United Kingdom of Great Britain and Northern Ireland's Adaptation Communication to the United Nations Framework Convention on Climate Change

UK Government

UN CLIMATE CHANGE CONFERENCE UK 2021

IN PARTNERSHIP WITH ITALY

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United Kingdom of Great Britain and Northern Ireland - Adaptation Communication

This submission sets out the United Kingdom of Great Britain and Northern Ireland's (UK) Adaptation Communication. The guidelines outlined in Annex of Decision 9/CMA.1 [1] have been used to inform this submission, with supplementary information included as an Annex. This Communication will be updated in advance of COP26 to reflect upcoming milestones, publications and further progress.

The UK's Nationally Determined Contribution and Finance Biennial Communication to the United Nations Framework Convention on Climate Change (UNFCCC) are being submitted in conjunction.

Photo - View of Booby's Bay, Cornwall.

[1] https://unfccc.int/sites/default/files/resource/cma2018_3_add1_advance.pdf#page=6

Cover note

The impacts of climate change in the UK and around the world are clear and demand urgent action. We are already witnessing changes that impact lives and livelihoods, and reshape economies, landscapes and communities. As we reduce greenhouse gas emissions to net zero by 2050, we must also adapt and build resilience to current and future changes to our climate.

The Paris Agreement specifies that the international community must keep global average temperature to well below 2°C above pre-industrial levels, and pursue efforts to limit the temperature increase to 1.5°C. To meet this goal, we must take urgent action to mitigate emissions. In parallel, we must also adapt to the physical impacts that result from any increase in global temperatures and altered weather patterns.

The UK is taking action at home to ensure we are resilient and prepared for current and future climate risks. This includes reducing communities' risk to flooding, protecting critical national infrastructure from extreme weather, and enhancing the resilience of supply chains. However, we recognise that there is a need to go further to implement adaptation activity, and to minimise and avert losses and damages. In doing so, we strive to enhance the resilience of our people, environment, infrastructure, and economy. The power of nature has a critical role to play within plans to help ecosystems and society adapt. Healthy forests and wetlands help reduce the risk of flooding, improve biodiversity and provide natural carbon storage.

Internationally we are championing action to advance adaptation through our programming, policy and diplomatic engagement. Programmes supported through UK International Climate Finance have to date supported over 66 million people in developing countries to cope with the effects of climate change, including in countries that are particularly vulnerable to climate impacts. With Egypt, the UK co-led a Call for Action on Adaptation and Resilience at the 2019 UN Climate Action Summit, highlighting that we must give equal and increased urgency to improving adaptation and building resilience, alongside cutting emissions. We are now focused on translating this ambition into action, putting adaptation and resilience at the heart of our COP26 Presidency.

The UK will continue to build on the progress set out in our Adaptation Communication and will further support and learn from counterparts around the world in the lead up to COP26 in Glasgow, and beyond.

National circumstances, institutional arrangements and legal frameworks

UK Climate Change Act statutory framework

Through the legally binding UK Climate Change Act (2008), the UK government is legally obliged to reduce greenhouse gas emissions[2] and build capacity to adapt and strengthen resilience to climate risks.

Responsibility for climate change adaptation is split between the four countries of the United Kingdom. National governments in Northern Ireland, Wales and Scotland are responsible for respective adaptation programmes. Her Majesty's Government (HMG) is responsible for climate change adaptation in England and for embedding adaptation within policy areas for which it has UK-wide competence such as energy security and foreign affairs[3].

The UK Climate Change Act (2008) established:

- that a UK-wide Climate Change Risk Assessment (CCRA) must be undertaken every five years;
- followed by a National Adaptation Programme (NAP), primarily for England as well as covering UK-wide areas[4], to address climate change risks following each Climate Change Risk Assessment. Northern Ireland, Wales and Scotland develop their own respective adaptation programmes[5];
- the 'Adaptation Reporting Power' (ARP)[6] gives HMG and the Welsh government the discretionary power to require relevant bodies to report on their climate preparedness;
- that the independent Climate Change Committee (CCC) advises government and evaluate adaptation progress on a biennial basis.

UK Impacts, risks and vulnerabilities

The UK is an island nation in the temperate climatic zone. Due to the UK's geography and topography the nation is exposed to numerous climatic changes. The second UK Climate Change Risk Assessment (CCRA) was laid before Parliament in January 2017. The risk assessment includes 56 priority risks to the UK to be addressed in adaptation planning within six core themes:

1. flooding and coastal change risks to communities, built environment and infrastructure;

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[2] The UK NDC provides further information on our domestic mitigation institutional arrangements.
[3] for more information on the devolution of powers in the UK see https://www.gov.uk/guidance/devolution-of-powers-to-scotland-wales-and-northern-ireland. In the UK, many powers are delegated to Devolved Administrations (Northern Ireland, Wales and Scotland) such as powers over environment and planning, health and social services, transport, amongst others.
[4] See above.
[5] Further detail on Devolved Administrations adaptation programmes is available under the section covering 'National adaptation priorities, strategies and plans'.
[6] The third adaptation reporting strategy is available on page 70 of the National Adaptation Programme, linked above.

2. risks to health and wellbeing and productivity from high temperatures;
3. risk of shortages in the public water supply and for agriculture, energy generation and industry with impacts on freshwater ecology;
4. risks to natural capital including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity;
5. risks to domestic and international food production and trade;
6. new and emerging pests and diseases, and invasive non-native species affecting people, plants and animals.

The second Climate Change Risk Assessment was underpinned by an evidence report prepared independently by the Climate Change Committee which was published in July 2016. The evidence report analysed the 56 key present-day climate risks and opportunities and current levels of adaptation. It assessed how climate and socio-economic change may alter those risks and opportunities in the 2020s, 2050s and 2080s, and presented findings by level of urgency. Evidence summaries were produced for England, Wales, Scotland and Northern Ireland to describe the risks and opportunities specific to each part of the UK.

The UK government and Devolved Administration governments[7] are working closely with the Climate Change Committee on delivering the evidence review for the third Climate Change Risk Assessment. The evidence report will be published in 2021, and the Climate Change Risk Assessment will be published in 2022. The new evidence report will address identified evidence gaps through seven associated research projects. These cover topics such as future flood risk, future water availability, interacting risks in infrastructure, built and natural environments, amongst others. The findings of these projects have been published on the new UK Climate Risk website, developed by the Climate Change Committee.

Climate research and evidence

In partnership with UK Research and Innovation (UKRI), the UK Met Office and Natural Environment Research Council (NERC), the UK government works to build UK capacity through the £18.7 million Strategic Priorities Fund (SPF) UK Climate Resilience Programme. This research programme draws together multi-disciplinary research and expertise to support understanding and capability in strengthening preparedness and resilience to climate change in the UK. The UK government contributes through the steering group, ensuring that research is linked effectively with government research priorities and objectives.

On an annual basis, the UK Met Office publish a State of the UK Climate report. This provides an accessible, up-to-date assessment of UK climate trends, variations and extremes based on the latest available high-quality climate observational datasets.

UK Climate Projections

In November 2018, the UK published a new set of UK Climate Projections 2018 (UKCP18) in partnership with the Met Office Hadley Centre Climate Programme. The UKCP18 is the first major update to the UK's national climate change projections for nearly 10 years and include global and regional scenarios. The UKCP18 was updated in 2019 to include local level climate projections, providing high resolution 2.2km projections for the UK. In 2020, the projections were further enhanced to incorporate the future likelihood of certain extreme weather events.

[7] Northern Ireland, Wales and Scotland governments

The latest UK Climate Projections show an increased likelihood of warmer, wetter winters and hotter, drier summers in the future with an increase in the frequency and intensity of extremes. For example, heatwaves like that of summer 2018, when temperatures exceeded 35°C in parts of the UK are now 30 times more likely due to human-induced climate change, and by the 2050s these could happen as often as every other year.

The UK is using UKCP18 to inform its adaptation and mitigation planning and decision-making. The projections will also help improve businesses and individuals understanding of climate risks, encouraging them to take measures to strengthen their resilience. These climate projections are being translated into datasets, such as the Environment Agency's climate change flood allowances. These allow land-use planners and flood risk management authorities to understand how climate change affects future flood risk.

National adaptation priorities, strategies, policies, plans, goals and actions

Climate change adaptation is integrated within key policy areas across the UK government. The UK government coordinates adaptation policy in England, and throughout the UK on a range of non-devolved matters including foreign affairs and energy resilience.

The Second National Adaptation Programme (NAP) was published in July 2018 and covers England. The NAP sets out how risks highlighted in the second Climate Change Risk Assessment (CCRA) will be addressed over the following five years. The overarching aim of the NAP is to "shape a society which makes timely far-sighted and well-informed decisions to address the risks and opportunities posed by a changing climate".

The NAP contains actions in the areas of natural environment, infrastructure, people and built environment, business and industry, and local government. The NAP defines policies and measures to be implemented at several levels and identifies the actors responsible for their implementation. The NAP has a time horizon of five years (2018-2023) and is underpinned by a monitoring tool to track progress on adaptation actions, on a periodic basis (further details provided in the Monitoring section of this document).

The UK government's Third Strategy for the Adaptation Reporting Power (ARP) was published alongside the second NAP, setting out the approach for the third ARP reporting round (2019-2021). Under the ARP the Secretary of State for Environment, Food and Rural Affairs has the discretionary power to direct or invite key organisations with operations in England and across the UK to prepare reports on how they are adapting to climate change. ARP reports from the second adaptation reporting round are available online.

A wide range of infrastructure providers, utilities and regulators are participating in the third ARP reporting round from 2019-2021, including those responsible for water, energy, transport, environment, heritage, health and finance. As well as providing government and the public with information on the resilience of core sectors, the ARP process provides a tool for awareness raising, for organisational capability building, and for publicising examples of good practice, many of which come from the private sector.

For the third ARP reporting round government has focused on encouraging reporting organisations to utilise UKCP18 climate projections in their planning processes, and providing support to understand, manage and respond to interdependent risks within and between sectors.

Strengthened approach to adaptation and resilience

The UK Climate Change Act provides a strong foundation to enhance resilience to climate impacts, with research and evidence informing policy and organisations publishing reports on their adaptation progress through the ARP. To build on these foundations, we are continuing to develop our approach. Persistent, systemic action can help ensure the country is prepared for current and future changes to our climate. The UK is working to improve its delivery of integrated adaptation planning and action across all policy areas. This includes policy consideration beyond our five-yearly statutory cycle, to review longer-term risks and help the country to prepare up to 2050 and beyond.

A non-exhaustive set of sectoral policies and strategies in England to strengthen adaptation and resilience and respond to priority climate change risks are available in **Annex A.** This includes strategies on flooding and coastal erosion, terrestrial and marine environments, health, infrastructure, food security, and climate security.

Devolved Administration adaptation programmes

Scotland
Scotland's devolved statutory framework on climate change, established through the Climate Change (Scotland) Act 2009, includes strategic planning for climate change adaptation. The Climate Ready Scotland: Second Scottish Climate Change Adaptation Programme was published in September 2019 under the Climate Change (Scotland) Act (2009). The Programme takes an outcomes-based and people-centric approach to climate change adaptation in Scotland over the period to 2024. This cross-cutting approach promotes co-benefits and integrates adaptation into wider Scottish government policy development and service delivery. The seven high level outcomes – derived from both the UN Sustainable Development Goals and Scotland's National Performance Framework – cover community resilience and climate justice, the economy, infrastructure, the natural and marine environments and international partnerships.

Wales
The Climate Change Act requires Welsh Ministers to lay from time to time a report before the Senedd Cymru/Welsh Parliament on the objectives, actions and future priorities of Welsh Ministers around the impacts of climate change. The Wellbeing of Future Generations (Wales) Act (2015) sets out the Wellbeing Goals, including the goal of 'A Resilient Wales', for public sector organisations, as well as the requirement for Public Service Boards to pay regard to the CCRA when making wellbeing assessments. The Welsh Environment Act (2016) sets further provisions with regards to climate change, including requirements around natural resources policy and a duty to protect our ecosystems.

The Welsh Government published its second climate change adaptation plan for Wales, in November 2019. Prosperity for All: A Climate Conscious Wales sets out how Wales is aware of the climate risks, prepared for the impacts arising from climate change and is adapting to the areas of highest risk, supported by an infographic and easy read versions.

Northern Ireland
The Climate Change Act requires Northern Ireland Departments to prepare an adaptation programme to address the climate change risks to Northern Ireland, as soon as reasonably practicable after the laying before Parliament of the CCRA, and to review them every five years. Reports on the adaptation programme and subsequent progress are required to be made to the Northern Ireland Assembly.

The Department of Agriculture, Environment and Rural Affairs (DAERA) published Northern Ireland's second Climate Change Adaptation Programme (NICCAP2) in September 2019 which covers the period 2019-2024. The five-year programme primarily contains a government response to the risks and opportunities identified in the CCRA Evidence Report for Northern Ireland as part of the second UK CCRA.

NICCAP2 focuses on five key priority areas requiring urgent adaptation action. It sets the strategies, policies, actions and delivery action plans by which government departments will deliver on agreed adaptation outcome objectives. NICCAP2 also contains adaptation actions and delivery plans which will be undertaken and implemented by outside government sectors including local government. These outside government actions will contribute to addressing the findings of the CCRA Evidence Report for Northern Ireland and help deliver the outcome objectives of NICCAP2 over the lifetime of the programme.

Implementation of adaptation actions, and results achieved

The UK government continues to implement the actions set out in second National Adaptation Programme (NAP) (2018-2023) and are furthering action to respond to priority risks identified in the UK Climate Change Risk Assessment (2017). The NAP is a result of cross-department collaboration and brings together the UK government's policies, to manage key climate risks in one place. This approach is integral to ensuring adaptation is embedded across all levels of government.

As highlighted earlier in this Communication, the NAP sets out actions across a wide range of sectors, including on the natural environment, infrastructure, people and built environment, business and industry, and local government. The latest update on NAP actions implementation is published here.

Notable adaptation progress is being undertaken in exploring and supporting the vital role of nature-based solutions; managing floods and coastal erosion; and transforming our financial sector to respond to and manage climate-related financial risks.

Examples of recent announcements and achievements include:

- Continued work on the Green Finance Strategy (GFS), to align private sector financial flows with clean, environmentally sustainable and resilient growth, and to strengthen the competitiveness of the UK financial sector. The GFS includes steps to improve adoption of the Taskforce on Climate-related Financial Disclosures (TCFD) framework, which includes disclosure of physical climate risks. In November 2020, the Chancellor announced that TCFD-aligned disclosures will be made mandatory across the

economy by 2025. Further detail on Green Finance initiatives and announcements is available in **Annex B**.

- In November 2020, the UK revised its economic guidance by updating the Green Book Supplementary Guidance on Accounting for the Effects of Climate Change to encourage climate change risks to be embedded in policy and programme decisions, drawing on climate evidence and assessments. The guidance states that the impacts of a global temperature rise of 2°C should be considered, and decisions with longer term horizons (beyond 2035), such as infrastructure design and the natural environment, should also consider impacts at 4°C. Given our current understanding of risks, the guidance sets out this approach as prudent to upholding the 'managing public money principles'.[8]

- In March 2020, the UK government announced a £640 million Nature for Climate Fund to protect, restore, and expand habitats like woodlands and peat bogs, supporting climate mitigation through natural carbon capture and helping to alleviate flooding. Funding will help triple UK tree-planting rates to 30,000 hectares every year, equating to 40 million more trees. In response to the challenges facing the environmental sector as a result of Covid-19, the Green Recovery Challenge Fund has brought forward £80 million of these funds to kick start a programme of nature-based projects to address the twin challenges of halting biodiversity loss and tackling climate change, while creating and retaining jobs in the conservation sector.

- In March 2020, the Environment Agency[9] published our National Framework for Water Resources, which sets out England's future water resource needs and potential deficits, at a national and regional level. This will further support future water company planning for droughts; a key risk identified in the second Climate Change Risk Assessment.

- In May 2020, Natural England[10] published a new edition of the Climate Change Adaptation Manual with the Royal Society for Protection of Birds to support nature conservation in a changing climate. In 2019, the Forestry Commission published guidance on Managing England's Woodlands in a climate emergency.

- In May 2020, the UK published new sensitivity assessments focussed on potential climate change impacts on protected features of Marine Protected Areas (MPAs) and their role in enhancing climate change resilience.

- A number of habitat restoration initiatives[11] are underway to restore our estuarine and coastal habitats to benefit people and nature. The UK government's ambition is to set a gold standard for fisheries management. This includes the introduction of a climate change objective in a new Fisheries Act (2020).

- In December 2019, the Environment Agency began introducing changes to some of the regimes in the Environmental Permitting Regulations to require organisations to consider potential climate risks as part of their permit, alongside other types of environmental risk.

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[8] HM Treasury Managing Public Money: principles

[9] The Environment Agency is a non-departmental public body of UK government

[10] Natural England is a non-departmental public body of UK government. Its purpose is to help conserve, enhance and manage the natural environment for the benefit of present and future generations.

[11] Restoring Meadows, Marshes and Reefs project (ReMeMaRe) and Recreation ReMEDIES.

Implemented adaptation actions have enhanced our preparedness to current and future risks, averting and minimising loss and damage. A selection of adaptation projects that have been implemented or are currently being undertaken are outlined below.

Flood and coastal management resilience

Since 2015, we have already completed over 700 new flood and coastal defence projects across the country. Current planning policy is very effective at limiting inappropriate development in floodplains. For example, in 2018/2019 99.4% of new homes included in planning applications were determined in line with Environment Agency (EA) advice on flood risk. The EA advise developers and planners how much climate change will increase river and flood levels so that they can plan accordingly.

Despite record breaking rainfall in the winter of 2019, fewer than 5,000 properties flooded and nearly 130,000 were protected. These figures reflect the better protection that investment in flood risk management schemes over the last few years has produced.

Thames Estuary 2100 Plan

The Thames Estuary benefits from a world-class system of defences providing protection to 1.3 million people and £275 billion of property and infrastructure from tidal flooding. Climate change, ageing defences, growth and other pressures mean the risk of tidal flooding is increasing over time. The Thames Estuary 2100 Plan sets out the strategy for managing flood risk to the end of the century and has climate change at its core. It uses an adaptive pathways approach, with options for managing future tidal flood risk reviewed and revised continuously in line with observed changes in the estuary. It sets out a range of pathways for managing differing amounts of sea-level rise, river flows and increasing risk of storm surges.

A resilient natural environment

Nature-based solutions (NBS) are integrated into the UK's approach to adaptation, both domestically and internationally. These are defined by the International Union for Conservation of Nature as "actions to protect, sustainably manage, and restore natural or

modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits"[12].

NBS such as the protection and restoration of forests and wetlands provide a multitude of benefits- to help systems cope with long-term climate trends, reduce communities' vulnerability to climate disasters such as droughts, floods and storm surges and to support livelihoods and protect biodiversity. It is estimated that nature-based solutions could deliver up to a third of the global cost-effective mitigation required by 2030 to meet the Paris Agreement temperature goals[13]. The UK is utilising a range of natural based solutions to implement adaptation action, including:

- Following agreement of the post-2020 global framework under the Convention on Biological Diversity (CBD), we will produce a new Strategy for Nature in England. The Strategy will be clearly linked to other strategies, including those for Trees, Peat and Pollinators, and will set out further details and the over-arching narrative on how we are implementing our global commitments on biodiversity and climate change in England, including consideration of climate adaptation measures.

- As the cornerstone of future agriculture policy, the new Environmental Land Management scheme will provide a powerful vehicle for achieving the goals of the 25 Year Environment Plan and the commitment to net zero emissions by 2050, while supporting our rural economy. Climate change adaptation and mitigation are core aims of the Environmental Land Management scheme.

- Natural England is developing a review of carbon storage and sequestration by natural and semi-natural habitats which will quantify the climate change mitigation benefits of protecting and restoring them. There is good potential to deliver biodiversity and build its resilience at the same time as Nature-based Solutions for adaptation and mitigation. Native woodlands, peatlands and coastal habitats are particularly important for mitigation, but other habitats can also contribute. Natural England is additionally working to develop ways of incorporating climate change adaptation into the designation and management of protected sites, including Sites of Special Scientific Interest (SSSIs) and National Nature Reserves across England. For example, National Nature Reserves are now carrying out a climate change risk assessment in the course of developing their five-year management plans. Natural England is also carrying out research and monitoring to support adaptation for biodiversity and Nature-based Solutions for adaptation across terrestrial, freshwater and marine ecosystems.

- Healthy functioning peatlands provide a range of benefits, including flood management, biodiversity rich habitats and carbon capture potential. Peatland restoration will feature as part of the UK government's Nature for Climate Fund that will lead to the restoration of 35,000ha of peatland over the next five years. Agri-environment schemes can also deliver both mitigation and adaptation benefits and recent research has quantified the mitigation benefits of Countryside Stewardship options[14].

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[12] https://www.iucn.org/commissions/commission-ecosystem-management/our-work/nature-based-solutions#:~:text=Nature-based%20Solutions%20%28NbS%29%20are%20defined%20by%20IUCN%20as,adaptively%2C%20simultaneously%20providing%20human%20well-being%20and%20biodiversity%20benefits%E2%80%9D.

[13] https://www.pnas.org/content/114/44/11645

[14] Countryside Stewardship provides financial incentives for farmers, woodland owners, foresters and land managers to look after and improve the environment. https://www.gov.uk/government/collections/countryside-stewardship

Implementation of adaptation actions by Devolved Administrations

Adaptation and resilience requires local, tailored intervention and the governments for each of the UK 'Devolved Administrations' (Scotland, Wales, and Northern Ireland) have their own adaptation programme.

Scotland

Progress is being made towards the implementation of the around 170 policies detailed in the second Scottish Climate Change Adaptation Programme (2019 – 2024). For example, since September 2019:

- The Scottish government has launched its new Living with Flooding Action Plan.
- The Scottish government's Place Standard Tool Strategic Plan 2020-2023 sets out how place-based approaches to help communities and public authorities generate the discussions required to understand the assets of a place. It recognises that the effects of climate change are likely to be felt most powerfully at local levels and it is here where adaptation is most important.
- Historic Environment Scotland has published a Guide to Climate Change Impacts on Scotland's Historic Environment.
- The Scottish Fire and Rescue Service has published its Climate Change Response Plan to 2045.
- The Scottish Government is investing in peatland restoration, which delivers co-benefits through carbon sequestration and adaptation for natural habitats and flood management. To date, we have restored almost 20,000ha of peatland through our Peatland Action initiative with NatureScot.
- Scottish Government is investing in active travel initiatives, which both reduces emissions and encourages individual adaptive action through providing alternative options when public transport and road infrastructure may be affected by extreme weather.

Further details on the progress of the implementation of the second Scottish Climate Change Adaptation Programme (2019-2024) are available in the first annual progress report of the Programme, laid in the Scottish Parliament on 29 May 2020.

The Scottish Government funds the Adaptation Scotland programme to support capacity building and action on adaptation by the public sector, businesses and communities in Scotland and deliver on policy outcomes in the second Scottish Climate Change Adaptation Programme. Adaptation Scotland supports the development and expansion of regional initiatives within Scotland such as Climate Ready Clyde, Aberdeen Adapts, Edinburgh Adapts and Highland Adapts which drive effective adaptation action across cities, regions, islands and localities, aligned with the interests and needs of communities.

Wales

Welsh Government's new climate change adaptation plan responds to the 'more urgent' risks to Wales, detailed in the Wales summary of the UK CCC Climate Change Risk Assessment (CCRA). Wales' adaptation plan details how the actions tackle these risks by seeking to

improve knowledge, capacity and resilience. The key policy areas covered in the technical annex include:

- adaptive nature and our rural economy;
- protecting our coasts and seas;
- staying healthy;
- safe homes and places;
- caring for the historic environment;
- successful businesses, and;
- resilient infrastructure and transport.

Northern Ireland

Climate change is a dynamic process and the risk it poses will change over time with a level of uncertainty around impacts. In recognition of this, NICCAP2 is expected to evolve over its five-year cycle.

NICCAP2 will, therefore, be subject to a mid-programme review and an end-of-programme evaluation. The mid-programme review will provide an assessment on the progress of the implementation of the delivery plans' actions, the appropriateness of the assigned indicators, and the progress towards delivering the programme's outcome objectives. This review will provide a degree of flexibility to the climate change adaptation approach for government, civil society and local government sectors. It will allow us to update and add adaptation actions and indicators, and also update delivery plans as appropriate. The end-of-programme evaluation will be carried out to ascertain how effective the adaptation programme has been. Lessons learned and knowledge gained, from this evaluation process, will provide the basis for the development of subsequent Northern Ireland climate change adaptation programmes.

Knowledge exchange and partnerships

Mutual collaboration and partnership between countries, and non-state actors is imperative in advancing and mobilising greater adaptation and resilience action, internationally, nationally and locally. Adaptation and resilience solutions may be place-specific, but there are many shared challenges, notably in measuring adaptation progress, where governments, business and civil society can work jointly.

The UK government engages widely and values the insight of our partners domestically and internationally – including with business, local government, research bodies and the public. Collectively, we acknowledge that we must do more and go further to enhance adaptation activity and strengthen the resilience of the nation. Examples of domestic partnerships include:

- Secretariat of the Local Adaptation Advisory Panel (LAAP), a forum for dialogue on climate change adaptation between local government, central government and delivery bodies in England.

- Collaboratively working with world-leading UK scientific and research institutions in the field of climate science and impacts, on multidisciplinary climate resilience research through the £18.7 million UK Research & Innovation and Met Office Strategic Priority Fund (SPF).

- Contributing to the Infrastructure Operators Adaptation Forum (IOAF), a network enabling infrastructure operators to learn from each other and work together to reduce vulnerability and realise opportunities presented by points of dependency between infrastructure systems.

- Supporting and building capability of organisations reporting under the third cycle of the Adaptation Reporting Power (ARP), which opened in January 2019 and runs until Jan 2021. Over 90 organisations have confirmed their participation in the third round.

- Engaging with the British and Irish Council (BIC) Climate Adaptation working group, a forum sharing lessons between BIC Administrations[15] to improve linkages across the BIC regions and enhance adaptation interventions, particularly in respect to climate resilient infrastructure.

- Working with the Organisation for Economic Co-operation and Development Task Force on Climate Change Adaptation (TFCCA) to share lessons and learn from other countries and organisations.

Partnerships for nature-based solutions

The Environment Agency develops nature-based solutions to climate change in partnership with Natural England, local authorities, the Royal Society for the Protection of Birds, wildlife trusts, water companies and local groups. These partnerships have created 531 hectares of blanket bog and restored a further 2,148 ha across England in 2019/2020[16]. Restoring peatland has many benefits, including reducing downstream flood risk. This slows the flow whilst filtering the water, meaning water companies can use less chemical treatment. These projects will also lead to an increase in biodiversity to promote our native species and help store carbon to mitigate the impacts of climate change.

[15] BIC Administrations include the United Kingdom of Great Britain and Northern Ireland, the Channel Islands, Isle of Man, and the Republic of Ireland

[16] Projects include, Moors for the Future, the Pennine Peat Partnership, and the South West Peatland Partnership

Monitoring and evaluation of adaptation, barriers and challenges

Work is carried out across UK government to regularly track the implementation of the National Adaptation Programme (NAP). This is supported by a tool to record progress on NAP actions implementation. The 2019 update is published here.

As set out in the UK Climate Change Act, the Climate Change Committee has a duty to assess the progress in implementing the NAP, reporting to Parliament every two years. Their next progress report is scheduled for summer 2021. The last Climate Change Committee progress report published in 2019, provided sectoral scores based on the quality of plans and progress to manage risk. The UK government is working closely with the Climate Change Committee to identify how best to monitor adaptation activity and assign sectoral metrics and indicators for exposure and vulnerability to risk.

Internationally, UK climate finance is accounted for on a project by project basis in order to ensure that only funds that are directly contributing to reducing or tackling the impacts of climate change and environmental degradation are included. All International Climate Finance (ICF) programmes are required to collect and report on relevant results using a suite of defined key performance indicators (KPIs) with standardised methodologies, alongside other programme-specific indicators. KPI data is collected and published annually for transparency. It is also used for tracking and demonstration of results across ICF.

Barriers and Challenges

Monitoring adaptation progress remains a significant challenge, with an absence of a full set of robust metrics and indicators. With an absence in standardised metrics for adequately monitoring adaptation and resilience, private finance flows will remain small. Mobilising investment in nature-based solutions is similarly challenging without standardised metrics.

Further, adaptation and resilience planning is inherently complex, with uncertainty related to climate models, projections, and what this means in terms of climate impacts. Working at a local-level and sharing lessons and approaches within and across sectors is vital in developing consistent and robust adaptation plans.

To ensure society and the economy are prepared for a range of climate futures, we need adaptation and resilience to be integrated across all sectors and within all departments. Embedding adaptation policy within established policy frameworks such as for transport, housing and land-use, creates challenges that are widely recognised in other nations. These include interdependency risks, complexities of risk governance at local and national scales, and difficulty reconciling competing goals.

Finally, there is an economic gap in terms of understanding the costs of avoided loss and damage, maladaptation and impacts on the economy and communities from implemented adaptation actions. The UK will be conducting an economic policy study in advance of our third NAP in 2023.

Scotland

The Climate Change (Scotland) Act 2009 includes a statutory framework for monitoring progress on adaptation. Under this framework, the Scottish Government reports annually to

the Scottish Parliament on progress to its current Adaptation Programme. The most recent annual report was laid in Parliament on 29 May 2020 and included an initial assessment of the impacts of Covid-19 on the policies in the Programme. Statutory independent assessments of the Adaptation Programmes are also undertaken by the UK Committee of the Committee on Climate Change on a regular basis, with the most recent one having been published in 2019.

The Scottish Government recognises that the Covid-19 pandemic has been a significant challenge to the implementation of adaptation policy. However, Scottish government are firmly committed to the delivery of a sustainable, inclusive and resilient recovery from the pandemic. The current situation emphasises the importance of systems that can be resilient to both immediate and longer-term challenges including adapting to the impacts of climate change.

Scottish government also recognise that there are important ongoing knowledge gaps around adaptation and resilience. The 25 research outcomes set out in the second Scottish Climate Change Adaptation Programme aim to help fill these gaps. Examples of recently published research outcomes include work on understanding the vulnerability of soil health to climate change. The global climate and nature emergencies are key drivers of evidence building and research across Scottish Government, as set out in the draft strategy for Environment, Natural Resources and Agriculture research for 2022-2027 (2 November 2020). Bodies such as ClimateXChange and the Centre of Expertise for Waters play an important role in building this evidence base in Scotland.

Wales

'Prosperity for All: A Climate Conscious Wales' includes a new Monitoring and Evaluation Framework (MEF) which was launched in July 2020. The MEF outlines our commitment to report progress every two years and provides a clear structure and framework for consistency. Welsh Government oversees delivery of the plan through an internal climate change portfolio board, and also intends to work with the Climate Change Committee to allow for independent evaluation of the impact of the new plan once implemented.

Northern Ireland

As noted earlier in the Communication, NICCAP2 will be subject to a mid-programme review and an end-of-programme evaluation. Northern Ireland government departments have agreed that ahead of a mid-programme review and an end-of-programme evaluation, they will provide yearly reporting which gives an assessment of the progress of delivery plans. This will give government departments the opportunity to amend, update and add additional adaptation actions to the Programme which addresses and responds to climate change risks identified for Northern Ireland.

Implementation and provision of support to developing countries

The UK has committed to spend at least £5.8 billion of International Climate Finance (ICF) between 2016/2017 and 2020/2021. This builds on the £3.87 billion that was spent on climate activities between 2011/2012 and 2015/2016.

At the United Nations Climate Action Summit (UNCAS) in September 2019, the Prime Minister announced that the UK would double its ICF contribution from £5.8bn in 2016-2020 to £11.6bn from 2021-2025. This made the UK the first country to commit to a post 2020 finance goal, setting a clear benchmark for the international community towards COP26 and beyond. The UK will continue to deliver a balanced split between adaptation and mitigation finance.

Our investments in adaptation and resilience programmes help developing countries to manage risk; adapt and build resilience to the impacts of climate change; avert, minimise and address loss and damage caused by climate change; promote low-carbon development; support sustainable management of natural resources; increase access to clean energy; and reduce deforestation.

Programmes supported through UK ICF have to date supported over 66 million people to cope with the effects of climate change. Support delivered by ICF programmes is tailored to context. Activities contributing to the number of people whose resilience has been improved as a result ICF [17], include; supporting farmers to grow crops that can adapt to changing weather conditions; improving irrigation systems and preserving water catchments in areas facing increased drought risk; strengthening defences against floods and storms; and ensuring that social protection mechanisms are in place to make sure that people are able to cope with and quickly recover from weather-related shocks.

Over the next five years UK ICF will focus on driving the rapid transformation and systemic shifts required to achieve the Paris Agreement goals across the following four themes:

- Clean Energy: A major focus of our ICF programming will be on accelerating the clean energy transition in developing countries so that they can provide access to affordable, reliable and clean energy for all and reduce or avoid high emissions pathways, making use of innovation and technology.

- Nature for Climate and People: ICF will focus on accelerating a just transition to systems which manage land and marine resources sustainably while protecting and restoring nature. This will enable the sustainable production of enough nutritious food for a growing population, whilst using less resources and protecting and restoring nature. This will be critical in mitigating and building resilience to climate change.

- Resilience: Our work will ensure that countries and communities are supported to adapt to, prepare for and cope with the damaging effects of climate change and climate-linked disasters. Without action, hard won gains in areas such as health, nutrition and livelihoods risk being reversed. Those living in poverty, women and girls, people with disabilities and

[17] KPI_4: Number_of_people_whose resilience_has_been_improved_as_a result_of ICF

marginalised and crisis-affected groups are already being hit hardest by the impacts of a changing climate and they stand to suffer most unless action is taken.

- Sustainable Cities, Infrastructure and Transport: In the context of rapid changes in urban development, ICF will focus on the supporting low-carbon, resilient and inclusive urbanisation needed to promote sustainable cities, along with wider infrastructure across the transport, building and waste sectors.

UK ICF finance also supports a range of research activities aimed at strengthening climate resilience and adaptation through more effective use of science, data, tools and UK expertise. Programmes supported by the UK work across a range of sectors and geographies. A short selection of examples is provided below:

- The Weather and Climate Information and Services for Africa (WISER). This programme aims to enhance the resilience of poor people and of economic development in Africa to weather and climate shocks, by improving the quality and use of weather and climate forecasts and other information services. This will contribute to increased productivity of climate sensitive sectors, like agriculture, health and infrastructure. Improved weather information can also help to protect lives. This programme also has a significant capacity strengthening element delivered through the Climate Research for Africa (CR4D) initiative, a partnership of the African Climate Policy Center (ACPC) of the United Nations Economic Commission for Africa (UNECA), the African Ministerial Conference on Meteorology (AMCOMET), the World Meteorological Organization (WMO), and the Global Framework for Climate Services (GFCS).

- The Future Climate for Africa (FCFA) research programme which aims to enhance the scientific understanding and prediction of climate variability and change in Africa and, at the same time, is working with stakeholders to bring this information into use in adaptation planning. FCFA includes 11 pilot studies across sub-Saharan Africa that are using climate information to inform decisions, including infrastructure development, climate-smart agriculture, and urban and national planning.

- The Science for Humanitarian Emergencies & Resilience (SHEAR) programme supports improved disaster resilience and humanitarian response by advancing the monitoring, assessment and prediction of natural hazards and risks across Sub-Saharan Africa and South Asia. SHEAR aims to catalyse earlier and more effective action to respond to imminent natural hazards and enable greater and more effective investment in disaster resilience and preparedness.

- The Climate Impacts Research Capacity and Leadership Enhancement (CIRCLE) programme provides support to early career African researchers to undertake research on climate impacts, adaptation and resilience across a range of sectors and localities. It also supports building the capacity of African research institutions.

International Cooperation

At the United Nations Climate Action Summit (UNCAS) in September 2019, with our Partners Egypt, and our wider coalition of Bangladesh, St Lucia, Malawi, the Netherlands, and the

United Nations Development Programme (UNDP), we launched a Call for Action on Adaptation and Resilience.

The Call for Action has been endorsed by 120 countries and 86 institutions and organisations. This work highlights the UK's commitment to helping create the environment and partnerships necessary to provide countries with the financial and technical tools, and political leverage that they need to take action on adaptation and loss and damage.

Building on the momentum of the Call for Action, the UK launched the UN Group of Friends on Adaptation and Resilience with Egypt earlier this year. This serves as a platform for members to informally discuss adaptation and resilience efforts, share best practices, highlight major milestones, and be briefed by relevant entities and stakeholders.

The UK is additionally working to advance adaptation planning and action, by forming partnerships to share knowledge and to learn from other nations. The UK supports the principles of locally led adaptation and is working with a wide range of international partners to determine how the targeting and delivery of climate finance can be made more responsive to local demand and be utilised more readily at local level.

As part of the UK's G7 Presidency in 2021, the UK will encourage members to increase commitments, cooperation and financing of international adaptation and resilience; in line with our COP26 ambition. The UK will propose G7 initiatives related to adaptation and resilience and mainstreaming climate and biodiversity across ministerial tracks and at leader level. These commitments will be negotiated with G7 partners through 2021. In doing so, the UK aims to use its G7 presidency to support ambitious adaptation and resilience action and successful outcomes at COP26.

With a range of government and non-state partners the UK has already launched and is championing a series of initiatives focused on delivering practical action on adaptation and resilience:

The Least Developed Countries Initiative for Effective Adaptation and Resilience

In February 2020, the UK agreed to support the establishment phase of the LIFE AR programme (the Least Developed Countries Initiative for Effective Adaptation and Resilience) initiated by the Least Developed Countries (LDC) group of 47 countries at the UNFCCC. The establishment phase is to enable the LDC Group to commence work with seven identified frontrunner countries (Bhutan, Ethiopia, Uganda, Tanzania, Malawi, Burkina Faso and the Gambia). These countries will set up national mechanisms for a whole of government, whole of society approach to building resilience under the LDC vision for delivering a more climate-resilient future.

The initiative proposes changing the mechanisms by which climate finance is accessed, managed and targeted, to enable least developed countries to direct at least 70% of climate finance flows to support local level adaptation and resilience actions by 2030. By bringing together like-minded countries, LIFE AR supports south to south peer learning to share best practice and success stories, to support cross-country resilience initiatives and investments.

Risk-informed Early Action Partnership

The UK is committed to supporting the international Risk-informed Early Action Partnership (REAP), which aims to make 1 billion people safer from disasters by 2025 through integrated disaster risk management and climate adaptation laws, health and social protection for populations, and improved early warning systems.

The UK committed £175 million to REAP at UNCAS in 2019. The UK supports a number of REAP working groups through technical and policy input. Our world-class Met Office experts convene and support the early warning systems working group, and policy and disaster response experts from UK Foreign, Commonwealth and Development Office (FCDO) attend the health and marketplace working groups.

Coalition for Climate Resilient Investment

The Coalition for Climate Resilient Investment (CCRI) was also launched at UNCAS in 2019. CCRI represents a commitment from the global private sector towards the development of practical analytical and investment solutions to quantify and manage physical climate risks. By pricing climate risks (particularly for infrastructure) and including them in upfront financial decision-making, CCRI's aim is to incentivise a shift towards more resilient design and management.

Since its launch, CCRI has grown rapidly to 63 members, with more than $10 trillion in assets under management. The UK is a founder member of CCRI, with a view to action in the UK as well as with partners overseas (supported by UKaid).

CCRI is delivering through 3 workstreams:

1. 'top down' systemic risk assessments at national level to prioritise interventions based on the socio-economic value at risk in case of climate-related failures; supported by,
2. 'bottom up' asset design and structuring that incorporates climate risk into a cash flow modelling methodology for private sector and other investors;
3. financial innovation that will mobilise resources for resilience action.

CCRI will be an important part of the Adaptation & Resilience and Finance workstreams for COP26, supporting the Taskforce for Climate-related Financial Disclosures and working alongside the Indian-led Coalition for Disaster Resilient Infrastructure (CDRI) and related work with the Multilateral Development Banks.

Mobilising Private Finance

At the Finance in Common Summit in December 2020, the UK and other partners committed to accelerating private finance for adaptation and resilience investments. CDC Group, the UK's development finance institution, will help lead – recognising the important role development banks play in financing adaptation measures and mobilising private finance to meet local needs.

Adaptation Research Alliance

The UK is working with international partners from developing and developed countries to develop an Adaptation Research Alliance (ARA) to be launched at COP26.

The ARA seeks to bring together partners around the world to commit to increased capacity and funding for action-orientated research to inform effective adaptation and resilience at scale, and to embed research into adaptation activities. The ARA will foster new partnerships to deliver transdisciplinary, user-centred research to create action-orientated, practical adaptation and resilience solutions.

Nature-based solutions

Through the UK COP 26 nature campaign, we are seeking to ensure that finance, capacity building and co-operation are available to unlock the potential of nature-based solutions. Initiatives include:

Sustainable Land Use and Commodities Trade

We are working with other countries to launch a government-to-government dialogue, to discuss and agree an inclusive vision to further effective action on sustainable forests and land economy. This will include a focus on helping industries such as palm oil, cocoa, and soya transition towards more sustainable practices; and opening up new opportunities for investment and development in forests, land use, agriculture and the bio-economy. We will use the convening power of our presidency to create domestic and international spaces for these dialogues.

Leaders' Pledge for Nature

The UK Prime Minister signed the Leaders' Pledge for Nature at the UN General Assembly in 2020. This Pledge has been endorsed by over 75 countries. The UK will now work with other countries to take forward this agenda, strengthen resilience in our economies and ecosystems, taking an integrated approach to environmental challenges and scale up nature-based solutions.

Just Rural Transition

The UK will build on the Just Rural Transition (JRT) initiative launched with UK support at UNCAS, accelerating a transition to sustainable land use, agriculture, food and natural ecosystems. This includes building a coalition of the willing to show leadership in investment and policy commitments to climate resilient and sustainable agriculture.

Scotland

The Scottish Government recognises that climate change adaptation requires international cooperation and also, as part our commitment to championing climate justice, that those who experience the greatest impacts may need more support to adapt. In October 2019, the Scottish Government signed an Adhesion Declaration to join the global Regions Adapt initiative which was created alongside the 2015 Paris Climate Conference (COP21) as a framework for regional governments' action, collaboration and reporting on climate change adaptation. Since September 2019, three additional projects have been funded by the Scottish Government's Climate Justice Innovation Fund to explore new innovations in climate resilient food provision, water access and renewable energy.

Adaptation and Resilience synergies with other international frameworks and conventions

Adaptation and resilience, and minimising loss and damage, interacts with and complements many international frameworks and conventions. Examples include:

Convention on Biological Diversity

The UK is committed to its obligations under the Convention on Biological Diversity (CBD) and recognises the role that nature-based solutions to climate change adaptation can play in helping to meet these obligations. We will push for reference to nature-based solutions to be strengthened in the CBD Post 2020 Global Biodiversity framework and promote the critical need to improve the resilience and recovery of vulnerable ecosystems.

The UK through its leadership of the Global Ocean Alliance is championing a new global target for the protection of at least 30% of the global ocean within Marine Protected Areas.

Ramsar Convention

The UK is committed to its obligations under the Ramsar Convention and recognises how these commitments contribute to other international frameworks including the CBD and UNFCCC. We acknowledge the crucial role wetlands play as a nature-- based solution in adapting to climate change. The £10 million UK Peatland Restoration project aimed at restoring an estimated 6,500 hectares of degraded peatlands is a notable example of how domestic adaptation actions contribute to achieving targets set under the CBD and UNFCCC.

Marine

Adaptation and resilience of people and our natural environment contributes to many of the Sustainable Development Goals (SDGs). For marine ecosystems, SDG13 and SGD14 on Climate Action and Life Below Water are the most relevant for ocean-climate policy, and adaptation actions contribute to the UK's progress against the targets. The UK's Voluntary National Review of Progress against the SDGs highlights strong progress against SDG14 targets. The North East Atlantic Ocean Acidification Hub has been established in the UK. The Hub will act as the European regional centre for conducting monitoring and research into ocean acidification, primarily within the North East Atlantic region, including the submission of data to the UN for SGD 14.3 on ocean acidity.

Sendai Framework for Disaster Risk Reduction

The UK is committed to Disaster Risk Reduction, it is an integral part of the UK's domestic approach to civil contingencies and risk management, from land-use planning, to infrastructure investment, to our response to climate change. Risk reduction is embodied in our Civil Contingencies Act and improving national resilience was a key theme in the 2018 National Security Capability Review. This Review drives activity across the whole of government and includes strengthened prevention and preparedness activity against some of our most serious risks and commits the UK to continued cooperation with our international partners on risk reduction. In implementing the UN Sendai Framework for Disaster Risk Reduction, we continue to outline and improve how we measure domestic progress against risk reduction.

Gender-responsive adaptation action, supporting most vulnerable groups and utilising traditional knowledge and local knowledge systems

Climate change disproportionately impacts the poorest and most marginalised and those with existing vulnerabilities. The UK is committed to ensuring women and girls, indigenous peoples, people with disabilities, and marginalised groups, particularly those from parts of the world that are most adversely affected by climate change can express their priorities and concerns on an equal basis. The UK intends to build on a strong track record of encouraging and enabling an inclusive approach to climate action, including through our COP Presidency. The UK has a proud record of putting women's and girls' rights at the centre of its international policy:

- International Development Act (Gender Equality) 2014 makes a consideration of gender equality in all UK development assistance a legal requirement and under the Public Sector Equality Duty (PSED) the UK government is required by the Equality Act 2010 to give due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations between those who share a characteristic and those who do not (including in relation to age, gender, disability, race, religion, pregnancy and sexual orientation).

- In March 2018, the former Department for International Development launched the Strategic Vision for Gender Equality, reflecting and responding to the UK government's ambitions on this agenda and aiming to contribute to accelerated delivery of the Sustainable Development Goals.

- The UK has been a leading supporter and contributor to several climate finance programmes internationally that have embedded gender inclusion within their design and combine both gender mainstreaming and gender focussed programming. For example:

    - The UK has been the leading supporter to date of the UNDP's Climate Finance Network (CFN), which has a dedicated workstream on Gender and Social Inclusion and Climate Change Finance and supports the network's countries in integrating gender and social inclusion into climate change planning and budgeting processes.

- The UK has also worked to build women's and girl's climate resilience through investment in more inclusive core and shock-responsive social protection. Through the Better Assistance in Crisis (BASIC) and Gender-responsive Social Protection (GSP) programmes we are providing technical assistance and expertise to support partners on how to ensure social protection systems and interventions can respond to climate risks and the differential needs of women and girls, in the COVID-19 response and recovery.

Domestically, the UK is committed to promoting equality and inclusion, including women's empowerment and gender equality. Public authorities must fulfil responsibilities set out under the UK's Equality Act (2010) in the exercise of their functions. We also recognise the role of young people as agents for change on climate action. As part of the 2019 Year of Green Action, we consulted a Youth Steering Group as one of three new youth voice projects to encourage young people to participate in influencing national policy, on issues including climate change.

Local knowledge and cultural heritage

Protecting cultural heritage has an irreplaceable role in preserving the long-standing spirit and individual identities of communities. In the face of our changing climate, it is imperative to build resilience of historic settlements, cities and villages and intangible culture, to enhance wellbeing, stability, security and prosperity. There is much to learn from our cultural heritage and sharing traditional knowledge on what works to address the challenges of a future climate. The tools of heritage are about sharing knowledge and understanding across generations.

Through programmes such as the Cultural Protection Fund, the UK supports projects that use traditional knowledge, adaptation and historical practices to address international heritage at risk from climate change and natural disasters.

The UK Cultural Protection Fund and International Cultural Heritage climate work programmes include:

- learning from the past, including through traditional knowledge approaches, and sharing this knowledge between nations to reduce risk, help protect our global heritage and inform future adaptation, resilience and cultural protection;

- enhancing commitment to the SDGs domestically and internationally with key partners by using the SDG framework as a means for horizontal knowledge;

- capturing and protecting intangible cultural knowledge of communities; for example, traditional building methods, local knowledge systems related to adaptation practices and traditional knowledge passed inter-generationally. Generating innovation to ensure that like-minded (and other) governments:

  - recognise the importance of protecting cultural heritage at risk from climate change as part of a wider risk matrix, and
  - are cognisant of the long-term benefits of cultural heritage as a) a stabilisation tool b) a means to catalyse economic recovery and c) to reduce displacement post disaster.

- enhancing commitment to the SDGs domestically and internationally with key partners by using the SDG framework as a means for horizontal knowledge.

Scotland

The Scottish Government takes a climate justice approach to tackling climate change both domestically and internationally, recognising that it is those least responsible for climate change who are suffering first and worst from its effects.

The second outcome of the Scottish Climate Change Adaptation Programme aims to ensure that the people in Scotland who are most vulnerable to climate change are able to adapt and that climate justice is embedded in climate change adaptation policy. Associated actions include involving vulnerable groups in climate action to engage and empower communities and ensuring that our health and social care systems are resilient to climate change.

The Scottish Government's Climate Justice Fund supports projects and programmes to help build resilience to climate change among vulnerable people in our International Development Partner countries of Malawi, Rwanda and Zambia. A climate justice approach takes into account that women and girls are disproportionately affected by climate change, particularly in the global South. For example, the Climate Challenge Programme Malawi - funded by the Climate Justice Fund - has outcomes specifically dedicated towards the inclusion of women and girls in decision-making processes around climate change, as well as on boosting the incomes of female-headed households.

Annex A - Examples of Policies, Strategies and Plans

The below is a not exhaustive list, but provides an illustration of policies, plans and measures across a range of sectors.

Flood and coastal erosion management and water resources

In July 2020, the government published a long-term Policy Statement for England setting out our ambition to create a nation more resilient to future flood and coastal erosion risk. The Policy Statement outlines new national goals to manage flood and coastal erosion risks. It includes five ambitious policies and over 40 supporting actions which we will take to accelerate progress to better protect and better prepare the country against flooding and coastal erosion in the face of more frequent extreme weather as a result of climate change.

Alongside the Policy Statement the Environment Agency has published a highly ambitious National Strategy for flood and coastal erosion risk management from now to 2100, delivering a nation ready for, and resilient to, flooding and coastal change. The strategy supports embracing a broad range of actions that will increase our country's resilience, enabling people and places to better prepare, better protect, respond to and recover quickly from flooding and coastal change, both now and in the face of a changing climate

The strategy also calls for an adaptive approach to better equip practitioners and policy makers to plan for future flooding and coastal change and climate hazards. The government's £200m resilience innovation programme will support the Environment Agency to develop long term adaptive pathways in four locations across the nation (the Thames and Humber Estuaries, Yorkshire and River Severn) to ensure the investments we are making today and resilient to tomorrow's climate. The Environment Agency is also updating our guidance so that all new flood and coastal defences in England are designed to account for a range of future impacts, including from a 4°C rise in global temperature by 2100.

The government is also investing a record £5.2 billion to build 2,000 new flood and coastal defences over the next 6 years which will better protect 336,000 properties, from flooding and coastal erosion, including homes, businesses, schools and hospitals. A further 150 million is being invested in a six year programme to develop new innovative actions to bolster flood and coastal resilience in 25 local areas across the country. The selected places will serve as exemplars for flood and coastal resilience to inspire other locations across the country to take action.

Water resources are also identified as a priority national climate change risk, although this varies regionally. Our 2020 National Framework for Water Resources addresses this through a strategic, regional approach to manage water needs to 2050 and beyond. the increasing pressures of population growth and climate change through reducing water demand, halving leakage rates, developing new supplies and reducing the need for drought measures that can harm the environment. The framework supplements existing programmes to address unsustainable historical water abstractions, reform abstraction

licensing, and River Basin Management Plans that manage the environmental quality of river bodies.

Natural environment (terrestrial)

In England, the 25 Year Environment Plan sets out a range of goals and commitments for nature which can help us to mitigate and adapt to climate change, including improving the condition of our protected sites network. For example, by re-wetting peatlands or afforestation and creating or restoring 500,000 hectares of wildlife-rich habitat in England, as part of a Nature Recovery Network.

The Nature Recovery Network will be an expanding and better-connected network of places that are richer in wildlife, supporting the recovery of our species, and strengthening resilience to climate change and other pressures. Improving the condition and diversity within, and connectivity between our wildlife habitats, will also help species survive in their existing locations and allow them to move towards more suitable climates where necessary. Restoring our natural habitats also has a myriad of potential benefits for helping communities to adapt to climate change risks – from natural flood management to urban cooling.

Through the Environment Bill, the government is introducing a system of Local Nature Recovery strategies, to provide a spatial framework to underpin development of the Network. As set out in the National Adaptation Programme, Natural England will provide advice, resources and support to ensure that climate change resilience is enhanced in landscapes and habitats that are vulnerable to climate change, and throughout the Network. The government is also providing incentives and additional protections to extend and improve our ecosystems and natural capital assets, particularly for carbon-rich ecosystems such as woodland and peatland.

In England, the government are expanding woodland funded through the England Tree Planting Programme, part of the Nature for Climate Fund, aiming to increase the landscape resilience of England's woodlands helping wildlife to adapt and move through the landscape as the climate changes. Expansion of the woodland resource will also contribute to other objectives, including human health and well-being and water quality improvement.,

The Nature for Climate Fund also supports the restoration of peat, providing habitats for rare wildlife, as well as significant carbon sequestration. The UK will set out an ambitious framework for recovering English peatlands through the England Peat Strategy and the establishment of a Lowland Agricultural Peat Taskforce. The Taskforce will work with stakeholders to deliver recommendations for more sustainable agriculture on lowland peatlands.

Natural environment (marine)

Marine Nature-based solutions (NbS) have a crucial role to play in climate change adaptation and resilience, as well as mitigation. The protection, restoration and management of coastal habitats provide significant ecosystem services, such as flood

protection and carbon sequestration. Marine NbS contribute towards achieving HMG's vision for 'clean, healthy, safe, productive and biologically diverse ocean and seas'. Through achieving this vision, we will also ensure the marine environment can adapt to and be more resilient to climate change impacts.

Forty percent of the English inshore and offshore areas are protected within Marine Protected Areas (MPA), and HMG is currently considering its response to the recent Independent (Benyon) review on Highly Protected Marine Areas, including the role of blue carbon habitats to improve the climate resilience of the seas. A range of evidence on the impacts and risks from climate change on the marine environment is also being generated, including continuing to build the evidence base on carbon stock and sequestration services of marine habitats to improve understanding and qualification of potential mitigation co-benefits and risks associated to ocean acidification.

Food security

Government has made an important commitment in the Agriculture Act (2020) to publish a regular report on the subject of food security. The food security report will be a significant body of work that will use a set of core measurements and indicators for each of the key topic areas. This will include a range of themes which cover both global and domestic food security, from global food availability and resource sustainability to consumer safety and confidence.

We will analyse statistical data drawn from a blend of national and international data sources, including UK National statistics as well as data from the Food and Agriculture Organisation of the United Nations. It is our intention that the report will inform future discussions and debate to shape future policy on UK food security, to ensure that key challenges are met. The first food security report will be published at the end of 2021 with a report published every three years thereafter.

To improve understanding of the vulnerability of the UK food system, and how we can enhance its resilience to environmental, biological, economic, social and geopolitical shocks, the UK launched a five-year research programme in 2016. The Resilience of the UK Food System in a Global Context' (GFS-FSR) programme is funded by our Research Councils (BBSRC, ESRC, NERC) and the Scottish Government.

To ensure the population have access to safe and affordable food, the UK committed to a national shift to healthy diets supported by a sustainable food system through the National Food strategy.

Health

The UK is committed to all hazard multi-sectoral preparedness, resilience, and response to climate change emergencies, as described in the UK's Civil Contingencies Act (2004) and evidenced in the multi-agency emergency planning and response mechanisms of Local Resilience Fora.

The Heatwave Plan for England has contributed to a reduction in deaths during heatwaves. As part of the NAP, Public Health England (PHE) will widen the scope of existing plans

through the development of a new adverse weather and health plan, which will cover heatwave, cold weather, flooding and other weather-related hazards. This national plan will extend the focus of action beyond emergency planning and response to explicitly address strategic prevention and adaptation. New developments include a review and update of our early warning systems for the health and social care system.

The UK recognises that the health system has a key role in protecting the health of the population in response to the threats posed by climate change, but is also itself vulnerable to its effects. It is critical that health systems are resilient to climate change so they can help minimise and avert potential impacts on the health of the population. The UK seeks to improve the resilience of its health system through the systematic assessment of its vulnerability to climate change, addressing these vulnerabilities through actions in the NAP.

HMG is developing measures to improve patient safety and increase resilience in health and social care buildings especially in relation to heatwaves. For example, since April 2017, the National Health Service (NHS) has been working to understand and address overheating risk in mandatory Green Plans[18]. The NHS aims to embed adaptation into daily practice by 2023, by including it as a key element of Green Plans, as a set a requirement for all National Health Service providers.

Pests, diseases and invasive non-native species

Pests, diseases and invasive non-native species are a threat to health and the environment. Climate change may exacerbate these threats. Public Health England (PHE)[19] has targeted surveillance programmes to monitor native and the incursions of non-native vectors (organisms such as mosquitoes which transmit disease or parasites). This surveillance develops our understanding of the status, distribution and abundance of vector species. There are cross-government contingency plans in place to deal with invasive mosquitoes, which will be enhanced to cover other veterinary and medically important vectors.

In response, PHE has also developed guidance documents on public health awareness of ticks in urban and rural areas for local authorities, developed a handbook for wetland managers on risks posed by wetland creation and management, and published field and model-based research and reviews on the impact of climate change on vector-borne disease and the establishment of invasive disease vectors.

Infrastructure

Infrastructure for energy, water, transport and communications, underpins activities across society and the economy, yet may be directly or indirectly vulnerable to climate change risks.

As referenced in the National Infrastructure Strategy, infrastructure must be resilient to future climate change, by ensuring that its expected effects are fully considered at the

[18] formerly known as a Sustainable Development Management Plans, green plans are approved, live strategy documents outlining an organisation's aims, objectives, and delivery plans for sustainable development. They should include implementation of the NHS Long Term plan deliverables.
[19] PHE is an executive agency of government for England.

design stage. This means addressing the likely impacts of higher temperatures, more extreme weather, and increased incidence of droughts, floods, and disease, and building in cost-effective mitigations over the whole-life cycle of the asset now.

The increasingly interdependent nature of our critical infrastructure means that the need to identify and manage cascading risks is only becoming more important. HMG works across all thirteen critical infrastructure sectors to improve the UK's resilience to risks that could impact multiple systems and services, including those risks that could arise from climate change. To support our work HMG have developed an online 'Critical National Infrastructure Knowledge Base' platform, which maps data on critical systems and the relationships between them, including interdependency, geographic proximity and common supply chains. This is proving transformative to our ability to identify and model the impacts of cascading risks and target those interventions which will have the greatest impact in reducing them.

Climate Security

The UK will soon be publishing a Climate Change and Sustainability report in the context of UK defence activities. The report will include a strategy to address both climate change adaptation and broader sustainability. Under adaptation, the strategy will address three areas:

- Preserving the ability for the UK's Armed Forces to operate in a climate which is already hotter and more extreme and will become progressively more so. If nothing is done, it is possible there will be areas of the world and some environments where defence will lose its competitive advantage or will not be able to operate effectively. This includes understanding the resilience required to sustain existing bases and training areas, overseas and in the UK.
- Understanding the implications for the deployment of the UK's Armed Forces, including the UK's Humanitarian Assistance and Disaster Relief operations and Military Aid. There will be opportunities for upstream capacity building in climate stressed areas of the world.
- Supporting UK leadership on the debate about climate change and security, including by mobilising the international defence community. The G7, G20 and COP26 summits in 2021 offer an opportunity for this.

Annex B – Green Finance activities

- In addition to mandating climate disclosures, with a significant portion of mandatory requirements in place by 2023, the Chancellor in November 2020 announced that the UK will issue its first sovereign green bonds in 2021 as part of its Covid-19 stimulus planning. The sovereign green bond will support the UK to implement its 2050 net zero greenhouse gas emissions target and other environmental objectives, by financing projects that will tackle climate change and infrastructure investments, and by creating green jobs. Furthermore, the UK will implement a green taxonomy, to provide a common framework for determining which activities can be defined as environmentally sustainable, aiming to improve understanding of the impact of firms' activities and investments on the environment and support the transition to a sustainable economy.

- There are a number of ground-breaking Green Finance projects underway which will see private investment into Nature-Based Solutions. The IGNITION project in Greater Manchester is seeking to greatly expand the use of Sustainable Drainage Systems across the city, with finance secured against the cost savings from reduced surface water run-off. The Caen Wetlands project in Devon is seeking to restore 144ha of wetlands, using the proceeds from eco-tourism. The Department for Environment, Food and Rural Affairs (Defra) and the Environment Agency are launching the £8m Natural Environment Investment Readiness Fund to help more nature-based projects develop investable propositions that can secure private finance. This builds on the Global Commission on Adaptation's report that adaptation investments consistently deliver high returns, with benefit-cost ratios ranging from 2:1 to 10:1 through a 'triple dividend' of avoiding future losses, economic gains through innovation, and social and environmental benefits.

- The Green Finance Institute, created by the UK government to catalyse the growth of Green Finance, is bringing together public and private institutions to help mobilise more investment into nature-based adaptation. The Institute plays a central role in the Taskforce for Nature-related Financial Disclosures (TNFD), which aims to replicate the success of the Taskforce for Climate-related Financial Disclosures for nature.