of inventory methods - Setting up of the forest inventory - Area of restored degraded forests

Wood industry

ACTION 13

Develop an action plan for the adaptation of the wood industry and the processing industry (linked to Action 1)

This action will be integrated in the preparation of the new PNFB (linked to Action 1). The forestry and wood industry, through their ability to provide sustainable products and renewable energy, are a key element of France's climate ambitions. In order to optimise the use of the resource, the challenge is to develop the different uses of wood. First, to develop long-lived wood, especially in the construction sector or railway sleepers. At the same time, value secondary uses (or products) such as packaging. Finally, focus on wood products aimed at improving the trade balance, such as pulp. The aim is to develop a competitive wood processing industry in France (including the Overseas Territories) with a global supply capable of regaining market share on national demand.

The objectives associated with this action are as follows:

- Development of the capacity of the wood materials sector (increasing products for construction/renovation, optimising the use of secondary and hardwood species and adapting the production tool to these species, supporting French furniture and innovative wood products).
- Supporting the forest-based sector in the development of diversified species of the future in its production processes.
- Increased competitiveness of wood processing companies through the recovery of residual biomass (increase in drying capacity, use of co-products for heat production in wood material development processes).

These actions will be continued in accordance with the criteria for sustainable forest management. The specificities of the Overseas Territories will be well taken into account.

PILOTE	DGPE, with the support of DGE, DGALN, DGEC, Comité stratégique de filière (CSF) Bois and Interprofession
BUDGET	Ecological planning – France Nation Verte – Fonds chaleur – Fonds decarbonisation de l'industrie
TIMETABLE	2024-2029
INDICATORS	- New PNFB published - Gross sawn volumes produced in France, distinguishing between softwood and hardwood - Trade balance of timber products - Total value added from wood products processed in France

ACTION 14

Manage the harvesting and use of crisis wood in the context of climate change (linked to Action 1)

This action will be integrated in the preparation of the new PNFB (linked to Action 1). The significant mortality of major species such as spruce, beech or fir disrupts the regular supply of timber. In the short term, the influx of timber can saturate and disrupt markets. In the medium

term, mortality leads to a dry loss of raw material and an economic loss for forest owners. Proper management of forest dieback is therefore essential, in order to avoid destabilisation of supply chains, increased volatility of market prices and negative effects on the economy and forest management of territories.

The objectives associated with this action are as follows:

- Evaluate the quality and volume of crisis timber and timber to be harvested early for renewal (information to be shared with biomass cells).
- Promote flexible processing capacities in the forest-based sector, which are able to absorb large volumes of variable quality from crisis timber, and its link with contractualisation objectives.
- Analyse the technical and economic challenges to adapt management to the risk of depreciation of the value of the standing timber stock in relation to contributions on the vulnerability of stands, guide marketing choices (orientate cuts towards green wood or dry wood) taking into account exploitation and processing capacities. Conduct technical and economic analyses of the links between public support schemes and insurance mechanisms.
- Analyse the technical, economic and environmental challenges of the crisis timber stock in order to define an appropriate action plan taking into account the specific problems associated with the storage of crisis timber: significant water needs, storage areas to be temporarily mobilised, pass-on of the cost of storage, financial and environmental consequences of non-processing of crisis timber, impact of climate crises on supply flows.
- Improve the channelling of crisis wood to local players.

To this end, an inter-inspection mission was launched to analyse from a technical-economic and environmental point of view the issue of the recovery of crisis timber and the resilience of the forest-based sector to the impacts of climate change. The IGN/FCBA study on projections of wood availability and carbon stocks and flows in the French forest sector will be regionalised and a study on the flexibility of production processes will be launched.

PILOTE	DGPE, with the support of DGE, DGALN, DGEC, DG Trésor, Comité stratégique de filière (CSF) Bois and Interprofession
BUDGET	To be defined
TIMETABLE	2025: Study of the follow-up to be given to the future recommendations of the inter-inspection mission on technical and economic analyses and the study on the flexibility of production processes
INDICATORS	- Mission report issued - New PNFB published

ACTION 15

Promote continuity of logistic supply between forest and wood processing units in the context of weather-related skidding interruptions (linked to Action 9)

This action will be addressed together with Action 9 on soil. Climate change leads to an increase in the recurrence of periods of waterlogging of forest soils in autumn and winter, which interrupt the shoring of felled wood because the degradation of soil lift makes the parcels inaccessible to machines. Adaptation measures, in particular through the development of additional aerial cable skidding systems or equipment in additional storage places, will be developed, including in Overseas France, in line with the recommendations to be made in the

CGAAER-IGEDD study on the recovery of crisis wood and in line with the Action Plan for the preservation of forest soils.

PILOTE	DGPE with the support of DGALN/DEB
BUDGET	Forest financing of Ecological planning for 2024
TIMETABLE	2025: studies on the follow-up to be given to future recommendations resulting from the CGAAER-IGEDD mission on the recovery of crisis timber, publication and implementation of the Action Plan for the preservation of forest soils
INDICATOR	Number of cable skidding projects supported by public aid and amount of aid granted



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3 Third French National Adaptation Plan

MEASURE 39

Supporting marine fisheries and aquaculture in the face of climate

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

This action fiche addresses several issues:

- The strong need for **knowledge on the direct impacts** of climate change on target species and its indirect impacts *via* changes in food webs and/or environments on which these target species depend. The need for knowledge concerns both the current impacts and the modelling of these impacts in the medium and long term.
- Adapting fisheries and aquaculture management to these current or anticipated impacts, in particular by **integrating scientific knowledge on climate change into existing national, Community and international management frameworks**.
- **Supporting diversification and adaptation of fisheries and aquaculture strategies/practices**, in particular for actors heavily dependent on certain species that are likely to be affected by climate change (e.g. reef species in the Overseas territories).
- **Identifying the protection needs of the functional environments/habitats of the targeted species** in order to strengthen their resilience to climate change (e.g. fisheries functional areas, coral reefs, etc.) and integrating these needs into existing strategies (SNAP, SNB, etc.).

France has the second largest maritime area in the world and the oceans host a large proportion of biodiversity and provide many ecosystem services.

The oceans contribute to the climate system by absorbing 90% of the heat generated by human activities and 30% of CO₂ emissions. They also provide many provisioning services, including fisheries and aquaculture resources. Aquaculture, both for its food component and for the ecosystem services (creation of

biogenic reefs, carbon sinks, etc.) that it can provide, is an activity that must be preserved to contribute to food sovereignty in a context of climate change. Overexploitation of fisheries resources and pollution are the two main pressures responsible for the decline of fisheries resources (IPBES, 2019). Climate change and its consequences (increased temperature and acidification, changes in thermohaline circulation, degradation of certain functional habitats) add to the pressure. They affect marine biodiversity, in particular exploited marine species, as well as aquaculture production: changes in the range of certain target species (displacement or shrinkage of habitat), declines in the abundance of certain species (lower primary productivity due to water stratification, effects on the growth of individuals), increased variability in abundance, predation phenomena, emergence of new species. Models are being developed to predict changes in the distribution of species and activities as a result of changes in environmental parameters or anthropogenic activities. However, these are prerequisites for assessing the consequences of climate change, which are difficult to predict without knowledge of the ability of species to adapt. The first effects of climate change could be seen in the reduction in the size of sardines in the Mediterranean, or in the northward migration of previously absent fish species, such as mackerel in Iceland or octopus in the Bay of Biscay.

ACTIONS ALREADY UNDERTAKEN

Actions **to improve knowledge** are already part of the National Biodiversity Strategy 2030, including those related to fish stocks and the ecosystem approach (measure 13-3).

Another part of the actions already undertaken is aimed at **reducing the impact of fishing and aquaculture activities on marine ecosystems**, through spatial planning, the development of innovations (measures 14-3 and 13-2 of the National Biodiversity Strategy), or the valorisation of ecosystem services and restorative aquaculture, as well as by the development of algal biomass.

Several scientific and academic projects have also been developed **at European or international level** (e.g. for aquaculture, IUCN guides, Plan Bleu studies) to support the adaptation of activities, the aim now being to adopt a more national approach to better respond to local challenges.

NEW ACTIONS

1. Strengthen scientific knowledge on the impact of climate change on fish stocks, food webs, species reared and cultivated in marine aquaculture
2. To take forward at Community level the development of methodology to take account of the impact of climate change on fish stocks and the fisheries sector

3. For non-Community managed stocks, take climate change into account in the definition of management measures at national or local level to ensure sustainable exploitation of the stocks
4. Support adaptation to climate change in international strategies, in particular in the framework of Regional Fisheries Management Organisations (ORGP), the Marine Strategy Framework Directive (DCSMM) and the BBNJ Treaty (Biodiversity Beyond National Jurisdiction)
5. Strengthen the consideration of climate change in the implementation of the actions of the Aquaculture for the Future Plan 2021-2027
6. Adapting the strategic documents for the façade and the sea basins to the challenges of climate change
7. Identify and promote alternative or complementary aquaculture techniques to mitigate the direct and indirect consequences of climate change on concessions
8. Ensure adequate coastal management and governance to enable coastal aquaculture production and fisheries functional areas to cope with the consequences of climate change
9. Promote the integration of the challenges of adapting aquaculture to climate change into European and international policies
10. For commercially exploited species, identify fish functional areas (feeding, spawning, etc.) and allow their protection through Fish Protection Areas
11. Support the diversification and adaptation of fishing strategies and practices, in particular for actors heavily dependent on certain species likely to be affected by climate change

ACTION 1

Strengthen scientific knowledge on the impact of climate change on fish stocks, food webs, species reared and cultivated in marine aquaculture

In order for fishermen and aquaculture professionals to adapt better, and change their practices where necessary, we need to improve our knowledge of changes in the marine ecosystem and its resources, throughout the food web. Rising temperatures can have a number of effects including changes in species distribution, reduced feeding and species growth. Models have already been developed to simulate, in particular, the abundance of fishery resources. These models require sufficient data to assess the different possible behaviours according to species biology and environmental parameters. The aim of this action is to identify the knowledge needed to better assess the impact of climate change on fisheries and aquaculture activities (in the short term), to acquire the necessary data (in the medium term) and to develop methods to simulate future changes (in the medium to long term). The results of these studies will be disseminated to fisheries and aquaculture professionals.

1.1 - Improve scientific knowledge of the impact of climate change on the marine ecosystems on which fisheries and aquaculture activities depend

1.2 – Acquire knowledge, enhance knowledge and develop models to simulate changes and impacts on species

1.3 - Conduct short, medium and long-term simulations of changes in distribution of species and associated stocks in the context of climate change in order to assist the sectors in managing potential changes

1.4 - Communicate scientific knowledge to fisheries and aquaculture professionals

PILOTE	DGAMPA; implemented by IFREMER, IRD and MNHN, in conjunction with the CNPME and the CNC
BUDGET	FEAMPA, European calls for projects BOP 205 of which dedicated annual aquaculture agreements
TIMETABLE	Multiannual actions
INDICATORS	- Number of publications - Number of communications to professionals

ACTION 2

To Take forward at Community level the development of a methodology to take account of the impact of climate change on fish stocks and the fisheries sector

Taking climate change into account requires a method for incorporating climate change into stock management. Currently MSY (Maximum Sustainable Yield) already includes in its calculation method the variation in the abundance of the species concerned by area (stock). This action aims to assess the adequacy of MSY in taking climate change into account and, where appropriate, to develop a relevant methodology for taking climate change into account in managing fish stocks, in relation to the ecosystem-based approach to fisheries management under the Common Fisheries Policy. Once this methodology has been developed and shared among Member States, stock management will be able to take into account all aspects of climate change.

PILOTE	DGAMPA, in liaison with DG Mare
BUDGET	75 k€/year
TIMETABLE	- Short-term: Satisfy MSY while taking account of climate change - Medium-term: Development of a relevant methodology to consider climate change in the management of fish stocks - Long-term: Integrating climate change impacts into stock and fisheries management
INDICATOR	Number of European meetings on the subject attended by French scientists and experts

ACTION 3

For non-Community managed stocks, take climate change into account in the definition of management measures at national or local level to ensure sustainable exploitation of the stocks

In order to ensure sustainable exploitation of stocks and the resilience of the marine environment, climate change must be integrated into the definition of stock management measures at national or local level. As far as Community stocks are concerned, this measure is already included in the method for calculating QATs and quotas. The method already takes account of changes in the biomass of fishery resources.

PILOTE	DGAMPA for France and the Overseas territories. Implementation according to the competences of each: regional prefects, competent overseas authorities (TAAF, French Polynesia, New Caledonia, Wallis and Futuna), CRPMEM, CDPMEM, etc.
BUDGET	FEAMPA, Maritime public domain wind tax
TIMETABLE	Multiannual action
INDICATOR	Percentage of measures integrating climate change

ACTION 4

Support adaptation to climate change in international strategies, in particular in the framework of Regional Fisheries Management Organisations (ORGP), the Marine Strategy Framework Directive (DCSMM) and the BBNJ Treaty (Biodiversity Beyond National Jurisdiction)

Climate change is a global issue that requires everyone to adapt. France has a large maritime territory and is present in all the world's ocean, which is why it participates in the various discussions on oceans and fisheries management in international organisations including ORGP. This action aims to promote the consideration of the impacts of climate change in fisheries management and in international strategies and treaties such as the Marine Strategy Framework Directive (DCSMM) and the BBNJ Treaty (Biodiversity Beyond National Jurisdiction) in order to better implement their adaptation.

PILOTES	DGAMPA and ORGP delegations (EU delegation, FR delegation, France territories delegations) for the ORG component DEB in liaison with DGAMPA on the MSFD strand
BUDGET	With constant resources
TIMETABLE	short- and medium-term actions
INDICATOR	Number of actions integrating climate change

ACTION 5

Strengthen the consideration of climate change in the implementation of the actions of the Aquaculture for the Future Plan (PAA) 2021-2027

Global strategy action for aquaculture: in addition to the actions mentioned above (innovation and economic development), the aim is to give a strong orientation to the other axes, in the management and annual monitoring of the PAA actions: installation/consideration of changes in coastline and water quality; work on species resilience; data collection, etc.

This action aims to guide PAA decisions, projects and actions from a climate change adaptation perspective (e.g. modification/addition of FEAMPA selection criteria, communication strategies, etc.) at national and regional level.

PILOTE	DGAMPA, in conjunction with DGPE, DGAL, DEB, coastal regions and professional organisations
BUDGET	FEAMPA and national/regional partners. France 2030 following calls for projects (Resilience and agri-food capacities, InnovEau)
TIMETABLE	Immediate and multiannual until 2027
INDICATOR	Number of projects co-financed by the FEAMPA/supported by a State aid scheme in the field of adaptation to or anticipation of the consequences of climate change

ACTION 6

Adapting the strategic documents for the façade and the sea basins to the challenges of climate change

The strategic documents for the façade (FSD) are integrated maritime planning documents implementing, inter alia, the Marine Strategy Framework Directive (MSFD). They integrate the economic, social and environmental issues specific to each coastline, including issues related to aquaculture and fisheries activities. Integrating the challenges of climate change remains an important challenge, including in terms of adapting public policies.

In order to maintain aquaculture and fisheries activities in line with the evolution of ecosystems, including marine protected areas, and the evolution of the coastline, the strategic documents for the façade, including the maps of vocation, will be revised. Particular attention will be paid to the integration of climate change issues. As a result, the departmental patterns of maritime cultures structures will also need to be revised to take these issues into account. The action related to the public debate from 20 November 2023 to 26 April 2024 on wind planning and the updating of the strategic documents of façade will need be continued and deepened with a view to fully integrating climate change issues into FSD' vocation maps for the 4th cycle (adoption in 2030). This action will also be extended in Overseas to the strategic documents for the sea basins (DSBM).

PILOTE	DGAMPA, in connection with the DEB
BUDGET	FEAMPA and national counterparts

TIMETABLE	Deadline: 2030 (next update of FSD policy components)
INDICATOR	Percentage of FSD, SDS and/or SRDAM and DSBM updated taking into account climate change issues with a target of 100%

ACTION 7

Identify and promote alternative or complementary aquaculture techniques to mitigate the direct and indirect consequences of climate change on concessions

- Feasibility studies for setting up aquaculture less close to the coast, in order to have more suitable parameters (e.g. temperature, pH) or to minimise the risks (imbalance of fresh water supply, increased risk of contamination by pathogens with virulence aggravated by climate change, etc.): identification of suitable sites, including wind farms as potential development areas, identification of technical, regulatory, health etc. constraints for the operating methods (infrastructure, easements, etc.) and the personnel involved (training, safety, etc.).
- Promotion of complementary techniques to ensure the sustainability of livestock and crops in the face of the consequences of climate change by promoting carbon capture, filtration and the balance of ecosystems: protection of seagrass beds (rehabilitation of fallow land, recolonisation, farming and harvesting techniques), development of a perennial algal biomass, in the margins of commercial production (integrated multitrophic aquaculture), and restorative aquaculture.

PILOTE	DGAMPA, in liaison with DEB, DIRMs, AMP managers and professionals
BUDGET	FEAMPA - France 2030 according to calls for projects
TIMETABLE	Deadline: 2027 (time to identify techniques, scientific validation, implementation)
INDICATOR	Number of projects dedicated to the adaptation of aquaculture production techniques financed by the FEAMPA

ACTION 8

Ensure adequate coastal management and governance to enable coastal aquaculture production and fisheries functional areas to cope with the consequences of climate change

In face of rising sea levels, some concessions or private areas dedicated to aquaculture activities are likely to be called into question, as is the ecosystem in which they are located (marshes, lagoons, clear water, sandbanks, bay bottoms, etc.). Actions to maintain, monitor, supervise and plan these environments, which are often protected because of their environmental sensitivity, are therefore necessary to identify perennial sites, those requiring adaptation and those that can no longer be conserved under this destination.

The consequences of climate change on land can be felt in coastal and marine environments, and in water quality. It is therefore imperative to ensure, through appropriate governance, that these impacts are properly taken into account, including in the context of land-based measures

to combat climate change (wastewater reuse, river management, etc.) so as to avoid imbalances in the nutrient and physico-chemical parameters of coastal waters.

PILOTE	DGAMPA, in liaison with DEB, DGAL and DGPR
BUDGET	To be defined
TIMETABLE	Immediate and multi-annual action
INDICATOR	

ACTION 9

Promote the integration of the challenges of adapting aquaculture to climate change into European and international policies (regulation, standardisation and marketing)

The aim is to represent French interests and make representations to European (e.g. the European Commission) and international bodies (FAO, CGPM, etc.) in order to facilitate the adaptation of aquaculture production methods to cross-cutting regulations and standards.

PILOTE	DGAMPA
BUDGET	No additional need
TIMETABLE	Immediate and multiannual actions (integration into national strategies, instructions in the Council Working Party on Fisheries and Aquaculture, interventions in the AgriFish Council and international bodies, comments and proposals on draft texts and regulations, requests for regulatory changes, etc.)
INDICATOR	develop/establish regulations and standards for aquaculture in relation to climate change and/or dedicated recommendations, in particular in relation to the species produced

ACTION 10

For commercially exploited species, identify fish functional areas (feeding, spawning, etc.) and allow their protection through Fish Protection Areas

Functional fisheries areas (ZCH) are key areas in the life of a fish species and their protection therefore promotes the conservation and the development of these species. However, climate change has the potential to profoundly alter these areas. The question is therefore whether the protection of these areas by ZCH, despite a change in temperature for example, makes it possible to maintain and promote fish species in a changing area and, if this is not the case, to initiate a reflection on how to maintain the protection of these species.

PILOTE	DGAMPA, in connection with the DEB
BUDGET	FEAMPA
TIMETABLE	From 2025
INDICATOR	Number of fisheries protection areas

ACTION 11

Support the diversification and adaptation of fishing strategies and practices, in particular for actors heavily dependent on certain species that are likely to be affected by climate change (e.g. fisheries resources associated with coral reefs overseas)

11.1 - Disseminate sufficient information to businesses on the impact of climate change on their resources and activities

The results of actions 1 to 3 must be disseminated to marine professionals so that they are aware of the impact of climate change and, where necessary, change their practices so that businesses are resilient to change.

11.2 - Empower businesses to adapt their practices and support the seafood market to changes in the species fished

Changes in species distribution can create new opportunities such as octopus in the Atlantic or loss of activity (species more available, material unsuitable). This is leading to changes in supply and demand for seafood. The aim of the action is to provide businesses with the means to adapt and to help the sector to develop seafood products.

PILOTE	DGAMPA
BUDGET	To be defined
TIMETABLE	To be defined
INDICATORS	11.1 : Number of companies raised awareness 11.2 : Financial resources committed / action plans developed to help companies adapt their practices



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3 Third French National Adaptation Plan

MEASURE N°40

Better assess adaptation actions implemented by companies

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

The objectives of this measure are

- Upstream of new projects, align the environmental assessment criteria with the reference warming trajectory for adaptation to climate change (TRACC) to ensure future climate-compatible development (avoid maladaptation).
- Downstream, assess how companies are adapting to climate risks, with a view to supporting them and strengthening their actions. Companies are required to comply with environmental reporting obligations that include the issue of adaptation to climate change. A review of this reporting will be conducted to verify its adequacy with the adaptation needs of companies.

ACTIONS ALREADY UNDERTAKEN

The environmental assessment framework, as defined today in national and European law, is a cross-cutting approach that takes into account the environment as a whole (biodiversity, climate, water, air, soil, land, landscape, human health, material goods, cultural heritage, etc.), as well as the interactions between these different environmental factors, and in particular those likely to be modified by the effects of climate change.

The French and European regulatory frameworks are increasingly demanding on the reporting of climate risks and adaptation actions by companies, in particular with the adoption of the Corporate Sustainability Reporting Directive (CSRD) and the European Sustainability Reporting Standards (ESRS) that complement it, at European level. This transparency requirement encourages European companies to analyse climate risks when they are material (i.e. likely to have a significant impact) for their activities. It also provides comparable data, which will allow

a better analysis of how European companies take these issues into account. The European taxonomy also makes it possible to identify the activities of companies aligned with the adaptation objectives.

Reporting frameworks are dense. In addition to the implementation of regulatory measures, support for companies must fully mobilise the economic world by creating peer-to-peer exchanges, feedback and innovation (see measure 33 of the PNACC).

NEW ACTIONS

- Upstream assessment: Integrate the reference warming trajectory for adaptation to climate change into the environmental assessment
 - Downstream evaluation: take biennial stock from 2026 onwards of the adaptation policies put in place by companies subject to non-financial reporting rules, with a view to assessing the need to strengthen these policies and improve reporting rules

ACTION 1

Integrate the reference warming trajectory for adaptation to climate change into the environmental assessment

Today, the effects of climate change are insufficiently taken into account in project impact assessments, while the lifetime of some projects may exceed several decades. Taking into account the effects of climate change will help increase the resilience of projects to climate change and anticipate the possible environmental, economic and social implications. The use of the reference warming trajectory for adaptation to climate change will standardise this analysis. Consideration of climate change adaptation issues will also be extended to the environmental assessment of plans/programmes.

- 1.1** The inclusion in project impact assessments of ‘the climate impact of the project and the vulnerability of the project to climate change’ is already provided for in the Environmental Code (Article R122-5), without specifying the level of warming to be taken into account. The Environmental Code will be amended by decree in 2025 to introduce the reference warming trajectory for adaptation to climate change as a working assumption in the environmental assessment of plans/programmes.

1.2 In practice, this consideration, particularly with regard to vulnerability to climate change, is still largely inadequate. A methodological guide for project developers and design offices will be published in 2025 to contribute to the climate change adaptation component of the environmental assessment of their project.

This guide will not address the climate change mitigation component (i.e. limiting the scale of climate change by addressing its causes), which has already been the subject of a guide on the inclusion of greenhouse gas emissions in impact assessments in 2021, and the inclusion of the effects of global warming in environmental reporting for plans and programmes.

1.3 In 2026, the Environmental Authority will take stock of how adaptation issues are taken into account in impact assessments.

PILOTE	CGDD
BUDGET	No additional need

TIMETABLE	First half of 2025 - Publication of the methodological guide on taking adaptation into account for the environmental assessment of projects - Webinars for consulting offices to publicise the guide - Integration of the topic in the upstream framing of impact studies - Publication of decrees amending the Environmental Code for the integration of the reference warming trajectory for adaptation to climate change in the environmental assessment of projects and plans/programmes - Preparation and publication of a similar guide for plans/programmes - Organisation of webinars for consultancy firms - Integration of the topic in the upstream framing of impact studies 2026: Publication of the balance sheet of the Environmental Authority
INDICATORS	- Publication of guides - Publication of decrees - Number of environmental assessments taking into account TRACC

ACTION 2

Take a biennial review from 2026 onwards of the adaptation policies put in place by companies subject to non-financial reporting rules, with a view to assessing the need to strengthen these policies and improve reporting rules

This action will focus on monitoring companies in the implementation of their reporting obligations on climate risks and adaptation actions. It will also encourage the mobilisation of companies that will not be affected by these obligations for several years, especially in sectors and territories most vulnerable to climate change.

The information reported will be analysed and published to inform subsequent reporting cycles, enable information sharing among companies and guide public policies. The information available will gradually improve.

Finally, the desirability and modalities of a gradual increase in adaptation requirements will be examined in the light of the implementation of the obligations already laid down, taking into account the differences in maturity and vulnerability of the activities (in particular according to size and sector of activity).

These include, in particular:

- Promote awareness and ownership of the EU regulatory framework (CSRD, taxonomy) to facilitate its application on the adaptation aspect;
- Encourage at European level the expansion of activities eligible for the taxonomy in the field of adaptation through the gradual integration of new activities;
- In the national context, once the European regulations have stabilised, link the publication requirements at national level with the scenario of the reference warming trajectory for adaptation to climate change where possible (Article 29 of the Climate Energy Law);
- Carry out an assessment of the application at national level of European standards for the publication of information related to climate risks and adaptation (CSRD, Taxonomy). Have an annual qualitative assessment of the actions and objectives, in terms of physical risk management and adaptation, of undertakings that publish their sustainability information on a regulatory or voluntary basis. Have an annual quantitative assessment of companies that publish information on their adaptation and physical risk mitigation strategy;

- In light of the first lessons learnt from the application of reporting obligations, launch a reflection on an increase in adaptation requirements. International experiences and lessons learned from mitigation policies can be used. Identify avenues and develop recommendations to improve companies' strategies and transparency on physical risks and adaptation.

PILOTE	DG Trésor in liaison with the CGDD and with the directorates in charge of the critical infrastructures concerned by the measure
BUDGET	No additional need
TIMETABLE	End 2025/beginning 2026: Summary on the publication of climate change adaptation information published in 2025 under the CSRD and the taxonomy From 2026 and every two years thereafter throughout the duration of the PNACC: Publication of the Government's assessment of the evolution of companies' adaptation strategies and recommendations for companies to take better account of adaptation issues.
INDICATORS	Number and typologies of undertakings that disclose information related to physical risks and climate change adaptation under the CSRD, and analysis of developments



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3 Third French National Adaptation Plan

MEASURE N°41

Developing the tools and information that businesses need to adapt to climate change

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

The challenges of adapting to climate change and its impacts on economic activity are currently insufficiently known by all economic actors and therefore little taken into account. In addition, tools to support the assessment of physical risks have been developed but remain general and sometimes partial. There is therefore a need on the part of economic actors for shared generic tools to start their adaptation process, complemented by tools specific to the problems and solutions of particular sectors.

In the same way as the sector-specific tools defined for the reporting on greenhouse gas emissions, the sectors or other key players will be responsible for developing them, with the methodological support of the State and its operators.

As soon as sectoral guides are available, the usual means of mobilising businesses will be used for their dissemination (see measure 33 of the PNACC).

This measure is also complementary to an action dedicated to climate services, including the harmonisation of the information provided to territorial actors, including businesses, on the physical effects of climate change at a precise territorial scale (see fact sheet 22 of the PNACC).

ACTIONS ALREADY UNDERTAKEN

A guide, entitled *"How to embark your company upon on its climate change adaptation journey?" 30 French companies that are already taking action* was published in February 2024. Led by the State operator Ademe in partnership with the association Entreprises pour l'Environnement (EpE) and the Ministry responsible for the Ecological Transition, it aims to help companies tackle the issue of adaptation to climate change, an essential step to ensure the sustainability and continuity of their activities. It shows, through the testimony of thirty French companies, that it is possible to engage in an adaptation process regardless of its size or its sector of activity. Structured according to the logic of an adaptation path, the guide presents examples of adaptation actions, diagnostic approaches, strategy development and monitoring and evaluation processes, rooted in the concrete experience of witness companies. It also provides theoretical and methodological elements that help to better understand the issues at stake and identify good practices and tools to be mobilised along the way.

NEW ACTIONS

1. Provide companies with consolidated and individualised data on the evolution of climate hazards
2. Develop a generic reference guide/tool to facilitate the engagement of economic actors in adaptation
3. Raise awareness among economic sectors of the benefits of drawing up sectoral guides for assessing vulnerabilities to the physical risks to which are exposed as a result of climate change (e.g. drought, floods, landslides, etc.) and of adaptation solutions, and support sectors interested in producing sectoral guides to adapt to climate change
4. Streamlining the offer of generic and sectoral tools recommended by the State, in order to facilitate the choice of companies
5. Conduct an experiment with particularly exposed industrial sites in order to refine public methodological support tools

ACTION 1

Provide companies with consolidated and individualised data on the evolution of climate hazards

Business awareness of increasing climate risks and risk awareness remains low, especially for small businesses. Knowledge of climate risks is, however, a crucial factor in triggering an adaptation strategy. Despite the efforts made in previous PNACCs to produce and disseminate climate projection data (via the DRIAS portal), these remain difficult to access and exploit for companies without expertise on the subject.

In this context, this measure aims to make available to any French company tools and analyses concerning the risks of climate hazards, accessible via the digital space of the Banque de France dedicated to companies (Espace Dirigeant), including, from the end of 2025, a mapping of its exposures to certain climate hazards.

Each manager, or the person he or she has appointed, will be able to consult, as of the end of 2025 and on a confidential basis, the exposures of his or her company to several types of

hazards (temperatures, precipitation, storms, etc.), in relation to a reference period and according to the TRACC scenario (with three time horizons: 2030, 2050 and 2100). The exposure of the company's sites is measured using data sent by Météo-France (DRIAS) to the Banque de France, which then adjusts them to create indicators specific to companies and their activities.

Specifically:

- It will be possible for a company to directly visualise changes in hazards in all its establishments, but also to consult them by grid (with a resolution of 8 km by 8 km) throughout mainland France;
- The company will be assisted in its diagnosis by a score system allowing it to identify the severity of the increase in its exposure according to the hazards and sites concerned. Companies will then be directed to additional resources and partners (notably Ademe) to develop a dedicated action plan. The Banque de France's offer is thus complementary to the other existing, well-identified schemes: ACT Adaptation, Climadiag Agriculture, Bat'Adapt, Diag Adaptation...
- Thereafter, the Banque de France's portal will continue to be enriched, in particular by capitalising on existing research and tools to offer companies 'sector-specific hazards' (i.e. evaluation of exposure that take into account sectoral specificities in terms of adaptation issues). The visualization of the evolution of hazards in the Overseas territories will be added in the long term, thus covering the entire French territory.

This service will be free of charge.

PILOTES	DG Trésor and Banque de France
BUDGET	No additional need
TIMETABLE	Opening of the service at the end of 2025
INDICATOR	Number of enterprises that have used the tool

ACTION 2

Develop a generic reference guide/tool to facilitate the engagement of economic actors in adaptation

The guide will provide the generic methodological elements of a climate change adaptation approach common to all companies, e.g. the consideration of heat waves at the workplace or the adaptation of tertiary buildings to climate change. In its cross-cutting aspects, it will seek to integrate, inter alia, multi-benefit solutions such as nature-based solutions.

PILOTES	DGEC, Ademe and Bpifrance
BUDGET	50 k€
TIMETABLE	2025: Start of work 2026: Finalisation
INDICATOR	Number of downloads of the guide and requests for support by operators

ACTION 3

Raise awareness among economic sectors of the benefits of drawing up sectoral guides for assessing vulnerabilities to the physical risks to which sites are exposed as a result of climate change (e.g. drought, floods, landslides, etc.) and of adaptation solutions, and support sectors interested in producing sectoral guides to adapt to climate change

Priority is given to the sectors potentially most affected, such as agri-food, wood processing, chemicals, building materials and construction, water management, logistics and tourism. These guides may contain in particular (i) the analysis of specific sectoral risks and opportunities, (ii) the definition of action plans for adaptation to these risks, based on the sharing of good practices, focusing on nature-based solutions for adaptation to climate change and on existing tools and methods (CSRD reporting tool based on the General Directorate for business (DGE)'s CSR Portal, ACT Adaptation method, etc.). In particular, these guides will contribute to the evolution of business continuity plans and the adaptability of companies (such as changes in jobs, skills and work that these measures require). The approach is intended to be accessible and gradual in order to identify pragmatic and proportionate actions, which will be enriched by feedback. For example, the analysis of specific sectoral risks and opportunities may include, beyond aspects of processes and working conditions, the impacts of climate change on the supply chain, and the link must be ensured with the outputs of the supply chain resilience study (see fact sheet 33 of the PNACC). These guides may be inspired by the projects referenced in the [Resource Centre for Adaptation to Climate Change](#), which will be enriched with examples of solutions put in place by companies. They can be the basis for awareness-raising, promotion and animation tools, so that the federations and sectors that have developed them can disseminate these solutions throughout the territory.

PILOTES	DGE and Ademe, in cooperation with professional federations and national inter-professional organisations, trade unions, AMRAE (Association for the Management of Enterprise Risks and Insurance), DGITM, CGDD and DREETS
BUDGET	No additional need
TIMETABLE	2nd half of 2024: Launch of awareness-raising of the sectors and identification of the first voluntary sectors, launch of work with AMRAE 2025: Preparation of the first guides by voluntary professional federations with the support of state services
INDICATOR	Number of high-stakes sectors that have developed a sectoral guide

ACTION 4

Streamlining the offer of generic and sectoral tools recommended by the State, in order to facilitate the choice of companies

A catalogue of tools recommended by the State for adapting to climate change will be deployed on the [Resource Centre for Adaptation to Climate Change](#).

Generic tools will comply with the principle of: “1 need – 1 tool”, will be freely accessible and organised in the form of an adaptation pathway. The sectoral tools will be brought together in particular during the production of the sectoral guides (see action 3).

In addition, the digital platform ‘Green transition of enterprises’ will be gradually incremented with new actions and public support related to adaptation to climate change.

PILOTES	Ademe, DGE and CGDD
BUDGET	No additional need
TIMETABLE	2025: Continuous update of the catalog of recommended tools on the resource center and supporting schemes available on the platform
INDICATORS	- Online catalogue of recommended tools on the Resource Centre for Climate Change Adaptation - Number of requests for support or accompaniment schemes related to climate change adaptation via the Green Business Transition Platform

ACTION 5

Conduct an experiment with particularly exposed industrial sites in order to refine public methodological support tools

Due to their production process, certain industrial sectors may be particularly vulnerable in the medium term to the effects of climate change. If public policy tools exist or are being prepared, a confrontation with the concrete challenges and difficulties faced by industrial installations in their adaptation strategy is likely to improve public policies. This will involve experimenting with industrial installations whose production capacity is threatened because of their location, due to the effects of climate change on site or on their territory. The aim is to understand how companies take ownership of the challenges of adaptation and what steps can be taken beyond risk management, in order to identify concretely which public levers (from central, territorial and operators) can help them carry out the necessary transformations.

PILOTES	DGE and Ademe, with the support of the DGPR, the DGITM and, depending on the territories concerned, the DREETS, the DDTM and the services of the prefectures
BUDGET	No additional need
TIMETABLE	2024: Definition of approach and methodology, selection of voluntary sites (1 st wave), launch of first two projects 2025: First assessment of projects launched at the end of the first half of the year, launch of two additional projects
INDICATOR	Quality of outputs from experimentation (report on the lessons learned for policy levers)



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3 Third French National Adaptation Plan

MEASURE N°42

Mobilising financial actors for the private financing of climate change adaptation

CATEGORY OF THE MEASURE

3. Adapting human activities: ensuring economic resilience and food, economic and energy sovereignty

BACKGROUND

Faced with investment and financing needs for climate change adaptation, financial actors have a key role to play in contributing to companies' adaptation efforts. This measure aims to create favourable conditions for financing adaptation by private financial actors.

NEW ACTIONS

1. Facilitate the financing of business adaptation actions
2. Carry out a mission on the role of the banking system in risk prevention

ACTION 1

Facilitate the financing of business adaptation actions

Financing facilities for businesses will be deployed, including:

- The establishment of green guarantees for climate change adaptation and the ecological transition. The public investment bank BPI France's new 'creation and development' green guarantees will finance companies' climate change adaptation projects, like building insulation or water reuse circuits, on more favourable terms as regard guaranteed percentages and commission levels compared with conventional guarantees. The amount of the guaranteed loan for these adaptation projects may be up to €2 million, and up to €2.5 million for industry, taking into account the specific needs of this sector. They have been offered to all VSEs and SMEs since 2024;

- The launch of green transition¹ bonds benefiting from the State guarantee. These bonds for SMEs and midcaps aim to finance long-term actions contributing to the green transition. These 'transition bonds' will be distributed until 31 December 2029 with insurers and management companies.

In addition, the dialogue with financial actors will be deepened in order to strengthen the mobilisation of private finance for adaptation.

PILOTES	DG Trésor and BPIFrance
BUDGET	For the transition bond: State guarantee on all final losses of the fund, up to a maximum of 30% of the fund's outstanding amount. A maximum amount of the guarantee is currently set at €5 billion (2024 Finance Law)
TIMETABLE	2025: Implementation of the financing facilities and deepening of the dialogue with financial actors to strengthen the mobilisation of private finance for adaptation
INDICATORS	

ACTION 2

Carry out a mission on the role of the banking system in risk prevention

This mission will aim in particular to (i) take stock of climate risk considerations in the financing decisions of banking actors, and (ii) develop proposals to strengthen the role of the banking system in raising risk awareness and incentivising the prevention of natural risks.

PILOTE	DG Trésor
BUDGET	No additional need
TIMETABLE	1 st half 2026
INDICATOR	Mission report delivery

¹ [Financing the transition of SMEs and mid-caps - Launch of "transition bonds" \(OT\) - Press - Ministry of Finance](#)



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3 Third French National Adaptation Plan

MEASURE 43

Promoting the adaptation and resilience of natural environments and species to climate change

CATEGORY OF THE MEASURE

4. Protecting our natural and cultural heritage

BACKGROUND

The aim of this fact sheet is to identify the vulnerability of natural environments (species and protected areas) to on climate change and, on this basis, to contribute to their resilience. In order to rethink conservation techniques and mobilise public and private actors, these actions must be based on research programmes and generate co-benefits for other socio-environmental challenges.

Biodiversity provides essential ecosystem services: food production, water purification, providing cultural services, raw materials such as wood, medicines, etc. Biodiversity is therefore essential to ensure the productivity of our crops (soil fertility, pollination, etc.) and livestock (disease regulation, feed, etc.). Biodiversity also protects our health.

By regulating the local climate, ecosystems help to mitigate the urban heat island effect and reduce mortality during the heat wave. In addition, nature contributes to our good mental health, in particular through the living environment (landscapes), recreation and leisure activities.

Participatory education and science services related to biodiversity also promote social cohesion.

Priority should be given to implementing actions in the overseas territories, where 80% of France's biodiversity is located.

ACTIONS ALREADY UNDERTAKEN

The **national strategic framework for biodiversity has been established**. The Government has adopted several strategies and action plans that already cover a wide range of measures, including:

- The [National Biodiversity Strategy 2030](#) (SNB), which aims to limit all pressures on nature, including habitat fragmentation which limits the movement of species in the context of climate change. Action 20 of the SNB therefore provides for measure to promote ecological frameworks, that are essential to promote the movement of species and reduce their vulnerability to climate change.
- The [National Strategy for Protected Areas](#), which aims, to develop a coherent and resilient network of marine and terrestrial protected areas (target: 30%) and strong protected zones (target: 10% well managed) by 2030. Protected areas are spaces designated for the long-term conservation of the nature they shelter, as well as, the associated ecosystem services and cultural values. Protected areas are refuges and reservoirs of biodiversity: they host species that will have to migrate and promote the resilience of species to climate change. To date, 33% of the national territory is covered by protected areas and 4.2% by high protection zones. Three-year action plans are in place, including plans for the creation or expansion of new protected areas and high conservation value areas.
- The [National Marine and Coastal Strategy 2024-2030](#) also aims to place 10% of the national marine territory under strong protection by 2030, with an ambitious and balanced contribution from France (5% of French waters under strong protection by 2030).
- The [4th National Plan for Wetlands \(PNMH4\)](#), which provides for numerous measures to preserve or improve the functioning of wetlands. In fact, they provide many services in the field of adaptation to climate change: resource regulation, flood prevention, etc. In particular, this plan aims to acquire 8 500 ha and restore 50 000 ha of wetlands by 2026. In particular, the restoration of areas where rivers function properly in order to improve the functions of the associated wetlands will be strengthened and improved. They will complete the documentation of all ecosystem interactions that they aim to restore.

With regard to invasive alien species (EEE), several preventive actions planned under measure 10 of the SNB (limiting the introduction of and combating invasive alien species) must be stepped up with the support of the PNACC-3, in particular the establishment or increase (where they exist) of naturalistic monitoring networks for species dynamics (arrival of new species / expansion of existing species), with effort being made at the level of the marine environment which will be most impacted by the arrival of subtropical or tropical species on the Mediterranean and Atlantic coasts.

At national level, several priority research programmes and facilities (PEPR) have been launched, including:

- The **PEPR Solu-biod** aims to innovate with nature to achieve positive impacts for biodiversity, society and the economy. Nature-based solutions (SFN) are innovative approaches to protect, restore and manage ecosystems that effectively address various societal challenges, and have positive socio-economic and biodiversity impacts. However, new scientific approaches are needed to accompany profound changes in the design, implementation and evaluation of SFN, and the emergence of a new economic sector.
- The **PEPR FairCarbon**, which aims to combat global warming by achieving carbon neutrality, restore soil fertility and improve water quantity and quality, through changes in land use and land management practices, and inform public policy.
- The **PEPR Subsurface: a common good**. The emergence of new technologies for the use of the subsurface and the growing demand for the resources it contains raise the question of the conditions for its sustainable use. This requires a better knowledge not only of its potential, but also of the environmental, economic and social impacts of its use; the response must be based on an innovative transdisciplinary scientific approach.
- The **PEPR One water**. In the face of water scarcity, this PEPR aims to address several issues, including the impact of global change, both climatic and anthropogenic, on resources and environment and to support the transition to a new management of resources and a more sober, virtuous and resilient society.

- The **PEPR FORREST** is being established. It will be about thinking about sustainable forest management that allows both maintaining its role in mitigating and adapting to climate change and meeting the needs of the forest-based sector *through* the development of a circular bio-economy. It contributes to the objectives of the National Low Carbon Strategy or even the SNB.

The Foundation for Biodiversity Research (FRB) has published a synthesis of the impacts of climate change on ecosystems and ecosystem services in France, accompanied by recommendations for biodiversity adaptation.¹

On 28 June 2024, the results of the EXPLORE 2 study on the availability of water resources in 2070 were published.

As part of the space component of France 2030, the CNES has published a call for tenders for the purchase of demonstration services developed over the period 2024-2026 based on satellite data and related to water management. These services will make it possible to monitor the volume of water stored in dam reservoirs and the dynamics of water bodies as well as the quality and temperature of water bodies and watercourses, as well as irrigated agricultural plots and the density of intercropping vegetation cover.

At local level, there are regional groups of climate experts who may also be interested in climate-biodiversity linkages and who are involved in improving knowledge at regional level, and developing of action research in territories to provide foresight and develop demonstration projects.

At European level, the Commission supports, major biodiversity projects, in particular [Biodiversa](#). Through the Horizon Europe research partnerships.

NEW ACTIONS

Identifying vulnerability of species and protected areas and proposing actions for the restoration and prevention of habitats and species

1. Taking into account the challenges of climate change adaptation in the National nature restoration plan
2. Carry out a vulnerability assessment according to the Reference warming trajectory for climate adaptation (TRACC) for species subject to a National action plan (PNA) and then include measures in the PNA
3. Identifying habitats and species vulnerable to climate change and the loss of ecosystem services associated with their degradation and/or disappearance, whose resilience of which can be ensured by reducing pressures or by active restoration
4. Accelerate the restoration of river morphology, associated landscapes and wetland functions in line with the Water Framework Directive and the aquatic environment part of the Nature Restoration Regulation
5. Turning our protected areas into laboratories for climate change adaptation
6. Integrating climate change into the work of national and regional biodiversity observatories

¹Soubelet H., Delavaud A., Goffaux R., Voirin S., Bérel M., 2023. Biodiversity and climate change: Impacts on biodiversity, French ecosystems and ecosystem services. Recommendations for biodiversity adaptation. Synthesis of knowledge. Foundation for Biodiversity Research

Relying on research and knowledge more broadly as a decision-making tool to anticipate the consequences of climate change

7. Improving marine habitats knowledge
8. Improve scientific knowledge on the evolution of the biological and geological diversity of glacial, periglacial and post-glacial ecosystems and more generally of the cryosphere, and their role in the adaptation of mountain areas to climate change
9. Develop the climate change adaptation and mitigation component of the EFESSE programme (French Assessment of Ecosystems and Ecosystem Services)

Strengthening inventory actions and developing mappings

10. Accelerate the coverage of French wetland inventories
11. Monitor the evolution of wetlands under climate change through the development and use of a modelling tool
12. Develop a new collaborative tool for monitoring river restoration
13. Mapping changes in the distribution of marine species due to climate change
14. Conduct a regular national biodiversity census using traditional or DNA-based methods

Mobilising stakeholders to combine the challenges of climate change adaptation and biodiversity conservation

15. Develop a public communication campaign "Adapting and restoring biodiversity: what are the levers?"
16. Organise an exchange seminar for biodiversity policy operators on climate change adaptation

Identifying the vulnerability of species and protected areas and proposing actions for the restoration and prevention of environments and species

ACTION 1

Taking into account the challenges of climate change adaptation in the National nature restoration plan

The Nature Restoration Regulation was definitively adopted on 17 June 2024. Its implementation is reflected in the development of a national restoration plan for France within two years of the publication of the text. This national restoration plan will have to integrate the challenges of climate change adaptation. To develop this plan, IUCN is providing support work *through* the Technical Support Implementation (TSI) funding programme.

In parallel, roadmaps will be developed for the Overseas Territories, in accordance with Axis 2 of the National Biodiversity Strategy.

PILOTE	DEB
BUDGET	Funding DG Reform European Commission
TIMETABLE	2024-2025: TSI support for the preparation of the National restoration plan 2026: Publication of the National restoration plan
INDICATORS	- Publication of the accompanying report - Publication of the national restoration plan with climate change adaptation criteria

ACTION 2

Carry out a vulnerability assessment according to the Reference warming trajectory for climate adaptation (TRACC) for species subject to a National action plan (PNA) and then include measures in the PNA

The steering committees of all the PNAs will be mandated to carry out a vulnerability assessment of the species covered, in accordance with TRACC. Specific measures relating to climate change (in-situ or ex-situ conservation, accompanied migration, etc.) will be included, where appropriate, when the PNAs are renewed.

PILOTE	DEB
BUDGET	Budget for PNA 2025 and beyond
TIMETABLE	Start with the overseas territories 2025: Bringing the problem to COPIL 2026 - 2027: Carry out this assessment and identify the measures to be taken if necessary
INDICATOR	Percentage of PNAs taking account of climate change impacts

ACTION 3

Identifying habitats and species vulnerable to climate change and the loss of ecosystem services associated with their degradation and/or disappearance, whose resilience can be ensured by reducing pressures or by active restoration

This action will consist in carrying out a prospective study of the evolution of habitats vulnerable to climate change over different time horizons, up to 2050, and in anticipating the consequences of these evolutions in terms of loss of ecosystem services provided. The terrestrial and marine habitats identified as the most vulnerable and/or whose degradation would be associated with the most important services will be studied to anticipate

modulations of protection instruments (perimeter, temporality of protection measures, management measures such as the establishment of ecological continuities).

The identification of vulnerable species may be based on the IUCN Red Lists.

PILOTE	DEB, with the participation of OFB for Overseas France
BUDGET	Additional budget to be defined
TIMETABLE	2025: Prioritisation of natural habitats (EUNIS) most vulnerable to climate change with quantification of losses of associated ecosystem services (supporting CGDD work on CarHab for the terrestrial environment) by 2030, 2040 and 2050
INDICATOR	Study published

ACTION 4

Accelerate the restoration of river morphology, associated landscapes and wetland functions in line with the Water Framework Directive and the aquatic aspects of the Nature Restoration Regulation

Rivers, wetlands and aquatic environments in general are fragile ecosystems, at the centre of the impacts of climate change on the water cycle (recurrent and increasingly intense droughts, flooding of rivers or wetlands, impact on aquatic fauna and flora). Conversely, more intense rainfall events may expose populations to major risks (flooding) if the balance of watercourses is not respected and wetlands are destroyed. preserving and restoring of the aquatic environments (rivers, wetlands) and its associated environments must be a priority for the adaptation of territories to climate change. These actions should not be limited to protected areas but should be extended to watersheds and implemented within an integrated water management framework in order to ensure the ecological continuity of these environments, their functionality and ecosystem services, in particular the regulation of the water cycle. Particular attention will be paid to scientific mediation and to informing stakeholders of the benefits of restoring rivers, wetlands and other related habitats, in particular with regard to flood and drought risks.

The criteria for prioritising the areas to be restored will be published as part of the preparation of the national plan under the Nature Restoration Regulation.

PILOTE	DEB
BUDGET	Water agencies' regular budget
TIMETABLE	From 2024 (continuous action)
INDICATORS	- Number of works treated to restore ecological continuity of watercourses - Area of restored wetlands - Area of Protected wetland

ACTION 5

Turning our protected areas into laboratories for climate change adaptation

Protected areas play a key role in conserving ecosystems. They limit the pressures and impacts of human activities on these ecosystems and provide essential services for climate regulation. It is therefore important to maintain and develop an efficient and coherent network of protected areas.

In particular, protected areas are refuges and reservoirs of biodiversity: they host species that will have to migrate and promote the resilience of species to climate change. Like the rest of the country, these protected areas are impacted by climate change, compounded by the other pressures they face. This means moving from a static conservation logic to a dynamic one that integrates climate change.

Protected areas must therefore adapt their management rules to incorporate the effects of climate change, experiment with management methods and find solutions to make territories more resilient through nature-based solutions, scientific tools and territorial animation.

Specifically, climate change will be systematically integrated into the management documents of protected areas, both terrestrial and marine. To this end, managers will be able to rely in particular on the methodological guide developed as part of the LIFE Natur'Adapt project in order to carry out a vulnerability diagnosis and translate it into a climate change adaptation plan at the level of the protected area. This will be accompanied by training programmes for managers (online training on the OFB platform - development of complementary modules - in partnership with the Regional Biodiversity Agencies (ARB), the National Centre for Territorial Public Service (CNFPT), municipalities and groups).

PILOTES	Managers of protected area networks, with the support of MTEBFMP DREAL, DEAL, local authorities and OFB
BUDGET	In addition to the SNB trajectory, 11 FTEs for the national parks (1 FTE/park)
TIMETABLE	From 2024
INDICATORS	- Number of protected areas that have developed a protected area-wide climate change adaptation plan (by protected area typology) - Percentage of protected areas staff trained on climate change

ACTION 6

Integrating climate change into the work of national and regional biodiversity observatories

The aim is to develop the issue of climate change impacts on biodiversity and feedback loops within the National Biodiversity Observatory (ONB) and regional observatories, and to develop indicators overseas, in conjunction with the Overseas Biodiversity Meter tool operated by PatriNat.

In addition, the mid-term review of the Regional Biodiversity Strategies will have to take into account the challenges of adaptation to climate change according to the TRACC, in order to strengthen, if necessary, actions relating to the conservation of wetlands, the protection of hedgerows or the development of nature-based solutions.

PILOTE	OFB
BUDGET	No additional needs (OFB financing)
TIMETABLE	From 2024
INDICATORS	- Number of national or offshore indicators integrating climate change impacts on biodiversity and/or feedback loops - Number of regional biodiversity strategies assessed at mid-term according to the TRACC

Relying on research and knowledge more broadly as a decision-making tool to anticipate the consequences of climate change

ACTION 7

Improving marine habitats knowledge

The EU Nature Restoration Regulation adopted on 17 June 2024 sets a clear pace for closing knowledge gaps (100% by 2040). The overall knowledge acquisition programme to be carried out under the National restoration plan will in particular, allow the spatialisation assessment and forecasting of the evolution of marine habitats characterised as carbon sinks (seagrass beds, macroalgal forests, loose sediments, mangroves) or habitats of sensitive species. This action will also contribute directly to actions 1 and 8.

PILOTE	DEB
BUDGET	To be defined
TIMETABLE	Commitment from 2024, two-stage planning (2030/2040)
INDICATORS	- Number of Marine Strategy Framework Directive indicators and criteria on the state of marine habitats (D1HB, D6) assessed - Achievement of the targets of Article 5.4 of the Catering Regulation (50% of the gaps closed in 2030, 100% in 2040)

ACTION 8

Improve scientific knowledge on the evolution of the biological and geological diversity of glacial, periglacial and post-glacial ecosystems and more generally of the cryosphere, and their role in the adaptation of mountain areas to climate change

The aim is to improve knowledge of the evolution of glacial, periglacial and postglacial ecosystems, in particular by:

- From the point of view of the water cycle and the conservation of the freshwater resources. Glaciers and proglacial lakes are an important freshwater resource that must be preserved.
- From the point of view of the evolution of the glacial and periglacial ecosystems which will be profoundly modified and the biological evolution in the face of the intermittence of rivers.

The aim of this action is to promote the development of common tools for monitoring glacial ecosystems and ecosystems emerging from glacial retreat in order to improve the exchange of information and data on these environments.

The actions carried out will take into account the work carried out under Action 1 "Improve knowledge and characterisation of natural mountain hazards" from Measure 6 "Protecting the population from natural hazards in the mountains, including glacial hazards and periglacial".

PILOTES	DEB and National Parks
BUDGET	Budget SNB
TIMETABLE	2030 - target SNB 3
INDICATOR	Number of tools developed to monitor glacial ecosystems

ACTION 9

Develop the "climate change adaptation and mitigation" component of the EFESSE programme (French Assessment of Ecosystems and Ecosystem Services)

Ecosystems provide a wide range of ecosystem services, in particular regulating services of biogeochemical cycles (nitrogen, phosphorus, water, carbon). Maintaining or enhancing these regulating services will be necessary for adaptation to climate change. However, these ecosystem services are threatened by the degradation of ecosystems health. This action aims to develop and improve knowledge on the interactions between ecosystem condition, ecosystem services and adaptation solutions.

This action will build on the national conceptual framework of EFESSE, the climate and adaptation component of which will be developed with the integration of climate change impacts in the ecosystem services assessments produced in the programme. The relevant works will assess the risk of loss of ecosystem services will be carried out according to TRACC. This will help feed into decision support tools (e.g. cost-benefit analysis) to guide actors, in particular on nature-based solutions. Action research projects to move from grey to nature-based or mixed solutions will also be supported.

PILOTE	CGDD
BUDGET	30 k€
TIMETABLE	From 2025
INDICATOR	Percentage of studies carried out under the EFESSE programme integrating climate change impacts

Strengthening inventory actions and developing mappings

Drawing up an inventory of our territory is an essential step in understanding our specific challenges (existing species, areas of interest, etc.) in order to take appropriate conservation and restoration measures.

ACTION 10

Accelerate the coverage of French wetland inventories

Wetlands are particularly important for maintaining biodiversity and the quality of water resources. Sought-after sites that support many anthropogenic activities, they disappeared to a large extent during the 20th century and continue to be degraded. In France, the lack of an inventory of all wetlands has been a real knowledge gap often used as an argument to explain the ineffectiveness of conservation actions for these habitats. The inventory coverage of French wetlands, including overseas wetlands, consolidates all existing knowledge in a dynamic support. It is estimated that 60% of French territory has now been inventoried.

PILOTE	DEB
BUDGET	Additional budget to be defined
TIMETABLE	2025-2027
INDICATOR	Percentage of French territory with inventoried wetlands

ACTION 11

Monitor the evolution of wetlands under climate change through the development and use of a modelling tool

This project, supported by the University of Rennes 2, will make it possible to model the evolution of wetland functions under the influence of climate change and will be carried out as part of a doctoral thesis.

PILOTES	DEB and University Rennes 2
BUDGET	No specific budgetary needs (thesis)
TIMETABLE	From 2024
INDICATORS	- Provision of the model - Integration into supported policies and projects

ACTION 12

Develop a new collaborative tool for monitoring river restoration

This new collaborative tool will make it possible to capitalise on the information on barriers to ecological continuity and the restoration work carried out, which is currently under-capitalised. The tool should be based on the river obstacle Benchmark. It will make it possible to feed into

the national banking system the data and restoration works carried out on transverse obstacles, and to draw up an inventory of obstacles to the lateral continuity of watercourses. The tool must also as far as possible, report, on the operations carried out as part of the study before removing the 'obstacles' to flow (digoes, mill thresholds, culverts, dams, water mirrors in protected areas and all water-related cultural assets), including in the Overseas Territories. The tool will be able to integrate the selection of restoration and conservation works regularly capitalised through the national system that is the water resource centre.

PILOTE	DEB
BUDGET	OFB and additional budget to be defined
TIMETABLE	From 2024
INDICATOR	Supply of the tool for the identification of obstacles to longitudinal and lateral continuity, and their removal, in order to monitor the progress of the restoration of watercourses (in the framework of France Nation Verte)

ACTION 13

Mapping changes in the distribution of marine species due to climate change

The MAESTRO project (Biodiversity Research Foundation) will document in the North-East Atlantic and Mediterranean the mapping of species exploited by thirty years of fishing campaigns. The results of the project can be used to implement the considerations related to the actions of measure 39 of the PNACC-3.

PILOTE	DGAMPA in conjunction with IFREMER and OFB
BUDGET	France Fisheries sector
TIMETABLE	2020 - 2025
INDICATOR	Number of publications

ACTION 14

Conduct a regular national biodiversity census using traditional or DNA-based methods

This census will combine 'conventional' naturalistic inventory methods with DNA-based techniques. This census will then be carried out on a regular basis in order to monitor the evolution of all wild populations in hexagonal and ultra-marine France in the long term, allowing a better understanding of the impact of climate change on biodiversity.

To do this, it is necessary to structure the public engineering accompanying the rise of DNA technologies (reference, data, mobilisation of collections) and protocols, articulated with monitoring programmes. Once the framework is established, inventories based on regular metagenomic surveys (eDNA and metabarcoding DNA) will be carried out, primarily in

freshwater and marine environments, targeting pollinators and soil organisms in terrestrial environments. Overseas territories and monitoring of invasive alien species will also be a priority

PILOTE	DEB
BUDGET	Additional budget to be defined
TIMETABLE	First phase in 2025 and then deployment in subsequent years
INDICATOR	Cover ratio (target 100% in 2027) – SNB indicator

Mobilising stakeholders to combine the challenges of climate change adaptation and biodiversity conservation

ACTION 15

Develop a public communication campaign "Adapting and restoring biodiversity: What are the levers?"

In order to raise public awareness of the interactions between biodiversity conservation and restoration and climate change adaptation, a communication campaign will be launched, providing concrete examples of actions (in France and the Overseas Territories) that can be taken to address these two issues. This will include disseminating the case for nature-based solutions for adaptation to elected officials and citizens alike, thereby deconstructing preconceived ideas.

PILOTES	DEB and OFB
BUDGET	New needs to be defined according to the chosen media
TIMETABLE	2026
INDICATOR	Dissemination of a communication campaign

ACTION 16

Organise an exchange seminar for biodiversity policy operators on climate change adaptation

In order to articulate and coordinate the actions of biodiversity operators on climate change issues, an exchange seminar will be organised. This seminar will address the issues of resilience of ecosystems and ecosystem services to climate change, and the contribution of ecosystems and ecosystem services associated with climate change adaptation. The situation of the overseas territories will be discussed.

PILOTE	DEB

BUDGET	Additional budget of €10k
TIMETABLE	2025
INDICATORS	- Organisation of the seminar - Publication of acts



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3 Third French National Adaptation Plan

MEASURE N°44

Protecting our natural and cultural heritage from the impacts of climate change

CATEGORY OF THE MEASURE

5. Protecting our natural heritage cultural

BACKGROUND

The aim of the actions included in this measure is to ensure that cultural heritage buildings and the cultural goods they house can be preserved in the face of the effects of climate change. Some sites, including those classified in international bodies, are fragile in the face of these effects, in particular on:

- The conservation of works, which requires new equipment to protect cultural goods from rising temperatures and humidity levels;
- Some archaeological sites (in particular those located on the coastline and ornate caves);
- Buildings, which were generally not designed to cope with such climatic conditions.
- Natural heritage areas (parks, gardens, etc.).

The measure also consists in using culture as a vehicle for raising awareness and representing the effects of climate change on the environment.

ACTIONS ALREADY UNDERTAKEN

Heritage sites, starting with the public establishments of the Ministry of Culture, are strongly encouraged to adopt business continuity plans (PCAs). In addition, they must have a plan for the safeguarding of cultural goods (PSBC) in order to meet the regulatory objective of protecting cultural heritage.

Since 2019, as part of the cathedral security plan, the Regional Directorates for Cultural Affairs (DRAC - regional conservation of historical monuments) have been supported in the

finalisation of the PSBCs and the organisation of large-scale exercises in connection with the departmental fire and rescue services (SDIS) and the security--audit mission of the Directorate-General for Heritage and Architecture (DGPA) of the Ministry of Culture.

Since 2021, for archives, collective workshops bringing together fifteen services provided support to archive services for the development of their PSBC and to develop a template and tools (pre-filled PSBC template with explanatory tutorials, spreadsheet allowing automated localisation of priority documents on store plans, internal and external risk self-assessment sheets, list of emergency materials) to facilitate the drafting of PSBCs. The museum sector was a forerunner in the method.

In addition, the archives and museums sectors have, for several years, relaxed the climatic requirements to be followed in archives stores, reserves and museum exhibition spaces (wider range of temperature and relative humidity with a strong focus on permissible variations over a fixed period of time). As regards archives, this flexibility is enshrined in the *Basic Rules for the Construction and Renovation of Archives Buildings*, the fifth edition of which has just been published.

In the archives sector, studies on the consequences of shutting down climate installations for collections for a fixed period of time started in 2023.

We also note that the National Programming of Archaeological Research already incorporates the contributions of scientific research on the effects of climate change on archaeological excavation sites, in a logic of anticipation and planning.

For cultural and natural properties inscribed on the World Heritage List, the effects of climate change are taken into account in the periodic reports, and the World Heritage Climate Action Guidance Document has been updated to provide high-level guidance on strengthening the protection and conservation of heritage of Outstanding Universal Value. A Climate Change Working Group was established within the French section of the International Council on Monuments and Sites (ICOMOS) in 2021, and a Climate Change Commission was established in 2023 within the Association of French World Heritage Properties.

NEW ACTIONS

1. Create a climate risk map for cultural heritage
2. Develop or update and implement prevention plans that integrate climate risks into heritage sites and institutions (archives, libraries, museums, historical monuments and archaeological sites)
3. Strengthen regular maintenance of cultural heritage (sites, monuments and heritage institutions with their surroundings, etc.) and preventive maintenance of buildings and, where appropriate, technical equipment ensuring the conservation of heritage collections, including climatic conditions for the conservation and/or presentation of cultural goods
4. Improve the training of heritage professionals in the field of risk and disaster prevention and climate change adaptation
5. Change national, European and international climatic ranges for the conservation and exhibition of cultural heritage
6. Accompany a panel of heritage sites to study their vulnerability to climate change and test adaptation solutions

ACTION 1

Create a climate risk map for cultural heritage

Geographical projections on the risks linked to climate change (extreme temperatures, droughts and bad weather, coastline retreat, clay removal/swelling, etc.) are not currently applied to heritage mapping (historical monuments inscribed and classified buildings, establishment of archives, museums and heritage libraries, national archaeological map, intangible heritage, remarkable heritage sites, etc.). It is necessary to:

- Carry out an inter-ministerial study to identify and cross-reference the various relevant geographical information systems, at the finest level, to identify and prioritise risks to assets linked to foreseeable climatic hazards.
- Ensure its dissemination and integration into the prevention plans of local and regional authorities, business continuity plans and PSBCs of cultural establishments (see Action 2).
- Ensure its dissemination and ownership by the archaeological research sector.

PILOTES	DGPA and SG of the Ministry of Culture, with the support (and/or work) of DGPR, DIE, SDES, DGSCG, IGN, BRGM and Météo-France
BUDGET	To be defined for the pooling of reporting
TIMETABLE	Launch of the study in 2025
INDICATOR	Study delivery date

ACTION 2

Develop or update and implement prevention plans that integrate climate risks into heritage sites and institutions (archives, libraries, museums, historical monuments and archaeological sites such as ornate caves)

The coverage and completeness of Business Continuity Plans (PCAs) and Cultural Property Safeguarding Plans (PSBCs) remain open to improvement, in particular with regard to emerging risks due to climate change. Support for institutions and regional directorates of cultural affairs in drawing up and updating their prevention plans must be stepped up in order to ensure that these tools are more effective. The method will now be continued with the integration of climate change-specific risks, prioritising, among services that do not yet have PSBCs, those that are subject to specific risks (see Action 1).

For national museums, the development of PSBCs will be integrated into the green transition objectives of future target and performance contracts as they are renewed.

PILOTES	DGPA and DGMIC, with the support of C2RMF and DGSCGC
BUDGET	To be defined
TIMETABLE	2024-2026

INDICATORS

For the archives sector: target of 80% of services having initiated the PSBC approach and 40% of PSBC finalised by 2025
For national museums under the supervision of the Ministry of Culture: target of 100% having at least initiated their CBSP by the end of 2025

ACTION 3

Strengthen regular maintenance of cultural heritage (sites, monuments and heritage institutions with their surroundings, etc.) and preventive maintenance of buildings and, where appropriate, technical equipment ensuring the conservation of heritage collections, including climatic conditions for the conservation and/or presentation of cultural goods

The necessary reinforcement of the regular maintenance of the cultural heritage (monitoring, functional and sanitary conditions) concerns both the exteriors, the envelope with its internal spaces and all technical equipment:

- For sites, parks and gardens, caves and surrounding areas: condition and efficiency of drains, flushes, dykes; application of a management plan for trees, hedges, brush removal (fire risk), soil conservation, etc.;
- For buildings: drainage of rainwater, efficiency of drains, condition of exterior wall coverings, condition and efficiency of thermal insulators, condition of frames, roofs, etc.;
- For technical equipment: wear, maintenance levels (depending on technical complexity), programming, etc.

In buildings, increased temperatures or air dryness are causing more and greater demands on the air treatment systems responsible for ensuring climate control of spaces for the conservation and presentation of collections. Deficiencies in thermal insulation and airtightness of existing buildings weaken conservation conditions and increase energy losses, especially for buildings built before the implementation of the 2012 building thermal regulation (RT 2012).

As regards buildings for the conservation of collections, the objectives are to:

- encourage their energy renovation in order to strengthen their passive qualities and limit the use of energy-intensive air treatment systems;
- make all buildings constructed before the application of the RT 2012 subject to a systematic energy and architectural diagnosis;
- to this end, consolidate the reference values for heritage establishments and work, on a sector-by-sector basis, on the development of a climate benchmark.

The works will be based on the recommendations of the diagnosis previously established and will be carried out by a project management team with architectural and technical skills in terms of managing the 'climate' of internal spaces. They will draw on the expertise and know-how of heritage restoration companies.

With regard to technical equipment, there is also monitoring, seasonal or occasional changes in the configuration of the management/regulation machines and the adjustment of the various air flow registers and the verification of their installation. It is a question of being able to cope with an event linked to climate change by using the various inertias (thermal, water) of the building to limit air treatment, for example, to characteristics that are too different or unsuitable for cultural goods: air too dry, hot, polluted (forest fire, etc.), etc.

The evaluation of the results obtained, based on the monitoring of the various health and functional conditions of cultural equipment, as well as the generalisation of energy performance diagnoses (DPEs) and energy audits will provide tangible information to establish

the relevance or not of progressive improvement work. This may lead, if necessary, in the medium and long term, to more or less ambitious renovation projects that also include adaptation challenges.

PILOTES	DGPA, DGMIC and DIE
BUDGET	For archives, subsidy from the Ministry of Culture currently up to 50% of the amount of the diagnostic study, interministerial investment plans
TIMETABLE	To be specified in connection with the Tertiary Eco-Energy Decree
INDICATOR	Annual percentage of buildings in the category concerned having carried out a diagnosis or thermal and energy renovation work

ACTION 4

Improve the training of heritage professionals in the field of risk and disaster prevention and climate change adaptation

Adaptation to climate change has started to be incorporated into both initial and in-service training for heritage professionals, especially in schools under the supervision of the Ministry of Culture. It will be systematised and generalised by:

- training the teams of the Ministry and its public heritage establishments in the ecological transition;
- incorporating climate change adaptation issues into the initial training framework for heritage schools, national higher schools of architecture and landscape schools under the supervision of the Ministry of Culture, as well as the Ministry of Higher Education and Research;
- strengthening the provision of continuing education on climate change in heritage schools under the supervision of the Ministry of Culture;
- extending and strengthening these training courses to heritage establishments dependent on local authorities (e.g. networks of public archival services, museums in France, historical monuments) by agreement with local authorities (e.g. the National Federation of Licensing and Governing Local Authorities) and the Centre National de la Fonction Publique Territoriale;
- improving the training of service providers, design offices and project managers in terms of knowledge of the climate and the parameterisation of climate installations in heritage establishments;
- increasing knowledge and use of heritage standards linked to climate change, the ecological transition and sustainable development.

PILOTES	DG2TDC, DGPA and SG of the Ministry of Culture, with the support of DIESE, INP, École du Louvre, École de Chaillot, ENSA and DGEIP
BUDGET	To be defined

TIMETABLE	By the end of 2025: Under the aegis of the DIESE, raising awareness among senior management of the Ministry of Culture In 2025: 100% of Ministry of Culture operators will have targets for training their teams on the green transition, including climate change adaptation issues By 2025: 100% of the ministry's presidents and heads of institutions will be trained on green transition issues, including climate change adaptation issues In 2026: 100% of the pedagogical frameworks of schools under the supervision of the Ministry of Culture will have integrated climate change adaptation issues
INDICATOR	Maintenance of this calendar

ACTION 5

Develop and promote, at national, European and international levels, the tools to best determine, in the current context of ecological transition and energy sobriety, the climatic ranges for the conservation and exhibition of heritage

Climate change poses significant scientific and technical questions for heritage conservation and exhibition methods. These questions concern professional communities, in France and beyond. Indeed, the standards in this area are defined and shared within a national, European and international framework. Developments are already taking place concerning, for example, building recommendations, conservation and exhibition spaces, showcases, etc. in museums, archives and libraries. The easing of climatic ranges is still insufficiently applied.

The archives and museum sectors have, for several years, relaxed the climate requirements to be followed in archives stores, reserves and museum exhibition spaces. This approach could be extended to other heritage sectors.

Studies must also be carried out on the consequences of shutting down climatic installations for a certain period of time in relation to collections (in particular the risk of pollution accumulation). For museums, the question also concerns the climatic behaviour of internal spaces according to their design, in particular when hygroscopic buffer materials, such as clay-based materials, are used as wall coverings.

Expertise and professional exchanges will be conducted to develop the guidelines, at national level, in conjunction with European and international partners.

PILOTE	DGPA, with the support of C2RMF, CRC and LRMH, also drawing on the work of ICOM France and the Bizot group for the museum field
BUDGET	To be defined
TIMETABLE	By 2026
INDICATOR	To be defined

ACTION 6

Accompany a panel of heritage sites to study their vulnerability to climate change and test adaptation solutions

Climate change is an aggravating factor for many existing threats to heritage sites: extreme climatic events (droughts, floods, etc.), increased temperatures, fires, risk of submersion, increase in invasive species, displacement or reduction of habitats, etc.

A panel of heritage sites (World Heritage, Great Sites of France, Regional Natural Parks, National Parks and Nature Reserves) and at least one example of practice or knowledge registered under the Intangible Cultural Heritage (ICH) will be accompanied to assess their vulnerability to climate change, test solutions to reduce it and draw up an adapted action plan.

This initiative will define and test the methodology to develop a vulnerability diagnosis and an action plan adapted to heritage sites. It will also raise awareness of the impact of climate change on our natural heritage.

PILOTES	IGEDD and IGAC, with the support of the DHUP, the DEB, the DGEC and the services of the Ministry of Culture
BUDGET	To be defined
TIMETABLE	End 2025
INDICATOR	IGEDD / IGAC study report



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3 Third French National Adaptation Plan

MEASURE N°45

Mobilising public procurement for climate change adaptation

CATEGORY OF THE MEASURE

5. Mobilising the Nation's vital forces to successfully adapt to climate change

BACKGROUND

Several measures of the PNACC are likely to have an impact that should be taken into account in public procurement or concession contracts, in particular all the measures related to the construction and renovation of buildings, civil engineering works, urban planning and green spaces, management of public transport, water, energy or waste management services, also taking usage into account. Indeed, public procurement is used in all public services, and is therefore transversal to most of the sectors of activity affected.

Thus, in addition to the adaptation and preventive maintenance of infrastructure, equipment or environments, it is also a question of adapting professions and increasing skills in vocational training markets, providing tools for knowledge, anticipation, prevention and management of risks and crises. More generally, the PNACC should be an opportunity to deepen adaptation as an indispensable lever to mobilise as part of public procurement (government departments, hospitals, local authorities, public establishments or companies, etc.). This will avoid maladaptation and the waste of public resources on projects that are not adapted to the future climate.

This issue is part of the Sustainable Development Goals (SDGs) in their economic, social or environmental dimensions that must be taken into account for any purchase (public procurement of supplies, services, works or concession of works or services).

To this end, buyers and licensors are recommended to incorporate the issues identified at each stage of the contract/concession:

- Upstream, in the strategic objectives integrated into the purchasing policy, through tools such as socially and environmentally responsible purchasing promotion schemes (SPASER), which can be used for concessions, and building where appropriate on existing strategies such as the Territorial Climate-Air-Energy Plans (PCAET);
- If possible, providing for the arrangements for monitoring these objectives and including them in the annual purchasing schedule;
- When defining the need and sourcing, thanks to a precise estimate of the need in light of the challenges of adaptation and the assessment of the maturity of suppliers, service providers and concessionaires on the subject;
- By engaging in a dialogue with the holders/concessionaires at all stages of the contract and, in particular, at the end of performance in the context of feedback;
- When translating this requirement into the terms of the tender specifications and the award criteria; providing in particular for the possibility for tenderers to propose variants, in particular in order to encourage innovation;
- If necessary, by putting in place a progress plan and a periodic evaluation as part of the monitoring of the contract;
- Annually, as part of the report that the concessionaire must produce, tracing all the operations related to the performance of the concession contract and an analysis of the quality of the works or services, and as part of the monitoring of SPASER.

ACTIONS ALREADY UNDERTAKEN

The Climate and Resilience Act of 22 August 2021 provides for **the mandatory integration, from mid-2026, of environmental considerations** (a clause and an environmental criterion for the analysis of tenders), at any stage of the life cycle of the products, services or works purchased. This law complements **a series of sectoral obligations for environmentally efficient purchases already in force** and sets out the principle that all products used in public procurement must take into account 'in particular the environmental performance of products, in particular their bio-based nature' (Article L 228-4 of the Environment Code). **Adaptation to climate change is one of the environmental challenges to be included in this framework, whenever it is relevant.**

The National Plan for Sustainable Procurement (PNAD) 2022-2025 was designed as a support plan for all stakeholders in meeting the obligations set by the Climate and Resilience Act. To do this, the PNAD sets a target of **100% of public procurement contracts with at least one environmental consideration by the end of 2025**, so that actors anticipate and prepare to fully implement the law in 2026. As part of the roll-out of the PNAD, the General Commission for Sustainable Development, with the support of the ministerial directorates and co-pilot partners of the 22 actions (DAE, DAJ, DGE, DGEFP, associations, etc.), provides public buyers with the resources and tools necessary to carry out their missions:

Support and tools for buyers:

- **Territorially**, the 'green counters' scheme was created in 2022. These green counters offer **free first-level environmental advice to all buyers subject to the public procurement code**. This service is supported by the regional public procurement networks with the support of the Ministry responsible for the ecological transition and is gradually being rolled out in all regions. As of 2024, twelve counters cover almost the entire national territory (Auvergne-Rhône-Alpes, Bas-Rhin, Bourgogne Franche Comté, Brittany, Centre-Val de Loire, Hauts de France, Ile-de-France, Normandy, Pays de la Loire, Nouvelle-Aquitaine, Occitanie, Provence-Alpes-Côte d'Azur) and part of the overseas territory (Reunion and Mayotte). **The green counters have already been approached on issues related to adaptation to climate change.** An online support community, the RAPIDD digital platform (<https://rapidd.developpement-durable.gouv.fr>), is constantly growing: its purpose is to disseminate information on socially and environmentally responsible procurement, and in particular to enable peer-to-peer exchange. It has 7 000 members (compared to 800 in 2021). On this platform, public buyers regularly ask and answer peer-to-peer questions on climate change adaptation levers, for example on the integration of *ad hoc* clauses in road maintenance contracts, taking into account albedo to avoid heat islands during heatwaves.
- To ensure that all purchasers (government departments, hospital departments, local authorities, public establishments and companies, lessors, etc.) are aware of the existing legal obligations with regard to sustainable purchasing, the Legal Affairs Directorate of the Ministry of the Economy lists on its website the legal provisions applicable on a dedicated page.
- To refine this knowledge by type of buyer and by sector, buyers can use an **open access tool** developed by regional networks, with the assistance of the State, 'la Réf', <https://3ar-na.fr/la-ref/>. Buyers can also mobilise an **open-access environmental and social clause list**, the 'green clause', <https://laclauseverte.fr/>. It is possible for actors to propose examples of clauses, which are then subject to moderation and validation by a network of experts (without the State), before being put online. **This clause list will be gradually supplemented, in particular with clauses on adaptation to climate change.**
- A set of sectoral guides and clause lists are gradually being created to help purchasers (guide on the general technical clauses applicable to civil works contracts, dedicated to "landscapes, sports and outdoor leisure areas", guide on ecological engineering yet to be published, guide on sustainable public procurement and ecological transition, developed by the regional network Auvergne-Rhône Alpes).
- The **steering committee of the Economic Observatory on Public Procurement (OECPP) also decided in 2023 to carry out an OECPP sustainable procurement kit, as part of the PNAD**. It aims to help buyers reconcile environmental, social and economic objectives in a holistic approach, ensuring that they are proportionate to the capacities of buyers and businesses, but also a source of innovation and support to the social and solidarity economy. Developed with buyers of all kinds, professional federations, but also experts and "drivers" such as the "green clause", tools will be proposed in 2025 in coordination with the work of the CGDD (General Commission on Sustainable Development) on life cycle analysis or those of the DAE (State Purchasing Department) for state buyers. A table to help define needs will be proposed, then working groups on textiles and vehicles will propose further recommendations, clauses and standard criteria, which will look for good practices and solutions already existing or to be imagined based on nature, opening the clauses to innovation.
- **At national level**, the DAE published at the end of 2023 a framework document formalising the State's responsible purchasing policy and is drawing up, in consultation with all the ministries and in line with the issues of ecological planning: the State's future **plan for promoting socially and environmentally responsible public procurement (SPASER) 2025-2027**, including a dedicated objective to 'Develop procurement taking into account the challenges of adapting to climate change'.
- In addition, the DAE has increased the **resources** from the State and its public institutions **dedicated to supporting purchasers** in taking environmental issues into account in markets

(three project managers who are environmental experts) and has drawn up a **guide** on taking greenhouse gas emissions into account in transport and delivery services in public procurement, which will be published in 2025.

Training modules and programmes:

- Since 2015, more than a thousand government buyers have benefited from training courses on responsible purchasing organised by the DAE and the Institute of Public Management and Economic Development (IGPDE). Currently, six training courses are listed in the 2024 catalogue: the fundamentals and implementation of responsible purchasing, as well as thematic training courses, including 'the introduction to taking account of greenhouse gas reduction in responsible public procurement' and 'the global cost approach in responsible public procurement'.
- **Since 2023**, a free MOOC dedicated to sustainable purchases, lasting eight hours, has been available, followed by more than 2,000 buyers:
<https://openclassrooms.com/en/courses/7716516-engage-in-sustainable-buying/8266144-participate-in-national-for-sustainable-buying-pnad>.
- Since 2023, a **free e-learning module dedicated to the development of a scheme to promote socially and economically responsible public procurement (SPASER)** has been put online on the platform of the National Centre for Territorial Public Service (CNFPT).
- Buyers can also benefit from the tools of the **Support Mission for the development of a SPASER, led by the CGDD**. The SPASER implementation path includes webinars, feedback, participatory workshops as well as resources and tools to succeed in their SPASER project.

NEW ACTIONS

1. Develop tools to include an "adaptation reflex" in all government purchases, starting with the building sector
2. Ensure that climate change adaptation issues and levers are properly taken into account in the new digital platform for sustainable purchasing
3. Reinforce the consideration of adaptation issues in the future National Sustainable Procurement Plan
4. Support an ambitious revision of the public procurement directives so that the European legal framework allows better consideration of environmental objectives, including adaptation to climate change

ACTION 1

Develop tools to include an "adaptation reflex" in all government purchases, starting with the building sector

Since 1st September 2023 and for a period of two years, the State Purchasing Department has been benefiting from support financed by the European Union for the 'Professionalisation of State buyers: strengthen skills to better take into account climate change adaptation, decarbonisation of procurement, energy efficiency and security of supply'. This support aims to meet the need for state buyers to become more professional, with a view to scaling up and amplifying the efforts already made in anticipation of the widespread integration of environmental considerations into the markets.

In addition to training activities, the DAE is setting up a collection of eco-responsible toolkits with examples of clauses and award criteria for public buyers. This approach mobilises many

actors and experts within ministries and public institutions (ADEME, CGDD, Legal Affairs Department, State Building Department, ministerial procurement missions, etc.). These eco-responsible toolkits are intended to be updated over the years, in particular to take into account the challenges relating to adaptation and assess their integration into clauses, thus contributing to **operationally translating the ministerial commitment made on 8 February 2024 to representatives of the economic world concerning State buildings: all new investments and renovations will have to take climate change into account ("adaptation reflex")**.

This appropriation by the State will allow to consolidate a detailed analysis and expertise on how to take account of adaptation for its own public procurement markets: the importance of the market, the existence of solutions and tools to take account of adaptation at the various stages of the market, the most decisive stages, effective levers, etc.

This feedback will be useful for:

- taking account adaptation to climate change in other sectors and categories of government markets;
- Enriching and improving the aforementioned awareness-raising materials, training and tools for the benefit of the entire community of public buyers, including those outside the State.

It should be noted that, as part of its exemplary approach, the State anticipates compliance with the obligations of Article 35 of the Climate and Resilience Law as from 1st January 2025 for its national inter-ministerial purchases and as from 1st July 2025 for its regional inter-ministerial purchases.

PILOTE	DAE
BUDGET	No additional need
TIMETABLE	Development of eco-responsible toolkits for the building sector in 2025 and addressing climate change adaptation challenges in the relevant purchasing segments by 2027
INDICATOR	Number of government procurement strategies integrating climate change adaptation challenges in identified priority segments

ACTION 2

Ensure that climate change adaptation issues and levers are properly taken into account in the new digital platform for sustainable purchasing

The digital portal on sustainable purchases, “achats-durables.gouv.fr”, launched in November 2024, is a new tool for action to raise awareness among public procurement stakeholders of the challenges of adapting to climate change. Indeed, it is intended to be the entry point to the various resources and provide operational support to buyers. This portal can also promote documentation and tools available on the topic of adaptation to climate change and act as a showcase for the levers and tools to be mobilised as they become available.

Thus, the collection of the DAE’s eco-responsible toolkits is accessible since February 2025 on the Sustainable Procurement Portal for wide dissemination to all public buyers. This communication also aims to inform economic operators of the level of maturity in taking into account the challenges of the ecological transition, including adaptation to climate change, through public procurement.

PILOTES	CGDD, DAJ-OECP and DAE
BUDGET	No additional need in 2025 From 2026: €40k to complete the climate change adaptation clauses, €50k for the functional evolutions of the platform
TIMETABLE	From 2025 : Highlighting the tools available From 2026 : Functional evolutions of the platform
INDICATOR	Number of mentions of climate change adaptation on the portal and on laclauseverte.fr

ACTION 3

Reinforce the consideration of adaptation issues in the future National Sustainable Procurement Plan

As a continuation of these actions, the future National Plan for Sustainable Procurement, which will be established for the period after 2025, will ensure that the issue of climate change adaptation is taken into account and made more visible for the relevant markets.

PILOTES	CGDD, DAJ-OECP and DAE
BUDGET	No additional need
TIMETABLE	Work from 2025 for a future PNAD by 2026
INDICATOR	Integration of adaptation challenges into the future PNAD

ACTION 4

Support an ambitious revision of the public procurement directives so that the European legal framework allows better consideration of environmental objectives, including adaptation to climate change

The European Commission plans to revise the three public procurement directives. This work started in the first quarter of 2025 with a public consultation and will continue throughout the year to feed into discussions on the texts. Negotiations are expected to begin sometime in 2026.

During these negotiations, France will be able to take an ambitious position to enable environmental issues to be better integrated into public procurement, including on the challenges of adapting to climate change.

PILOTE	DAJ-OECP with the support of the CGDD and the DAE

BUDGET	No additional need
TIMETABLE	2025: Response to the public consultation 2026: Participation in the negotiations of texts
INDICATOR	Adoption of the three revised directives



RESEARCH QUESTION:

Housing habitability in a
climate of +4°C



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3 Third French National Adaptation Plan

MEASURE N°46

Mobilising research and scientific knowledge on climate change and adaptation solutions

CATEGORY OF THE MEASURE

5. Mobilising the Nation's vital forces to successfully adapt to climate change

BACKGROUND

The objective of this measure is to mobilise and lead research communities on the theme of adaptation but also of maladaptation to climate change, and to promote the funding of research on several themes identified as deserving particular focus or being poorly addressed currently by research, in particular those useful for the deployment of the PNACC.

France has developed a world-class research capacity on the understanding of climate, its mechanisms and the various components that contribute or can influence its evolution. Thanks to this knowledge it is possible, for example, to draw short- and medium-term climate trajectories and to attribute ex-post certain events to global warming. A more recent area of research is how ecosystems and societies will respond to and adapt to these changes, as well as maladaptation. The issue of adaptation to climate change, which was initially studied from the point of view of preventing certain natural hazards, now extends to all dimensions of society and nature, potentially mobilising all academic disciplines, from formal sciences to natural sciences as well as humanities and social sciences.

ACTION ALREADY UNDERTAKEN

A major measure for the structuring of research at national level was announced on 7 December 2023 with the creation of programme agencies targeted at key societal challenges and led by some national research organisations. Thus, it was announced that a Climate, Biodiversity and Sustainable Societies Agency would be set up under the auspices of the national scientific research centre (CNRS), an Agriculture, Sustainable Food, Forestry and Natural Resources Agency under the auspices of the national research institute for agriculture and environment (INRAE), a Health Agency under the auspices of the national institute for health and medical research (INSERM) and a Decarbonised Energy Agency under the auspices of the commission for atomic energy (CEA). These agencies have the task of structuring and animating at national level the scientific communities involved in their field, organising scientific monitoring and dynamic foresight around a few major social issues, and steering and coordinating national research programmes to meet these major challenges. In their mission, they must address the issue of adaptation and maladaptation to climate change, mobilise all relevant research actors and propose lines of research, structuring of the scientific community and national programmes to address them, if necessary soliciting other programme agencies less directly concerned.

In the continuum between research and policy-making, a broader set of scientific and technical agencies and bodies (ADEME, OFB, ANSES, Météo-France, CEREMA, IGN, etc.) will be used to identify the needs of services or operationalise research results based on previous approaches and work.

NEW ACTIONS

1. On the basis of the Court of Auditors' report 'Research on adaptation to climate change' (2024), produce a detailed overview of the research carried out in France on adaptation and maladaptation and its outputs
2. Identify research topics to be developed on adaptation and maladaptation and ways to develop them
3. Host COFRA theses (training agreements through research in administration) on topics related to adaptation and maladaptation and encourage theses on the same subject
4. Mobilise national stakeholders around the theme "Obstacles and levers: organisational and behavioural transformations necessary for adaptation to climate change"
5. Mobilise national stakeholders around the theme of managing extreme events (heatwaves, water/hydroclimate risks, droughts, marine submersions, fires)
6. Mobilise national stakeholders around themes related to the consequences of climate change on environments and ecosystems, such as: forest resilience, storage capacities of natural carbon sinks, cooling and renaturation of cities, long-term evolution of natural and anthropised environments, coastal areas, mountain areas, natural and anthropised soils
7. Support large cities in their adaptation trajectories through action research
8. Support territories in documenting the role of biodiversity in adapting to climate change

9. Mobilise the research infrastructures implemented by the CNRS (e.g. OZCAR research infrastructures (critical zone), ACTRIS (physico-chemistry of the atmosphere), ICOS (greenhouse gases), CLIMERI (climate modelling), DATATERRA (data), ILICO (coastal and coastal environments and ecosystems), necessary for climate research and adaptation and in support of major research programmes, e.g. PEPR TRACCS (climate modelling and climate service), IRIMA (risks), Sustainable city, and OneWater

The pilots of the measure will ensure that all relevant technical and scientific actors and the necessary expertise are called upon for all actions.

The use of artificial intelligence for research on adaptation to climate change is the subject of measure 51 of the PNACC.

ACTION 1

On the basis of the Court of Auditors' report 'Research on adaptation to climate change' (2024), produce a detailed overview of the research carried out in France on adaptation and maladaptation and its outputs.

1.1 Develop and regularly update the overview of science in support of adaptation in France through a census of teams publishing on adaptation or maladaptation, by research laboratory and joint research unit (UMR), discipline, etc.

1.2 Identify published research results that can be mobilised for the implementation of the NAP and contribute to their dissemination to stakeholders.

1.3 Identify the research needs of operational departments and for the conduct of public policies, taking into account existing approaches such as BRIEau and comparing them with the scientific panorama in order to identify new themes to be developed.

PILOTES	CGDD and DGRI
BUDGET	To be defined
TIMETABLE	2025: Overview of French research on adaptation and maladaptation. Mapping of research laboratories and UMR publishing on the subject by programme agencies associating other scientific and technical agencies and bodies. 2025: Overview of adaptation or maladaptation research programmes 2025-2029: Real-time identification of research results that can be mobilised for the implementation of the PNACC
INDICATOR	Production of the panorama, regular updating

ACTION 2

Identify research topics to be developed on adaptation and maladaptation and ways to develop them

The results of Action 1 will be brought to the attention of the programme agencies, particularly those led by CNRS, INRAE, INSERM and CEA. Through forward-looking and strategic thinking on adaptation and maladaptation issues, and at the request of the Liaison Committee with the State, they will be able to make proposals for programmes. In particular, they will identify national research programmes on adaptation or maladaptation as well as European and international programmes led by French research teams, in particular those concerning the challenges of maladaptation at territorial level.

In addition, to properly target the necessary adaptation measures, research actions will be carried out to better quantify the evolution of climate hazard (extreme meteorological and hydrological events, sea level, etc.).

2.1 - Referral to the programme agencies (CNRS, INRAE, INSERM, CEA and INRIA) on adaptation and maladaptation.

2.2 - Organisation of a colloquium with the programme agencies, State operators and the ministries concerned, involving the research organisations concerned, to identify the research topics to be developed for adaptation and maladaptation.

2.3 - Preparation by the agencies of a programme proposal.

PILOTES	CGDD and DGRI
BUDGET	Agencies, France 2030 financing programme and its successor
TIMETABLE	2025-2026
INDICATORS	- Results of the work, synthesis of the colloquium - Programme proposals from the four agencies

ACTION 3

Host COFRA theses (training agreements through research in administration) on topics related to adaptation and maladaptation and encourage theses on the same subject

Adaptation to climate change involves changes in the public policy of the State, for which research can make a contribution that has so far been insufficiently mobilised. At a time when the need for adaptation is becoming stronger, the development of relations between research and public administration is a relevant course of action and an essential element in the renewal of public action by the State.

This action is based on the roll-out of the 'COFRA' system (training agreements through administrative research) set up in 2022 by the ministries responsible for higher education and research and civil service. This involves setting up training agreements through administrative research and thus carrying out several theses within the State administrations. Other measures related to thesis work on adaptation topics and in support of public policies will be sought.

PILOTES	CGDD and DGRI

BUDGET	Financing of COFRA theses
TIMETABLE	2025-2027: Highlighting adaptation and maladaptation in annual COFRA campaigns 2025: Highlighting adaptation and maladaptation in the MTEECPR thesis prize
INDICATORS	List and number of theses undertaken

ACTION 4

Mobilise national stakeholders around the theme “Obstacles and levers: organisational and behavioural transformations necessary for adaptation to climate change”

In the area of adaptation to climate change, the focus is often on technological solutions. However, many vulnerabilities to climate hazards are based on social, psychosocial, organizational and institutional factors. Technologically robust and economically viable solutions are struggling to move beyond large-scale implementation for feasibility reasons, caused by organisational and behavioural barriers.

Adaptation refers to a large extent to the question of the appropriation of diagnosis and adaptation strategies by society as well as to behaviours and practices, whether individual or collective, institutions, public or private actors, crossing multiple and complex mechanisms including psychological, cognitive or economic ones, intertwining short or long-term visions.

The action of public authorities, whether in the form of support, incentives or coercive measures, must be consolidated by reflecting on and anticipating the behaviour of the various actors during the development of adaptation strategies, in order to make adaptation measures comprehensible, ethical and acceptable.

This action, which should involve the relevant scientific and technical agencies and bodies (climate, biodiversity, sustainable societies programme agency, the environmental agency ADEME, etc.), will provide insights and tools to help arbitrate between different measures taken by public authorities, make them more effective and adjust them to socio-organisational contexts and challenges as they progress.

4.1 - Ask the Climate, Biodiversity, Sustainable Societies Programme Agency to identify laboratories with research axes on organisational and behavioural barriers of professional actors and those of consumers/users with regard to adaptation in different areas (e.g. housing and housing, urban heat islands, intense rains and floods, drought, resilience of the energy system, agriculture, etc.).

4.2 - Ask the programme agency "climate, biodiversity, sustainable societies", with the support of priority research programmes and equipment (PEPR) Sustainable city, Transform and Decarbonisation of mobility, to identify national research programmes on organisational and behavioural barriers to the adaptation of different types of actors as well as international programmes led by French research teams.

4.3 - Organise an event on the topic of research on organisational and behavioural barriers to adaptation for professionals and individuals and disseminate its findings. This event may also focus on different areas requiring adaptation of practices and behaviours (see point 4.1).

PILOTES	CGDD and DGRI
BUDGET	Agencies, France 2030

TIMETABLE	2025: Identification of the research community, launch of the work 2026: Development of research programme themes 2027: Search for funding
INDICATORS	- Community Mapping - Scientific Foresight Paper

ACTION 5

Mobilise national stakeholders around the theme of managing extreme events (heatwaves, water/hydroclimate risks, droughts, marine submersions, fires)

5.1 - Ask the relevant actors (programme agencies "climate, biodiversity, sustainable societies", "health" and "agriculture, sustainable food, forest and associated natural resources", Météo-France, ADEME, etc.) to identify laboratories with research axes on the management of extreme events and on the future frequencies and intensities of extreme events, in order to quantify these events

5.2 - Ask the relevant actors, in particular with the support of PEPR IRIMA, to identify national research programmes on the management of extreme events and on the future frequencies and intensities of extreme events, as well as international programmes led by French research teams.

5.3 - Organise an exchange event on the topic of extreme events management and disseminate its findings.

5.4 - Identify the research needs of the operational services, including for the definition and development of warning systems at various time scales, up to warning systems for the detection of climatic shifts (such as ice sheet instability).

5.5 - Search for funding methods.

PILOTES	CGDD and DGRI
BUDGET	Agencies, France 2030
TIMETABLE	2025: Identification of the research community, launch of the work 2026: Elaboration of research program themes, scientific meeting, search for funding
INDICATORS	- Community Mapping - Scientific Foresight Paper

ACTION 6

Mobilise national stakeholders around themes related to the consequences of climate change on environments and ecosystems, such as: forest resilience, storage capacities of natural carbon sinks, cooling and renaturation of cities, long-term evolution of natural and anthropised environments, coastal zone, mountain areas, natural and anthropised soils

6.1 - Ask the relevant actors (the various programme agencies in particular "agriculture, sustainable food, forests and natural resources" and "climate, biodiversity, sustainable societies", ADEME, OFB, etc.) to identify the laboratories carrying out research on the consequences of climate change on environments and ecosystems. Agencies will be able to integrate the advances of PEPR TRACCS, FairCarbon, FORESTT, One Water, SoluBiod, Basement.

6.2 - Organise an exchange event on the topic of the consequences of climate change on environments and ecosystems by capitalising on the results of modelling studies on the evolution of environments according to climate change projections (Explore 2 for example).

6.3 - Identify the research needs of operational services based on projections and models as well as approaches reflecting prioritised research and innovation needs in support of public policies.

6.4 - Mobilise local stakeholders, places where the impacts of climate change are differentiated and therefore key locations for the development of adaptation solutions, in order to jointly develop 'Living Labs' where all the scientific issues of the various PEPRs will be addressed. The aim is to contribute to carrying out inter-PEPR actions in coherence with socio-economic actors for better science-society synergy. The implementation of the PEPR TRANSFORM should help the development of these Living Labs.

6.5 - Search for funding methods.

PILOTES	CGDD and DGRI
BUDGET	Agencies, France 2030
TIMETABLE	2025: Identification of the research community, launch of the work 2026: Elaboration of research themes, scientific event, search for funding
INDICATORS	- Community Mapping - Scientific Foresight Paper

ACTION 7

Support large cities in their adaptation trajectories through action research

This action aims to link the work implemented under the POPSU Transitions action-research programme to the NAP. The POPSU Transitions program is deployed in twenty-three stakeholder-researcher platforms at the local level, set up in partnership with metropolises and major cities. Within the framework of these platforms, research teams carry out, for three years and in collaboration with local elected representatives and their departments, work on themes articulating ecological transition and transformation of urban policies.

The POPSU programme aims to measure territorial contributions to transition policies, support national and local transition policies, capitalise on and disseminate local results and build a local intellectual scene by mobilising local researchers and involving elected officials and local authorities.

Three objectives of linking the POPSU Transitions programme to the PNACC are pursued:

- Promote the territorialisation of the PNACC and its anchoring in local authorities;
- Enrich the PNACC with the scientific knowledge accumulated on each of the 23 POPSU Transitions platforms;
- To feed the NAP with data and results from cross-cutting issues (water, resources, planning, economic change, landscape, etc.).

PILOTE	GIP EPAU
BUDGET	Funded by DGALN/PUCA, ADEME, the CDC Institute for Research and the 23 partner local authorities
TIMETABLE	March 2024: National POPSU Forum Transitions and Official Program Launch 2024-2027: Implementation of action research in 23 platforms 2027-2028: Publication of books
INDICATORS	- Number of scientific studies on adaptation issues - Number of meetings and symposia organized

ACTION 8

Support territories in documenting the role of biodiversity in adapting to climate change

The role of biodiversity is central to climate change adaptation strategies. The ERABLE program aims to tell the story. It supports transdisciplinary research projects through a platform involving social and life sciences researchers, artists, decision-makers and local life actors. It capitalises, for action purposes, on the knowledge established on the territories and disseminates it to various audiences: elected officials, professionals, scientists and the general public. The aim is to involve elected representatives in the construction of projection or foresight tools on biodiversity issues, in the context of adaptation to climate change.

Its methodology is based on four pillars, one of which is foresight. The research projects will focus on the trajectories of biodiversity change in the territories and their consequences.

- at various time horizons (2030, 2050, etc.): short-term operational / medium-term strategic vision;
- and according to various variables (particularly from a +4 °C perspective).

PILOTE	GIP EPAU
BUDGET	National Biodiversity Strategy

TIMETABLE	2024: Selection of projects (first session), annual colloquium 2025: Project monitoring, annual colloquium, project selection (second session) 2026: Project monitoring, first results 2027: Project monitoring, results, cross-sectional analysis study of supported projects
INDICATORS	- Number of projects supported - Number of events carried out - Number of researchers mobilised - Number of publications produced

ACTION 9

Mobilise the research infrastructures implemented by the CNRS (e.g. OZCAR research infrastructures (critical zone), ACTRIS (physico-chemistry of the atmosphere), ICOS (greenhouse gases), CLIMERI (climate modelling), DATATERRA (data), ILICO (coastal and coastal environments and ecosystems), necessary for climate research and adaptation and in support of major research programmes, e.g. PEPR TRACCS (climate modelling and climate service), IRIMA (risks), Sustainable city, and OneWater

PILOTES	CGDD and DGRI
BUDGET	Agencies, France 2030
TIMETABLE	Continuous action
INDICATOR	Sustainability of infrastructure



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3 Third French National Adaptation Plan

MEASURE N°47

Strengthening the governance of climate change adaptation

CATEGORY OF THE MEASURE

5. Mobilising the Nation's vital forces to successfully adapt to climate change

BACKGROUND

The objective of this measure is to strengthen governance, transparency and engagement on the implementation of the PNACC.

The issue of mobilisation and negotiation with stakeholders, institutions and citizens is central to the success of the adaptation challenge as a new impetus is being affirmed in the PNACC. The aim is to build the conditions for this mobilisation through representative and adapted governance arrangements that will monitor the deployment of adaptation actions in the short, medium and long term.

ACTIONS ALREADY UNDERTAKEN

A specialised Commission within the National Council for the Ecological Transition (CNTE) deals with adaptation to climate change and, as such, monitors the progress of the implementation of the NAP. This committee, chaired by Senator Ronan DANTEC and composed of representatives of the CNTE, prepares the annual CNTE's opinion on the implementation of the PNACC. As required, external experts (organizations or qualified persons) are invited to participate in the work of the Specialised Commission.

The Economic, Social and Environmental Council (CESE) actively participates in the work of the CNTE through the Chairperson of its Environment Commission. The CESE has taken up the subject of adaptation to climate change on its own initiative and has asked its Environment Commission to propose an opinion. This report, entitled "Facing climate change, accelerating systemic and fair adaptation", calls in particular for greater synergy between the CNTE and the CESE regarding the follow-up to the PNACC and the search for societal consensus.

NEW ACTION

Strengthen the links between the National Council for Ecological Transition and other consultation bodies

The role of the CNTE and its specialised commission in monitoring progress in the implementation of the PNACC will be confirmed. In order to reinforce the involvement of all stakeholders in this follow-up, regular exchanges will be organised between the CNTE and other consultation bodies. The CESE will thus be more widely invited to participate in CNTE meetings dealing with adaptation to climate change. Specific meetings with sectoral bodies such as, for example, the Health and Environment Group for health issues related to climate change, the France Ocean Committee, the National Council for the Sea and Coasts and the National Coastline Committee, as far as coastal issues are concerned, will also broaden views and deepen links between adaptation to climate change and other public policies.

PILOTES	DGEC and CGDD
BUDGET	No additional need
TIMETABLE	From 2025
INDICATOR	Number of meetings of the CNTE (and its specialised commission) with sectoral bodies to discuss specific topics of adaptation to climate change



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3 Third French National Adaptation Plan

MEASURE N°48

Engaging citizens in missions related to climate change adaptation and risk prevention

CATEGORY OF THE MEASURE

**5. Mobilising the
Nation's vital forces to
successfully adapt to
climate change**

BACKGROUND

The objective of the ecological civic service is to anchor ecological commitment throughout life and to allow the synergy of the different modes of engagement, including volunteering.

In the context of ecological planning and the deployment of the France Nation Verte benchmark, the objective is to propose that a part of the missions of the ecological civic service, which will be offered to 50 000 young people by 2027, could relate to the implementation of the PNACC. These missions will focus on the issues of climate crises and the prevention of natural risks (heatwaves, fire risk, floods, etc.) and will include support for local authorities located in particularly exposed areas and need to raise awareness and promote prevention among the population. Mobilising people engaged in civic service would contribute to raise awareness among vulnerable groups.

The "1000 ambassadors of the ecological transition" programme, a joint initiative of the Government, ADEME, the Civic Service Agency (ASC) and the Unis Cité association, will help to promote ecological civic service to other young people, particularly from priority neighbourhoods in cities and rural areas.

Volunteering should be made as open as possible to young people, thus allowing host organisations to offer missions to young people of all levels of qualification (from the least to the most qualified).

Under the authority of the Mayors, the municipal reserves for civil security are made up of volunteer citizens who enrol for a renewable period of one to five years. Their purpose is to support services contributing to civil security. To this end, they participate

in supporting and assisting the populations, logistical support and the re-establishment of activities during the occurrence of crises. They can also help prepare the population for risks. The aim is to ensure their wider deployment to provide a complementary response in the event of a crisis.

NEW ACTIONS

1. Mobilising young people in ecological civic service for the resilience of territories
2. Mobilise young people in Senior Civic Solidarity Service (SC2S) to register vulnerable people on communal heatwave registers and sensitise them to climate change
3. Further deploy the municipal civil security reserves and ensure their coordination with other existing mechanisms to provide a complementary response in the event of a crisis, particularly in the context of natural disasters

ACTION 1

Mobilising young people in ecological civic service for the resilience of territories

Phase 1: Experimentation in 4 to 5 territories from 2025

Establishment of a civic service for the resilience of territories: experimentation with multi-purpose missions to raise awareness among the population (locals and tourists) to support change and prevention in areas at risk.

Example of a mission to Gironde and the Pyrenees Atlantiques: mobilising young people to raise awareness of fire risk as part of the annual forest and vegetation fire prevention campaign.

After the summer of 2022, marked by numerous and powerful fires, the President of the Republic announced the reinforcement of forest and vegetation fire prevention. The new information campaign on the legal clearing obligations was a strong prevention operation. It was carried out from March to May 2023 and from November to December 2023 to make this prevention measure known to the concerned citizens and to urge them to carry them out for their safety and that of our forests. A national communication campaign is also conducted every year from May to August to disseminate widely the good reflexes to be adopted to prevent and protect against fires, including through a communication kit.

Young people in civic service will reinforce the intervention of young people from the national universal service (SNU) already mobilised as part of the 'FIRE/FORETS mission of general interest', which was tested following the Gironde fires in 2022 and 2023. Eventually, young people in the SNU will be offered an extension of their commitment through the ecological civic service on this type of mission.

Phase 2: Feedback and analysis of the experiment conducted with a view to generalising these missions from 2026

On the basis of feedback from this experiment, work will be carried out to propose tools (model missions, guides, etc.) with a view to generalising the programme throughout the

territory from 2026. Missions for young people in civic service could include promoting a culture of risk and good behaviour in the event of a disaster.

PILOTE	Civic Service Agency in connection with the MSJVA, the CGDD and the DGPR
BUDGET	To be defined for additional tasks, under the ongoing accreditation of the Ministry of Interior, in connection with the Civic Service Agency
TIMETABLE	2025 - 2026
INDICATOR	

ACTION 2

Mobilise young people in Senior Civic Solidarity Service (SC2S) to register vulnerable people on communal heatwave registers and carry out climate change awareness actions with them

Under Law No 2004-626 of 30 June 2004 on solidarity for the autonomy of the elderly and persons with disabilities, mayors are required to establish a register of the names of elderly and disabled persons in their municipality living at home, and who so request, in order to enable the targeted intervention of the health and social services in the event of the alert and emergency plan being triggered. Three categories of persons may appear on the register: persons aged 65 and over, persons over 60 recognised as unfit for work, and persons recognised as disabled. During heatwaves, municipal services regularly call registrants to check in.

According to a survey carried out in 2015, while preventive measures seem to be well known, the perception of the specific risks one faces is low, including among people over 65 (only 4% of older people think they have a significant risk during a heat wave and do have registered in municipal registers). It is therefore essential to improve the identification of vulnerable persons in municipal registers, and therefore to have the staff to do so.

The mission of those engaged in civic service and carrying out missions under the Senior Civic Solidarity Service (SC2S) is to break social isolation. They benefit from specific training on approaching the elderly, which was developed by SC2S actors. Those trainings may be mobilised in this context. When carrying out this task within a body called upon to intervene under the heat wave plan, they may participate alongside the staff mobilised for this purpose in actions to encourage and support vulnerable persons to register in the municipal registers, provided that this activity is explicitly mentioned in their employment contract.

Throughout the year, young people in ecological civic service will be able to carry out their mission of general interest in town halls and carry out awareness-raising activities for the general public on the effects of global warming and the measures of the PNACC. For example, by using electoral rolls or home-cooking lists, they will also be able to help raise awareness among people over the age of 65 and encourage them to register in municipal registers, check in and provide them with advice.

PILOTE	Civic Service Agency in conjunction with the DGECC, the CGDD and the MSJVA

BUDGET	To be defined for additional tasks, in connection with the Civic Service Agency
TIMETABLE	2025
INDICATOR	

ACTION 3

Further deploy the municipal civil security reserves and ensure their coordination with other existing mechanisms to provide a complementary response in the event of a crisis, particularly in the context of natural disasters

Governed by [Law No 2017-86 of 27 January 2017](#) on equality and citizenship and [Chapter IV of the Internal Security Code](#), municipal civil security reserves have demonstrated their role in support of the internal security forces. However, to ensure their wider deployment and durability, it is necessary to better link them with the existing ecosystem (security forces, civil security associations, volunteer firefighters, etc.), to identify the conditions for their proper functioning and to propose a stronger framework. These issues are the subject of the work of the *Beauvau de la sécurité civile* conducted by the Ministry of the Interior and an analysis of feedback by an interministerial team. At the end of the work, the objective is to characterise the best practices in terms of municipal civil security reserves and formalise the conditions for their generalisation, always on a voluntary basis.

PILOTE	DGSCGC
BUDGET	To be defined
TIMETABLE	1 st half of 2025: Integration of the work of the Beauvau de la sécurité civile
INDICATOR	Number of active municipal civil security reserves



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3 Third French National Adaptation Plan

MEASURE N°49

Pursue and strengthen climate education in school and higher education curricula

CATEGORY OF THE MEASURE

5. Mobilising the Nation's vital forces to successfully adapt to climate change

BACKGROUND

The issue of adaptation to climate change calls for an upskilling of all citizens. The aim of this factsheet is to continue and strengthen the consideration of climate change issues in school education and higher education. The aim is to promote the assimilation of scientific foundations to understand the phenomena at work and to encourage taking action, thus avoiding or overcoming eco-anxiety.

In school education, climate change is part of the curriculum and integrated into education for sustainable development, which has been strongly reinforced since 2019 by the Ministry of National Education.

Over the past two years, teaching about the green transition has been increasing in higher education institutions, especially in the first cycle of all courses. The subject of adaptation is part of this transversal teaching, which brings the various disciplines into dialogue with each other.

The Ministry in charge of the ecological transition and its institutions oversee a set of higher education schools and a university (Gustave Eiffel), through the Network of Higher Education Institutions for Sustainable Development – RESDD. This network includes a majority of engineering schools. It has skills and expertise on sustainable buildings and cities, sustainable land-planning, energy, climate, weather, but also on the ocean, all of which feed into adaptation knowledge and practices.

ACTIONS ALREADY UNDERTAKEN

The Second National Plan for Adaptation to Climate Change (PNACC-2) noted that “the effectiveness and success of the adaptation policy and its acceptance by the population require a sufficient level of education and training” and that “all levels of training are potentially concerned, from school to higher education”.

School education

PNACC-2 included two measures in this area, one on climate education in school education in France and one on international education.

Climate education has been stepped up in schools

Climate change is part of education curricula and integrated into education for sustainable development, which is strongly reinforced since 2019 by the Ministry of National Education (<https://eduscol.education.fr/1117/education-au-developpement-durable>).

During the PNACC-2 period, the Ministry of National Education carried out the following actions:

- Reinforcement of all school curricula on climate and biodiversity (evolution of high school curricula in 2019 and elementary and middle school curricula in 2020);
- Gradual revision of vocational qualification standards to better integrate energy and climate issues and creation of new diplomas;
- Establishment of eco-delegated pupils mobilised in favour of the climate: in middle and high school classes, as well as at school level (Council for High-school Life, Council for Middle-school Life), at academic level (Academic Council for High-school Life) and at national level (National Council for High-school Life);
- Deployment of the E3D label (School or Establishment with a Global Approach to Sustainable Development) with 14,200 schools, middle and high schools with the E3D label identified in the last annual inventory of October 2024;
- Integrating climate change issues into the training of teachers and managers (academic training programmes and the national training programme);
- Production of new educational resources on climate change;
- Promotion of the development of educational projects in schools and educational establishments;
- Development of partnerships with scientists, experts, associations.

Support to the Office for Climate Education has resulted in dedicated resources.

Thanks to the institutional support provided to the Office for Climate Education (OCE) and the provision of a teacher by the Ministry of National Education the following actions were taken:

- Agreement signed between UNESCO and the Ministry of National Education in 2020 for the recognition of the OCE as a UNESCO reference centre. This agreement was extended to the ministry responsible for the ecological transition in 2022;
- Production of educational resources around IPCC reports (Ocean and cryosphere, Lands, etc.);
- Teacher training and deployment of trainers in France and internationally;
- Preparation of a MOOC on these subjects in English;
- Organisation of an annual international seminar on climate education;
- Organisation of Teacher’s COPs in the margins of the COPs.

Higher education

Higher education and research (ESR) has embarked on a process of ecological transition. One of the objectives is to train the citizens and actors of tomorrow who will have to respond to these challenges. Training on climate change (including adaptation but also mitigation) is integrated into a broader package on sustainable development and the green transition, including also biodiversity, resources and just transition/social fairness. This concerns both the initial training of students and the lifelong training of teachers and teacher-researchers and all ESR staff.

This process, carried out in the form of collaborative work and consultations with ESR stakeholders, consists of four steps described below.

The first step consisted in the drafting of a scoping note and recommendations from the Ministry of higher education and research 'Training undergraduate students in the ecological transition for sustainable development', sent to heads of institutions in July 2023, with training for all undergraduate students being effectively implemented by the start of the 2025 school year at the latest. Thus, a minimum of 30 hours of teaching of a basic knowledge base will be carried out on the following four thematic fields: climate change (including adaptation but also mitigation), biodiversity, resources, just transition/social fairness. This will lead to free (in the choice of the type of certification), but compulsory certification by the institution.

The second stage, based on the same collaborative approach, allowed the production of a recommendation note from the Ministry of the ESR 'Training teachers and teacher-researchers in the ecological transition for sustainable development', sent to school heads in September 2024. A distinction should be made between acculturation to the green transition (including climate change, biodiversity, resources, just transition/social equity) of teachers and teacher-researchers as citizens and the training of teachers and teacher-researchers to train students in the green transition for sustainable development. Teachers and teacher-researchers dedicated to training students will be trained on a voluntary basis. As for acculturation, it will be offered to the entire teaching staff, but also, as far as possible, to the staff of the establishments. Ideally, all teachers and teacher-researchers should follow this awareness/acculturation which will also be offered on a voluntary basis. However, this acculturation should be mandatory for neo-entrants.

The third step concerns the integration of the green transition (including climate change and adaptation) into curricula and disciplines.

The fourth step is to address the skills needs of the professions on the green transition, in particular by integrating adaptation and mitigation to climate change. To that end, a mapping of training in the ESR (FRESQ) is carried out and is analysed in the light of the skills expected to meet green jobs and the evolution of jobs that will have to integrate the green transition.

For the specific field of higher education under the supervision of the Ministry of Culture and falling within the area of competence of CNESARAC established by the law on the creation of architecture heritage of July 2016, an ambitious plan is under way. The aim is to integrate the subjects of ecological transition in all its components, adapted to the nature of the teaching, into all the frameworks for higher education in culture. This is one of the objectives of the Ministry of Culture in its *Guidance and Inspiration Guide for the Ecological Transition of Culture*. That was also the subject of an opinion adopted unanimously by CNESERAC in July 2023.

Awareness-raising and training must therefore be continued and deepened in the higher education and specific training courses on both vulnerabilities, risks and adaptation, but also climate change mitigation, will be encouraged. The ESR can also be a good relay for training in risk culture and the concomitant and domino effects between risks related to climate change

and adaptation, both in initial training for students and in lifelong training for ESR staff and economic actors in the territories.

Resources made available by UVED

Created in June 2005, the Virtual University Environment and Sustainable Development (UVED) is one of the eight Thematic Digital Universities (UNTs) supported by the Ministry of Higher Education and Research. A national centre of educational resources on the ecological transition for sustainable development has been created and entrusted to UVED. Since 2023, the virtual university has been in charge of producing online teaching resources on green transition education for undergraduate students and their teachers. To this end, it has established, with many volunteer teachers, a Common Pillar of Transversal Knowledge and Skills on the Anthropocene (S3C): <https://moodle.uved.fr/>. Teachers can find a coherent teaching model on the subject of the green transition as well as various resources to recompose and use for the production of their own teaching.

Many materials are therefore already available on the issue of adaptation, such as these nine resources: <https://moodle.uved.fr/course/view.php?id=58&section=4>.

National diplomas on the environment in a systemic way

The framing of national higher education diplomas requires the registration of competency repositories and training courses, in the registers of France Competences: National Register of Professional Competences (RNCP) and Specific Register (SR). Mentions of national diplomas are thus recorded by the Ministry of Higher Education and Research, either on the proposal of educational institutions or on the initiative of that ministry itself.

Furthermore, the Ministry of Higher Education and Research has proposed the registration of a master's degree in 'sustainability sciences' and a bachelor's degree in 'sciences of ecological and societal transition'. These national degrees could cover climate change adaptation, if they lead to more specific pathways.

NEW ACTIONS

School education

1. Produce and disseminate tools to help understand climate issues
2. Upskill teachers, managers, inspectors and managers on climate-related issues
3. Support students' engagement in climate action

Higher education

4. Set up training on green transition, integrating climate change and adaptation for undergraduate students from all higher education institutions
5. Deploy training on the green transition, integrating climate change and adaptation for higher education staff, including teachers and teacher-researchers
6. Mobilise the RESDD for the production of educational resources on climate change adaptation

7. Develop training paths, within the framework of national diplomas, aimed more specifically at adaptation to climate change
8. Support the engagement and action of higher education students and staff for the climate and the green transition in general
9. Produce an immersive virtual world, for example in a coastal environment, allowing students to visualise adaptive challenges and test solutions
10. Develop student awards on adaptation to climate change

SCHOOL EDUCATION

The planned new actions are being implemented as a follow-up to the action plan published by the Ministry of National Education in June 2023: 'Schools, the first place to commit to the green transition'.

ACTION 1

Produce and disseminate tools to help understand climate issues

This first component consists of several actions led by the Ministry of National Education (MENESR):

- Further strengthen the climate theme in school curricula with the implementation of the revised moral and civic education (EMC) and technology programmes (which entered into force at the start of the 2024 school year), and a new revision in preparation for all the programmes from cycle 1 to cycle 4: "all teaching must contribute to the acquisition by students of specific knowledge and skills in the field of education for sustainable development and the ecological transition" (letter of referral from the Minister to the Higher Council for Programmes, 13 March 2024);
- Pursue the revision of the reference frameworks for vocational diplomas in order to integrate climate change issues in particular;
- Develop and disseminate the competency framework for education for sustainable development (ESD) developed by the Ministry of National Education and published in October 2023, as well as the progress benchmarks and end-of-cycle expectations published in October 2024;
- Create and disseminate spiral competency-based¹ notional pathways (work of the Scientific Council for National Education);
- Disseminate to teachers and students (in particular eco-delegates) the ABC of climate and biodiversity, an online training course developed by the CNED (operator of the MENESR);
- Continue the high patronage and support of the Ministry of National Education for the dissemination of the Climate and Biodiversity Tour produced by the association Météo et Climat, and for the dissemination of the exhibition in its virtual format;
- Continue the development and dissemination of educational resources dedicated to climate education, carried out in partnership with the Ministry of National Education: pedagogical simulation kit of COP Climat (AFD), pedagogical resources of the Office for Climate Education (OCE), game 'Play to debate - Food and climate' (association L'arbre des connaissances), pedagogical resources of the Tara Ocean Foundation, the Sea Foundation and the Maud Fontenoy Foundation; educational resources on the challenges of adapting the forest to climate change, devices aiming at building an action plan to reduce the carbon footprint of the establishment (Low Carbon Establishment Project, Invent our low carbon lives ...).

¹ Learning paths in which the same notion is studied at different times of schooling, in different contexts and with increasing levels of difficulty.

- Continue the development and dissemination of educational resources on climate issues related to polar areas within the framework of the partnerships of the Ministry of National Education with the association Le Cercle Polaire (national educational action Appel des Pôles), the association Océan Polaire (PolarPod expedition), the Tara Océan Foundation (Tara Polar Station), Greenlandia (impacts of climate change on Greenland communities and Arctic ecosystems).

PILOTE	DGESCO
BUDGET	Not quantified
TIMETABLE	September 2024: Entry into force of the revised EMC and technology programmes October 2024: Publication of progression benchmarks and end-of-cycle expectations, completing the EDD competency framework for schooling 2025-2026: Revision of curricula from cycle 1 to cycle 4 2025-2027: Continuation of the revision of the reference frameworks for vocational diplomas Continuously: Development and dissemination of pedagogical resources, deployment of pedagogical devices (with public institutions and partners of the National Education)
INDICATOR	Implementation of planned actions

ACTION 2

Upskill teachers, managers, inspectors and managers on climate-related issues

- Continue training in education for sustainable development for national education inspectors and trainers (National Training Programme) and teachers (Academic Schools of Continuing Education). Focusing on climate change, particularly in the context of the Annual Resources Forum for Education for Sustainable Development (FOREDD): for example in 2024 on the theme of adaptation to climate change and risk culture, in 2025 on the theme of the sea with a particular focus on the ocean and climate;
- Continue collaboration between the Ministry of National Education and its public institutions to develop training tools and resources (examples: ABC Climate of the CNED, webinars "Climate of tomorrow: educating for change" developed by Réseau Canopé, Job DD of ONISEP to facilitate students' career guidance, etc.).
- Raise awareness of climate issues among all National Education staff as part of the ministerial version of the government training programme for public officials on the ecological transition;
- In addition to this awareness-raising, deploy a specific training system for teaching staff to enable students to acquire the skills of the MENESR ESD repository and support the implementation of teaching situations and educational activities on the subject of the climate in particular;
- Support the mobilisation of the entire educational community (teachers, school management and life staff, maintenance staff, school catering staff, parents, etc.) through a comprehensive approach in favour of the ecological transition recognised by the E3D label;

- Strengthen the link between E3D-labelled school structures and regional players in the ecological transition, particularly by promoting synergies with local and regional authorities;
- Strengthen the link between the actors of national education and agricultural education, and ensure the coherence of educational pathways between school and higher education; strengthening links between players in general, technological and vocational education;
- Support and disseminate resources for teachers developed in partnership between the Ministry of National Education and its public and associative partners;
- Develop tools and teaching methods on climate change issues with the OCE as part of the ClimaSco experiment, enrich the national ESD system with the lessons and tools drawn from the ClimaSco experiment and the impact assessment to be carried out in the three pilot academies (ClimaSco: a consortium of €9 million over five years co-financed by the call for expressions of interest 'Skills and professions for the future' from France 2030);
- Draw on international best practices and experiences and promote national know-how, particularly in the context of the work of the European Commission, the OECD, UNESCO, the United Nations Greening Education Partnership, etc.

PILOTE	DGESCO
BUDGET	Not quantified
TIMETABLE	April 2024: FOREDD 2024 on Global Changes, Risks and Resilience: educational and pedagogical issues » April 2025: FOREDD 2025 on the theme of the sea, including ocean and climate 2025-2027: Raising staff awareness of climate change (training public officials in the ecological transition) Continuously: deployment of national and academic training, development of resources for teachers, etc.
INDICATORS	- Staff trained as part of the declination of the government training program for the ecological transition - Impact measurement in the three academies involved in the ClimaSco project - Evolution of the E3D label (target of 20 000 at the end of the 2025 school year and 100% by 2030 - target set in the June 2023 ministerial action plan 'Schools, the first place to commit to the green transition') - Implementation of the planned actions

ACTION 3

Support students' engagement in climate action

This component is divided into several actions led by the Ministry of National Education (MENESR):

- Continue the dissemination of guides such as the guide 'Acting for the ecological transition in schools, middle schools and high schools' published by the Ministry of National Education in June 2023;
- Continue the animation, training and support of eco-delegates, as well as the promotion of their actions by the Eco-delegated Action Award;

- Mobilise the Health, Citizenship and Environment Education Committees (CESCE), whose scope of action was extended by the Climate and Resilience Act of 22 August 2021;
- Organise a major Climate COP for high school students jointly between the Ministry of National Education and the French Development Agency, with the elected academic eco-delegates of the Academic Councils for high school life and high school students from French institutions abroad (AEFE) and in conjunction with youth associations mobilised for the climate. The event will be organised in the context of the Francophonie Summit and the Sustainable Development Week;
- Draw on the experience of the major climate COP for high school students to organise COP simulations in the academies, particularly in connection with future international COPs;
- Promote the organisation of territorial youth COPs organised jointly by the State services in the regions, the Region and the rectorate, such as the COP'O'lycées launched in October 2024 with high school students from the Orléans Tours academy;
- Ensure that pupils, in particular eco-delegates, have a role to play in overall E3D initiatives, which combine pedagogy and actions in schools;
- Mobilise young volunteers on civic service missions in schools, for example in the framework of the Civic Service Agency's 'J'peux pas, j'ai climat!' operation.

PILOTE	DGESCO
BUDGET	Not quantified
TIMETABLE	• 26 June 2024: Award ceremony 2024 of the 4th edition of the Eco-delegated Action Prize (including a special energy-saving prize) • 30 September – 1st October 2024: Organisation of a Climate COP for high school students as part of the Francophonie Summit and Sustainable Development Week (partnership between the Ministry of Education and the French Development Agency, with the participation of ADEME) • June 2025: Presentation of the 2025 prizes of the 5th edition of the Eco-Delegated Action Prize (including a special prize on the theme of the sea) • November 2025: Organisation of COP simulations in the academies in parallel with COP 30 in Belem • Continuously: Support for eco-delegates, teacher training, deployment of the E3D label, mobilisation of CESCE, etc.
INDICATOR	Number of schools and establishments with the E3D label (target of 20,000 at the end of the 2025 school year and 100% by 2030, target set in the June 2023 ministerial action plan 'Schools, the first place to commit to climate change')

HIGHER EDUCATION

ACTION 4

Set up training on green transition, integrating climate change and adaptation for undergraduate students from all higher education institutions

Although some higher education and research institutions have already set up training on a basic knowledge base on the green transition and sustainable development, this will be done for undergraduate students from all ESR institutions from the start of the school year 2025-2026.

This 30-hour minimum course will be taught in the following four thematic areas: climate change (including adaptation, but also mitigation), biodiversity, resources, just transition/social fairness.

It is also recommended that the project mode, and in particular student engagement, within institutions and territories, be supported, recognised and valued.

This training will lead to free (in the choice of type of certification), but compulsory certification by the institution: the Ministry of ESR recommends the issuance of 3 ECTS credits. The training must lead students to the acquisition of skills according to a competency framework: the European Green Comp competency framework is the one recommended by the ESR Ministry.

To support the implementation of the training, a national centre of educational resources on the ecological transition for sustainable development has been created and entrusted to UVED.

PILOTE	DGESIP
BUDGET	To be defined, the sustainability-related objective of the COMPs may make it possible to finance part of the needs if the institutions so request.
TIMETABLE	2025-2026
INDICATOR	Number of undergraduate students trained in green transition and sustainable development in ESR institutions

ACTION 5

Deploy training on the green transition, integrating climate change and adaptation for higher education staff, including teachers and teacher-researchers

For the training of teachers and teacher-researchers, a distinction should be made between acculturation of the citizens to the green transition and the training of teachers and teacher-researchers who train students in the green transition.

The acculturation will be based on the same basic knowledge as for undergraduate students with the following themes: climate change (including adaptation but also mitigation), biodiversity, resources, just transition/social fairness. Acculturation will be offered to the entire

teaching staff, but also, as far as possible, to school staff. Ideally, all teachers and teacher-researchers should follow this awareness/acclturation which will be offered on a voluntary basis. On the other hand, this acculturation should be mandatory for neo-entrants.

The training of teachers and teacher-researchers dedicated to training students will be voluntary and will have to go beyond the basic knowledge base. The objective will therefore be to go beyond the citizen awareness phase in order to get into the heart of topics related to the ecological transition (and jobs impacted in the medium term), and to be able to transmit to students both solid knowledge and the skills necessary for the ecological transition and in particular climate change (including adaptation) by promoting an interdisciplinary approach and the project-by-action mode.

PILOTE	DGESIP
BUDGET	To be defined, the sustainability-related objective of the COMPs may make it possible to finance part of the needs if the institutions so request.
TIMETABLE	2025-2026
INDICATOR	Number or percentage of incoming teachers and teacher-researchers trained in green transition and sustainable development in ESR institutions

ACTION 6

Mobilise the RESDD for the production of educational resources on climate change adaptation

UVED has already collected educational resources on adaptation to climate change (see above). Specific work will be carried out by the RESDD as part of its competence on knowledge but also associated public policies. The specificities of the Overseas Territories will have to be taken into account. This work will follow two axes:

- An analysis of how adaptation is now addressed in the S3C Pillar. The annex indicates the adaptation-related entries in the S3C course outline. Pedagogical proposals could be made on the basis of this content analysis;
- Unit resources could be produced and offered to UVED in its resource catalogue that complements S3C.

PILOTE	General Secretariat of the MTEBFMP in charge of the animation of the RESDD together with the CGDD on the issue of content and DGESIP
BUDGET	To be defined
TIMETABLE	2025
INDICATOR	Unitary pedagogical resources deposited on the UVED website

ACTION 7

Develop training paths, within the framework of national diplomas, aimed more specifically at adaptation to climate change

The aim is to develop 'climate change adaptation' courses, as part of the national diplomas 'sustainability sciences/sciences of ecological and social transition'. In the same configuration as Action 3, i.e. a working group of RESDD institutions, bachelor/master courses will be developed specifying the objective of training experts in climate change adaptation.

In the ESR, it will be necessary to encourage the creation of specific training courses on both vulnerabilities and risks related to climate change and associated adaptation and resilience, in particular in relation to territories. Existing pathways on climate education could also further develop climate change adaptation.

PILOTE	General Secretariat of the MTEBFMP in charge of the animation of the RESDD together with the CGDD on the issue of content
BUDGET	To be defined
TIMETABLE	2025
INDICATOR	Creation of an adaptation bachelor's/master's course in one or more RESDD or higher education and research establishments

ACTION 8

Support the engagement and uptake of higher education students and staff for the climate and the green transition in general

To encourage student engagement, the Ministry of ESR recommends:

- Accompany and support students, in particular by setting up a commitment coordinator within the institution and allocating time to students to be able to get involved;
- Implement different recognition and valuation processes depending on the degree of commitment (a light commitment must be associated with a lighter process and a lower valuation than a strong commitment);
- Ideally, implement dedicated teaching units within the curriculum and promote them in particular through ECTS credits;
- Reinforcing and simplifying the status of engaged student (deployment of the March 2022 circular and adjustment);
- Promote the deployment of the commitment through collaboration with the socio-economic world and other partners (local authorities, public structures, companies, etc.);
- Contribute to the development of so-called "green jobs" through student engagement, a factor for success and professional integration.

One of the key challenges for successful training in the green transition (including climate change and adaptation) is to make time available for teachers and teacher-researchers.

To meet this need for time, several forms of valuation can be proposed among the existing schemes:

- hourly discharge;

- leave for educational projects (CPP), which could be considered collectively to create a collective dynamic within institutions;
- Educational residences may also be envisaged: these residences allow greater flexibility by allowing a spread over one or more years in groups of teachers, and not only individually.
- Other valuations may also be considered, such as:
 - o the Personal Training Account (CPF) to monitor and obtain certificates on the green transition;
 - o RIPEC (Compensation Scheme for Teaching and Research Staff) for the recognition of the involvement of teachers in the green transition;
 - o a change in the assessment grids for teachers to recognise TEDS in their professional career development, but which requires substantive work to be carried out in the longer term.

PILOTE	DGESIP
BUDGET	
TIMETABLE	2026 and beyond (long-term work)
INDICATOR	Number of institutions implementing actions to enhance student or staff engagement on the green transition and especially on climate change adaptation

ACTION 9

Produce an immersive virtual world, for example in a coastal environment, allowing students to visualise adaptive challenges and test solutions

The specificities of the overseas territories will be taken into account, for example by proposing immersive universes reproducing offshore coastal environments.

The project will be carried out as a 'use case' treated as part of the 'Digital twin of France' project to be developed by the IGN.

PILOTES	CGDD and IGN
BUDGET	To be defined
TIMETABLE	2027
INDICATOR	Creation and provision of an immersive virtual universe

ACTION 10

Develop student awards on adaptation to climate change

A part of higher education places its pedagogical logic on climate change adaptation issues on a daily basis, and the work produced by students in this context can inform public action. Still, there is currently little or no means of bringing together and making accessible the intellectual productions conceived within French universities and schools.

As such, an approach to identifying and valuing inspiring student work on adaptation to climate change could be embodied through a Student Award on adaptation to climate change. Since adaptation to climate change is a cross-cutting challenge to different sectoral public policies, it seems essential to address all higher education disciplines (social sciences, life sciences, engineering, journalism, arts, etc.).

The prize would be set up around three objectives:

- Gather - A national platform: all the work received would be made public on a platform accessible to all. It would constitute an unprecedented database on the work undertaken on climate change issues;
- Disseminate: the prize aims at a national valorisation of the awarded works, selected by a committee of experts composed of stakeholders, qualified personalities and representatives of local and regional authorities. Several national, financially-endowed prizes will be awarded (public prize, expert prize, etc.). The winning works will be given national visibility: exhibition, dissemination on institutional social networks, publication, etc.
- Accompany – From idea to project: several works may be accompanied, either by the award of one or more doctoral scholarships in order to continue the research initiated, or as part of a thesis, or by the funding of one or more prototypes.

PILOTE	GIP EPAU
BUDGET	Financial and partnership roundtable under finalisation
TIMETABLE	December 2024: Launch of the Student Award on Adaptation to Climate Change June 2025: Announcement of the winners of the first session
INDICATORS	- Number of student projects delivered - Number of votes for the Audience Award



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3 Third French National Adaptation Plan

MEASURE N°50

Train all public officials on adaptation issues and mobilise the competencies of the State

CATEGORY OF THE MEASURE

5. Mobilising the Nation's vital forces to successfully adapt to climate change

BACKGROUND

The objective of this measure is to ensure that the State and its operators have the necessary skills to integrate the future climate into all public policies and support stakeholders in the implementation of the NAP and its territorial implementation.

ACTION ALREADY UNDERTAKEN

In line with the State's ecological transformation plan, the 5.7 million public officials will be trained in the ecological transition by 2027. The training modules for public officials contain teaching on climate change adaptation and this dimension will be reinforced in the training dedicated to the 25 000 civil service managers.

NEW ACTION

Identify the skills needed within government departments to meet the challenge of adapting to climate change

Due to the many sectors of activity and natural environments potentially impacted, the issue of adaptation to climate change is eminently transversal and requires the mobilisation of all, starting with the services of the State.

Work will be carried out by the General Secretariat of the Ministry responsible for the ecological transition to identify the necessary skills within the Ministry's services and its operators, list the skills available within these services and propose accordingly a plan for upgrading the skills of staff and recruiting for critical skills.

The analytical framework that will be created can be used by other ministries to carry out similar studies.

PILOTE	General Secretariat of MTEBFMP with the support of DGEC
BUDGET	No additional need
TIMETABLE	2025
INDICATORS	- Skills and Recruitment Plan - Number of departments that have done similar work



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3 Third French National Adaptation Plan

MEASURE N°51

Mobilising artificial intelligence solutions for climate change adaptation

CATEGORY OF THE MEASURE

5. Mobilising the Nation's vital forces to successfully adapt to climate change

BACKGROUND

Artificial intelligence (AI) is a tool to support communities and decision-makers in developing new climate change adaptation strategies, through a better knowledge of the current and future dynamics of their territories, provided that it is done with a positive environmental cost-benefit balance, in line with the general reference framework on frugal AI. For example, artificial intelligence presents opportunities to acquire more data and more accurate predictions about the following increased risks:

- **Heatwave:** based on environmental conditions, such as soil moisture and the state of the atmosphere, AI associates a probability with the arrival of an extreme heat wave, up to one month before its occurrence.
- **Coastal erosion and risk of marine submersion:** thanks to video surveillance of the seashore coupled with AI algorithms to analyse the images, it is possible to follow the evolution of the coastline, and therefore chronic erosion and retreat related to major events. Video surveillance also makes it possible to continuously monitor the state of the protection structures against the risk of marine submersion.
- **Forest fires:** a surveillance system based on cameras and/or sensors can detect early signs of fires in real time and alert response teams. An AI model is able to assess the risk and accurately estimate the origin of the outbreak and then predict the velocity and direction of propagation.
- **Flooding:** forecast models based on weather forecast data or satellite imagery can predict the amount of water in rivers and

affected areas in the event of flooding. Water level measurement technologies can also generate alerts in real time.

Artificial intelligence also allow action to:

- **Combating heat islands:** the identification of heat islands from sensors or satellite images makes it possible to prioritise renaturation actions according to technical feasibility criteria, impact on living comfort and social criteria of the area concerned.
- **Preparing our forest heritage:** AI solutions are able to map our forest heritage and establish the vulnerability of species to climate change and forest fires based on temperature and humidity criteria.
- **Managing flood rescue operations:** Artificial intelligence will be able to detect automatically by video analysis situations that pose dangers to people in the heart of cities.

To harness the full potential of AI for climate change adaptation, an AI acculturation of agents and elected officials who implement climate change adaptation actions is essential for them to better know the opportunities offered by AI and be able to manage such projects.

ACTIONS ALREADY UNDERTAKEN

Ecolab is piloting a call for projects entitled 'Frugal AI Demonstrators for the Ecological Transition in Territories'. This call for projects represents a lever of economic support for the French AI sector, and support for both supply and demand. The funding is targeted to consortium members, both local authorities and companies. It allows French companies and start-ups to find applications for their solutions, beyond the usual grants awarded. It also makes it possible to finance research laboratories that develop solutions at the service of territorial public actors, and to make them work in collaboration with public actors with specific needs.

The second wave of the call for projects, launched in June 2023, received 20 applications from consortia of local authorities/companies/research laboratories. Of these twenty projects, two deal with the theme of heat islands. To reduce the impacts of urban overheating, AI makes sense of disparate data from sensors across the city in order to carry out a diagnosis and set up a tool for monitoring actions, like carrying out "freshness routes" for example, or help planners to plant trees on their territories. Building on advances in the valorisation of data and digital twins, AI makes it possible to analyse, visualize and cross-reference pre-existing territorial data in order to locate plantable areas (degrees and types of plantations). Given the urgent need for structuring climate adaptation actions, a dedicated call for projects would speed up the development of innovative and replicable solutions across territories.

NEW ACTIONS

1. Launch a funding scheme for AI demonstrators for climate change adaptation in the territories: call for projects "Adaptation x ecological transition"
2. Capitalise on these demonstrators to replicate them in all relevant territories
3. Train in AI the national and territorial public administration in charge of implementing concrete actions to adapt to climate change
4. AI and research: benefit from new AI methodologies (learning and deep learning, generative AI, distributed AI, multimodal foundation models) for climate change adaptation

ACTION 1

Launch a funding scheme for AI demonstrators for climate change adaptation in the territories: call for projects "Adaptation x ecological transition"

Concrete actions to adapt to climate change are carried out in all regions in the face of the consequences of global warming: risk of drought, risk of flooding, marine submersion, heat spike, shrinkage-swelling of clay soils, etc. Local and regional authorities must be encouraged to innovate to develop disruptive solutions to address the urgency of adaptation to climate change.

A call for projects for local authorities in consortium with companies and research laboratories, in conjunction with Ministry's operators, would trigger a virtuous dynamic of research and innovation to put artificial intelligence at the service of climate change adaptation decisions. The call for projects will support solutions mobilising AI and with a positive environmental cost-benefit balance, in line with the general benchmark on frugal AI.

This call for project is intended to broadly target all types of territories and all types of adaptation action, as well as to support an AI x adaptation economic sector, which is composed both of large groups specialising in AI or adaptation or start-ups and SMEs with atypical know-how in the field.

A new wave of demonstrators will be dedicated to adaptation in the territories.

PILOTE	Ecolab in connection with the National Coordination IA, the Banque des Territoires and the administrations concerned
BUDGET	Identification of the means available following the report of the AI Commission
TIMETABLE	2025-2026: Call for projects 2025-2028: Monitoring of funded projects
INDICATOR	Number of AI demonstrators for climate change adaptation

ACTION 2

Capitalise on these demonstrators to replicate them in all relevant territories

A call for projects for local authorities in consortium with other public and private actors must spread throughout the national territory. Through a budget dedicated to communication and the sharing of knowledge and experience, the projects financed under the call for projects will be ambassadors of the uses of AI for adaptation, serving as a basis for other territorial projects, or even making technological bricks available to other communities.

As a continuation of the animation of the Community of AI Actors in the territories and in conjunction with the Banque des Territoires, Ecolab will carry out actions to promote and meet the AI ecosystem x adaptation.

PILOTE	Ecolab in connection with the National Coordination IA, the Banque des Territoires and the administrations concerned
BUDGET	No additional need
TIMETABLE	2025-2028
INDICATOR	Number of communities using artificial intelligence for climate change adaptation measures

ACTION 3

Train in AI to the national and territorial public administration in charge of implementing concrete actions to adapt to climate change

Innovative projects to harness AI in a climate change adaptation context require informed coordination by agents who will then use the solution in their daily work. In order to realistically consider what AI is capable of and the challenges and risks associated with it, awareness-raising among staff is essential for the success of projects.

Thus, a dedicated AI acculturation programme for forecasting and crisis management will complement the national ambition to use AI as one of the tools for urgent and necessary adaptation to climate change.

Training bodies for territorial public officials, such as the CNFPT (National Centre for Territorial Civil Service), could be supported to conduct AI training, by providing a pool of experts with the capacity to train officials and elected representatives as well as training and awareness-raising resources. These trainings should include awareness raising on the environmental impacts of AI. For funding, these training organisations may be accompanied to the AMI Compétences et Métiers d'Avenir (future skills and jobs - CMA) funding scheme.

PILOTE	Ecolab in connection with training organisations
BUDGET	To be defined
TIMETABLE	Action initiated at the end of 2024 and continuously deployed
INDICATOR	Number of officers sensitised to artificial intelligence

ACTION 4

AI and research: benefit from new AI methodologies (learning and deep learning, generative AI, distributed AI, multimodal foundation models) for climate change adaptation

The scientific community is now strongly mobilised through several Priority research programmes and equipment (PEPRs) - in particular NUMPEX and TRACCS - to develop explainable AI methods with validation methodologies based on the expertise (quality, veracity) of large multimodal and multi-component FAIR datasets from observation and experimentation infrastructures and digital simulation, as well as knowledge. The aim of this action is to:

- i) intelligently manage and reduce multi-component data flows from large distributed observation, experimentation and sensor systems;
- ii) calibrate, accelerate and improve the accuracy of digital models coupled with AI, including with a finer downscaling; improve their medium- and long-term forecast of climate change and its variability;
- iii) characterise extreme events (frequency, intensity) and improve the quantification of uncertainties;
- iv) develop scientifically well-specified multimodal fundamental models;
- v) develop climate services and decision support tools to better guide new strategies for adapting our societies to environmental, climate and ecological changes.

PILOTE	The French Department of the Commissioner-General for Sustainable Development (CGDD)
BUDGET	Existing research funding schemes, including PEPR
TIMETABLE	From 2025, continuous action
INDICATOR	Number of publications using these new methodologies



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3 Third French National Adaptation Plan

MEASURE N°52

Mobilising the French people on the importance of adaptation and its benefits in the short and medium term

CATEGORY OF THE MEASURE

5. Mobilising the Nation's vital forces to successfully adapt to climate change

BACKGROUND

Because adaptation must take place at all levels of society and in all sectors, mobilising the State and its stakeholders to adapt to climate change cannot be fully effective without the support and commitment of citizens themselves. It is therefore essential to raise awareness of the subject by informing the people about the issues at stake and the action of the State, and by giving them the keys to acting on their own scale. This mobilisation requires a new narrative on ecology focusing on individual and collective solutions.

This long-term communication must also allow a new form of perception of the ecological transition, allowing the French people to better understand the issues in a systemic way and to understand the intrinsic links between climate change, biodiversity and social justice.

NEW ACTIONS

1. Deploy an ambitious communication plan to popularise adaptation to climate change
2. Establish a Climate Change Adaptation Week

ACTION 1

Deploy an ambitious communication plan to popularise adaptation to climate change

According to the Elabe Institute's barometer¹ on ecological transformation (a survey carried out in 2024 in 26 countries for Veolia), 66% of French people are convinced that doing nothing about climate change will cost more than taking action. However, the projection of what should be done is still too vague and can even become a source of anxiety. Communication is therefore a major strategic and operational lever for the success of the NAP. Through a communication plan, in consultation with key stakeholders, the State must deploy a general public communication throughout the territory aimed at launching mobilisation.

1/ Understand and determine the right levers of public opinion. Banalisation of the subject, questioning of scientific discourse, denial and anxiety, etc., there are many causes that explain the decline in public interest in climate issues. After several years of communication and warnings, it seems necessary to renew the discourse to install a popular ecology that embodies more than it rejects. An in-depth study of public opinion will allow to put forward new narratives likely to win support and mobilisation.

2/ Set up a 'laboratory of ideas' to federate a common narrative. To be effective, the issue of communication on adaptation to climate change needs to be addressed in a cross-cutting way, including behavioural sciences. An advisory communication committee, in the form of an 'idea laboratory', bringing together various profiles (communicators, scientists, representatives of environmental education associations and popular education pedagogues, specialised journalists, etc.) could thus be set up. The aim of this laboratory will be to build national momentum by proposing concrete actions to strengthen communication on adaptation to climate change. This work will be based on the Ministry's studies and available scientific evidence. The laboratory will be able to propose concrete and targeted actions by type of public (general public, elected representatives, companies, industrialists, etc.) and thus show that the cost of inaction or maladaptation will be much higher than the cost of adaptation.

3/ Have a strong communication plan for the general public. This plan could take the form of an advertising campaign (TV/radio/press/digital) led by the communication directorate of the ministry responsible for the ecological transition with the aim to take control of the narrative of adaptation to climate change and install it permanently among the French people. Like what has been done on major causes such as tobacco, alcohol or road safety, this involves a profound change in representations.

4/ Improve media coverage of adaptation issues. This includes:

- Show concrete examples of successful adaptation and state support at local level to change perception and remove barriers to engagement.
- Develop a partnership policy with the media to train them on the subject and amplify media treatment on solutions (versus disasters).

5/ Show a positive story of 2100. This aims to set up a "Green Team" on climate change adaptation topics, inspired by the the "Red Team Defense" of the Ministry of the Armed Forces, launched in 2019. The "Green Team" will be in charge of carrying out a foresight exercise on the possible future of France in the face of climate change, mobilising fiction (in particular climate fiction, "cli-fi"). The aim will be to propose new meaningful narratives and positive imaginaries that describe an 'ecological' world by 2100, in all its dimensions: lifestyles, consumption habits, means of transport, new energies and technologies, biodiversity, etc. The role of the Green Team will be as follows:

¹ 2024 edition: <https://elabe.fr/baro-transformation-ecologique-2/>

- Showing positive scenarios for the whole of France by 2100 by major type of territory: coastal, mountainous, agricultural, forestry, urban, peri-urban, rural, ultramarine, etc. and/or by theme (nature-based solutions, techno-solutions, governance, etc.);
- Narrating the scenarios in different formats (writing, illustrations, videos, etc.);
- Feeding and guide public policies on adaptation and planning, and accompany changes at different scales.

The Green Team will bring together different colleges: science fiction authors and screenwriters, multidisciplinary researchers and technical experts (from ministries, Ademe and local partners and actors) and pedagogues from associations working in environmental education. It will give a forward-looking view of France in the context of adaptation to climate change.

PILOTES	DICOM, DGEC and GIP EPAU
BUDGET	According to the adopted communication plan
TIMETABLE	Launch of the communication plan in 2025 and the Green Team in 2026
INDICATOR	Launch of studies and deployment of communication actions

ACTION 2

Establish a Climate Change Adaptation Week

The subject of adaptation must be firmly and permanently on the agenda of the French people, with the idea of the collective challenge. Thus, an annual adaptation week (similar to the media week) will be created from 2025 with media partnerships and local variations on the territory to show what is progressing and accelerate action on the subject.

The establishment of an adaptation week will help to develop collective knowledge of the challenges of adaptation to climate change. This awareness week will allow everyone to better understand the impacts of climate change and the solutions to deal with it. It will involve, through the distribution of communication kits, decentralised State services, national education, local authorities and local businesses.

This information can then be recalled throughout the year during thematic days related to adaptation to climate change (World Water Day for example) or *via* the France Services houses, by training their staff to direct the public to resource persons according to expectations and needs.

PILOTES	DICOM and DGEC
BUDGET	To be defined
TIMETABLE	2025
INDICATOR	Launch of the first edition in 2025



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