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PARIS REINFORCE (PR) input to the first global stocktake

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Good practices, experience and potential opportunities to enhance international cooperation on mitigation and adaptation and to increase support under Article 13, para 5, of the Paris Agreement

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Key points:

Key concerns that hinder national and international support of the PA, prevent climate mitigation and decrease international cooperation include (Köberle et al., 2021; Stoddard et al., 2021):

- *Technological:* unrepresentative reference scenarios in scenario analysis; misleading social and economic consequences of response measures; lack of commercialisation in low-carbon energy sources.
- *Socioeconomic:* distributional inequalities of response measures; vested interest of fossil fuel industries and elite preferences hostile to climate mitigation; reinforcement of a perpetual growth economy; social infrastructure underpinning high-carbon lifestyles; growing financialization of the environment.

Opportunities and best practices to increase international support and cooperation for the PA (Vielle, 2020; Neofytou et al., 2020 Köberle et al., 2021; Fuss et al., 2021; Yang et al., 2021; Giarola et al., 2021; Koasidis et al., 2022b; Edelenbosch et al., 2022):

- *Technological:* inclusion of co-benefits in scenario analyses; identification of positive economic outcomes; reframing of scenario outputs; linking top-down and bottom-up models; inclusion of heterogeneity in long-term projections; harmonisation of models; comprehensible format of modelling results.
- *Socioeconomic:* capitalisation of opportunities to increase cost-effectiveness and fairness of mitigation (e.g., flexibility mechanisms in the Effort Sharing Regulation).

Opportunities to support climate mitigation at a national level (Labella et al., 2020; Nikas et al., 2020; Sognnaes et al., 2020; Köberle et al., 2021; Koasidis et al., 2022a; Koasidis et al., 2022b; Koasidis et al., 2022c; Parris et al., 2022; Nikas et al., 2022; Gambhir et al., 2022):

- *Technological:* participatory procedures and knowledge co-creation; incorporation of stakeholder views into modelling exercises.
- *Socioeconomic*: engaging citizens to create opportunities for a transdisciplinary approach to mitigation; the use of frameworks and decision-making tools to support decision making, as well as the identification and design of appropriate mitigation pathways; monetisation as a policy tool.

About the project

PARIS REINFORCE (PR) is an EU Horizon 2020 funded project, with a consortium of thirteen European and five international partners. PR's fundamental aim is to enhance and improve climate policymaking. To do so, the consortium has access to a range of sophisticated climate-economic scientific models and brings together a wide range of knowledge and expertise to produce interdisciplinary analyses and reports. PR has been working on a number of additional Deliverables which will prove relevant to the GST. However, analyses are unfinished and thus remain to be published. PR will update our inputs with our latest results once they are complete.

Summary of the relevant work

Köberle et al. (2021) presents some key concerns and solutions to increasing the attractiveness of mitigation. One of the most crucial concerns when considering the social and economic consequences of climate response measures – and thus the attractiveness of these response measures – is the comparison of mitigation scenarios against hypothetic references that have excluded climate impacts, often resulting in policymakers and stakeholders being provided with a distorted and unrepresentative view of climate mitigation and its associated consequences. Therefore, a more relevant approach could consider how to implement mitigation options in a way that is compatible with promoting sustainable development or enhancing human welfare (see also Grant et al.,

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2020; Hausfather and Peters, 2020). For example, by exploring sets of scenarios that achieve similar cumulative emissions or comparing scenarios with similar climate impacts. These temperature-clustered scenarios would provide insight into corresponding costs and how they are distributed across society as scenarios could differ in how they achieve their climate goals, e.g., with differing timings, technology and instrument choices. A more accurate representation of the costs, co-benefits, and timings of mitigation measures would vastly increase cooperation.

Presenting mitigation costs under a different light could further enhance support for climate mitigation and adaptation. For example, mitigation scenarios could highlight that decarbonising the economy can occur in conjunction with per capita income growth with relatively small consumption losses overall, emphasising the fact that reaching the climate goals of the PA is compatible with steady economic progress.

IPCC assessments could place more emphasis on the distributional issues relating to climate policy, and the corresponding policy measures that will ensure an equitable transition. Scenarios that explore how to mitigate these distribution inequities could also work to enhance ambition in Parties' revised NDCs.

Acknowledging the shortcomings of GDP as a mitigation cost metric – instead reporting both broader and additional welfare metrics – would allow for a science-based societal debate and the creation of appropriate complementary measures.

Enhancing the economic efficiency of climate mitigation, or generating positive impacts from mitigation, will drastically increase support for the PA. Modelling the specific channels that impact the cost of mitigation will enhance our understanding of potential consequences associated with climate policy measure. We therefore suggest incorporating the following mechanisms into scenario analyses and formulation: co-benefits (e.g., reduced air pollution); behavioural biases and imperfections (e.g., individual food consumption may often not be 'optimal' for welfare maximation); knowledge spill overs and positive externalities; investment and finance (i.e., models assume optimal allocation of resources at all times, yet this is not the case); and pre-existing distortions (e.g., inefficient taxation). Using such mechanisms can assist in identifying positive economic outcomes, thus inform a more robust policy design with a more optimal mix of policy instruments.

To more accurately inform both policy design and investment decisions and better refine the role of economic analyses of the cost of mitigation, we provide three key suggestions:

- Both existing and upcoming scenarios research should provide the appropriate context (i.e., include caveats, risks, and opportunities) and carefully consider the framing of findings (e.g., framing 'carbon tax' as 'carbon dividend' reduces the focus on solely costs).
- Utilising temperature-clustered second-best scenario frameworks that have the power to explore alternative climate policy packages and the associated macroeconomic costs, as described above.
- Combining differing approaches to climate mitigation cost estimations to create a more comprehensive and realistic representation of climate mitigation. By failing to include mechanisms such as these, an overly pessimistic view of climate mitigation can be created, rather than a pathway that aligns climate action with increased welfare and sustainable development.

Koustsandreas et al. (2021) evaluated the effect of the Greek National Energy and Climate Plan (NECP) on the Greek economy, and the impact of higher decarbonisation speeds. The two scenarios utilised in this study relate to the draft (slow transition) and final (rapid transition) versions of the Greek NECP. Results indicated that the faster the speed of delignitisation, the greater the macroeconomic and societal benefits (assuming that capital is available to fund the transition). The rapid delignitisation scenario increased GDP by approximately 1% and

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household income by approximately 7% by 2030 compared to the slow delignitisation scenario, offering support for the double dividend effect of green policies.

Yang et al. (2021) conducted an integrated analysis for deep decarbonisation pathways (DDP) in China by linking a top-down (CGE) and bottom-up model (MAPLE). The soft-linking of these models is a methodological improvement on co-benefit analyses – linking can reduce uncertainties caused by using top-down or bottom-up models alone and narrow the range of estimates, thus provide a feasible solution for countries' DDPs environmental co-benefit analysis. After linking, Yang et al. (2021) found that the real GDP loss from deep decarbonisation, for example, reduced from 0.92% to 0.54% in 2030, and with the consideration of environmental co-benefits, this GDP loss was further offset by 0.39%.

Should Parties recognise the shortcomings of current mitigation cost scenarios (or modelling scenarios incorporate suggestions above to more accurately definite mitigation costs), potential benefits of decarbonisation both in terms of monetary co-benefits and societal wellbeing, and that greater speeds of decarbonisation will generate the greatest returns, they will likely be more willing to enhance mitigation measures and offer more support to the long-term goals of the PA.

Labella et al. (2020), Nikas et al. (2020a), and Nikas et al. (2021a) also recognised the importance of decision-making tools. The participation of multiple experts, whilst important, often results in disagreements within the group and unreliable solutions. Decision-making tools can therefore reduce complexity and solve broader decision-making problems regarding sustainability and decarbonisation policies, providing more robust solutions. Further, these tools make it easier to trust analyses and convert findings into concrete action.

Labella et al. have developed the fuzzy decision support tool, APOLLO, with the goal to provide solutions that the majority of (groups of) stakeholders agree on to maximise governance. APOLLO was showcased in a real case conducted in Austria, and experts displayed a consensus level of 85% on the risks most threatening to the transition – indicating that a coherent strategy addressing funding and competition issues is necessary to enhance cooperation and overall support for the PA. Similar findings on the consensus levels were found in Koasidis et al. (2022a).

Forouli et al. (2020) proposes a methodological framework, presenting a two-level integration of an IAM that provides policymakers with a comprehensive tool to assess environmental and energy-related issues, relevant across three SDGs (SDG3, SDG7, SDG13). The aim of this process is to identify the optimal portfolio of actions that best meet multiple objectives whilst simultaneously satisfying problem constraints. Results highlight how resource allocation must be shared across technologies to achieve optimal trade-offs on the achievement of the three SDGs listed above. Decision makers can then select a portfolio and tailor it to their specific needs and preferences. Such supportive tools, particularly those that are customisable based on country-specific needs, will vastly increase support and cooperation by providing stakeholders will a fuller view of their options and their outcomes.

An additional requirement to develop best practices, put forward by Nikas et al. (2021b), involves more participatory procedures to expand knowledge-making beyond that of just researchers and experts, as also discussed by Doukas et al. (2020) and Galende-Sanchez and Sorman (2021). This can be achieved through a variety of means, such as online platforms, which provide the opportunity for engaging in a wide array of tools, models, results and preferences.

One such platform is I^{2}AM PARIS which delivers comprehensive (and comprehensible) scientific information to support climate policy making. Nikas et al. (2021b) co-designed this platform with stakeholders in order to respond to key questions in the climate debate that the stakeholders have asked, using scientific processes also co-created with these stakeholders. Platforms such as this emphasise transparency, reproducibility, inclusivity,

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comprehensibility, plurality, and data democracy. By documenting modelling characteristics and capabilities, scientists can share a common language, and stakeholders can have more informed discussions and decisions.

Koasidis et al. (2022b) introduced a multi-criteria methodological framework for seaport sustainability planning. This framework allows policymakers and decision-makers, who operate in the shipping and port sectors, to evaluate different low-carbon interventions, identify the most competitive of these interventions under uncertainty, and evaluate the direction of the sector's policy context with regard to required actions. This framework has limited computational needs, thus enables decision-makers to account for a diverse set of uncertainties whilst quantifying their impacts in an easily comprehensible format to generate the most robust policy mixes and allow the optimisation of investment capital.

Parris et al. (2022) introduced the Transformations Process Framework, integrating knowledge in support of implementation transformations. This framework develops a narrative of the required transformational changes; identifies the key variables, drivers and barriers in the transformation process; and acts as a supportive tool to facilitate the exploration of relevant academic and other literature. This framework supports in the identification and clarification of the "right" questions, such as what factors need to change at differing scales, and acts as a synthesis guide to collate knowledge in support of implementing transformations across multiple scales and agents.

Gambhir et al. (2022) analysed low-carbon pathways in a range of major emitting non-European countries, using stakeholder input for the creation of scenarios. A key feature of this scenario co-creation arose from the identification of substantial barriers and opportunities stemming from these pathways. For example, in Russia, key issues discussed in the workshop revolved around the consideration of the forestry sector, and the cost reduction and scale-up prospects of nuclear and renewable energy sources. In the USA, early consultation emphasised the importance of both jobs and equity in the development of low carbon pathways. In India, discussions focused on the integration of renewables into the energy grid, air quality issues stemming from continued fossil fuel use, and managing decarbonisation with rapid urbanisation. China placed the focus on policy design, e.g., through emissions trading system development, and in the Central Asian Caspian region the focus was placed on energy tariffs, energy trade, and water resources. This work has revealed the significant benefit of stakeholder engagement in the design of low-carbon pathways, and the importance of including stakeholder views in scenario development to allow for the creation of context-specific mitigation and implementation measures for decarbonisation. Similar insights are gained from an EU-focused analysis of the project (Nikas et al., 2021c). These factors will be further explored in ongoing PARIS REINFORCE research, and the stakeholder views (with resulting low-carbon pathways) will feed into a second round of global mitigation modelling to ensure the representation of global low-carbon pathways in IAMs are more realistic, and reflective of stakeholder views.

Nikas et al. (2020) has also proposed a holistic perspective of human behaviour in influencing the climate transition, analysing how these may interact with the economic and energy landscape whilst identifying opportunities for a transdisciplinary approach to tackling climate change. From this research, six key suggestions to engage citizens and incentivise change and mitigation acceptance at the household level were identified:

- Transitions research agenda should recognise the requirement to explore game-changing business models and novel regulatory frameworks that act to both monetise and maximise the value of technological capacity (see, for example, Koasidis et al., 2022c).
- Socioeconomic models should be grounded with diverse local communities as this is where the majority of unexpected transformations occur.
- Development and implementation of micro-scale projects to gain insights into (and duplicate or upscale)

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local success stories.

- Deliberative democracy can be utilised highlight relevant or accepted policies (Karin, 2010)
- Lessons from participatory settings/knowledge co-production can assist in understanding how societal aspirations can be mapped onto requirements and opportunities for a transition fuelled by lifestyle changes (Glück, 2018).
- Gamification can encourage action (Wemyss et al., 2019), reveal stakeholder induced effects or enhance the robustness of sustainable transition pathway analyses (Celio et al., 2019).

Assessing the feasibility and desirability of climate action allows for a better understanding of a sustainable transition, encouraging policymakers and businesses to make investments, and should the policy perspective embark on a political ecology agenda it will provide an opportunity to fuel new forms of governance.

Koasidis et al. (2022c) examined behavioural change monetisation as a policy to support energy management. Utilising a case study in the Greek residential sector, the authors find that implementing an energy management action that is associated with the manual adjustment of a thermostat can achieve nation-wide and household-level energy reductions of 5.3% and 10%, respectively, with monetisation proving an additional EUR €200 (median) to each participating household.

Koasidis et al. (2022c)'s work indicates that monetisation can, and should, be considered a policy tool as it acts as an incentive for end-users to actively reduce their energy consumption, whilst allowing for the quantification of important social aspects in monetary units. These can then be fed into modelling exercises in support of energy policymaking, directly representing behavioural change in the residential sector. The results also highlight that a targeted behaviour-orientated action can significantly and cost-effectively contribute towards green recovery goals, requiring less initial capital investments, and such reward schemes could create new opportunities for actors in the energy system to enhance the services they provide to end-users and whilst simultaneously achieving their EU energy efficiency obligations.

Similarly, Edelenbosch et al. (2022) used a European cross-country survey to identify patterns and drivers of energy-saving investments and develop a novel method to translate survey questions into model parameters to create a more empirically grounded model (MUSE RBSM). Edelenbosch et al.'s (2022) analysis highlights the potential to capture heterogeneity in long-term models, demonstrating a methodological approach to link empirical data to an ABM within an IAM framework. The results show that including this heterogeneity in long-term projections can affect transition dynamics, particularly in terms of timing, which is surrounded by large uncertainties and can be impacted by policy.

Giarola et al. (2021) present a framework for a harmonisation methodology and a powerful diagnostic tool to feedback on the quality of the harmonisation. This harmonisation process is performed in the PR project and reduces the variance of outcomes that depend on controllable modelling assumptions.

Nikas et al. (2020b) has also introduced AUGMECON-R, a robust variant of the augmented ε-constraint algorithm, for solving multi-objective linear programming problems. The method proposed by Nikas et al. (2022) outperforms its predecessor as it allows for the easy and timely solution of hard problems of numerous objective functions, and solves the limitation of unknown nadir points

Neofytou et al. (2020) present a sustainable energy transition readiness index based on a multiple-criteria evaluation system (orientated on the AHP and PROMETHEE II methods). Neofytou et al.'s (2020) framework draws from four pillars (social, political/regulatory, economic and technological) to provide a ranking of countries' indicators that are perceived to be drivers of energy transitions. This framework aims to support policymakers in

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designing appropriate pathways towards more sustainable, greener economies.

There is also an opportunity to create a transdisciplinary scientific agenda to cocreate the aims and scientific processes underlying a transition to a circular, net zero economy with representatives from policy, industry, and civil society. Nikas et al. (2022) proposes a three-dimensional outlook to couple circularity performance and climate action, involving:

- The exchange of concepts utilised by different scientific communities to obtain a mutual understanding of circulatory principles, identify key sectors, and thus create the interdisciplinary foundation required to develop the capacity needed to represent circular economy in mitigation modelling.
- Co-defining the goals and processes to establishing links between climate action and circularity performance by synthesising the narratives, knowledge, concerns and motives of multiple actors into quantitative inputs.
- Translating and integrating these insights into new and/or structurally enhanced climate-energy-economy modelling capacity that is better able to represent critical industry supply chains, mitigation technologies, and consumption patterns.

This integration will be a vital step towards assessing the material implications of PA-compatible mitigation pathways and the contribution of enhanced circulatory performance. By exploiting such good practices, it would allow for the co-development of PA-compliant scenarios, increase their scientific credibility, and enable both policymakers and scientists to explore alternative mitigation pathways that contain improved industrial value chains, physical flows, sectoral reconfiguration, and behavioural factors.

Sognnaes et al. (2020) reviewed the needs of stakeholders and policymakers in terms of modelling scenario design. Workshops revealed that stakeholders favoured policy questions and topics that regarded potential failures of key technologies, lifestyle and behavioural changes, and just transitions. The most highly rated topics included carbon border adjustments and alternatives, capacity and flexibility of electrification in Europe in light of NECP submissions, and EU-internal taxation policies. Stakeholders also favoured questions surrounding employment and other socioeconomic dimensions, sectoral redeployment and skill requirements, and increasing NDC ambition in the context of SDGs.

Carbon border adjustments (CBA) in particular would increase environmental effectiveness at a relatively low cost, reduce carbon leakage, assist in the transition to a clean economy, force investments in clean technologies, and reduce CO_2 emissions.

Not only would the implementation of a carbon taxation policy contribute towards the PA targets, but it can have wide-ranging effects throughout other socioeconomic dimensions and sectors. Of the literature assessed, 1 out of 3 was in some way related to the European Green Deal, highlighting the importance of carbon taxation on policymaking in the transition towards a more sustainable energy system.

Koasidis et al. (2022a) reaffirm the importance of incorporating stakeholder views into modelling exercises, attempting to prioritise the SDGs based on stakeholder perspectives. The authors found that stakeholders thought it critical for climate change and SDGs to be tackled in tandem, and indicated that modelling studies have thus far overlooked the aspects that are important to stakeholders. Interestingly, Koasidis et al. also discovered that national government representatives typically considered integrating SDGs in climate model policy analysis significantly less important than other stakeholder groups.

Vielle (2020) has evaluated the European Commissions' (EC) Effort Sharing Regulation (ESR), proposal which aims to reflect the economic capacity of each Member State (MS) on the basis of its relative wealth in respect to fairness

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and cost-effectiveness, analysing the economic impacts of each flexibility option proposed by the EC.

Vielle's analysis revealed that flexibility mechanisms that allow "inter-Member state flexibility" are the most efficient option, tending to equalize CO_2 taxes, reduce compliance costs for MSs, whilst simultaneously increasing fairness between low-income MSs and high-income MSs. Simulations showed that a 10% limit can significantly reduce EU mitigation costs, whilst capturing most of the gain from allowance trading. As decision-makers are more likely to agree to mitigation solutions when they deem it fair (Winkler et al., 2018), capitalising on seemingly smaller opportunities to increase cost-effectiveness and fairness can both boost support and cooperation, whilst reducing the burden of abatement on developing countries.

Stoddard et al. (2021) have reviewed the vast literature detailing the historic lack of progress towards the PA and country's climate goals, formulating nine thematic lenses within which barriers to mitigation exist. These lenses were further grouped into three clusters: the Davos cluster; the Enabler cluster; and the Ostrich and Phoenix cluster. These barriers represent potential opportunities for achieving the deep-seated societal transformation required to limit climate disruption and ensure emissions are consistent with PA temperature goals, including significant yet underutilised opportunities for effective climate mitigation within current governance systems.

The Davos cluster encompasses international climate governance, the vested interests of the fossil fuel industry, and geopolitics and militarism. Examples of barriers within this cluster include multilateral development banks being slow to transition from funding high- to low-carbon development projects, direct lobbying by fossil fuel industries, geopolitical competition, carbon leakage, or a lack of international leadership. These represent fundamental barriers to mitigation and will require radical shifts in current political ideology and affiliations, as well as challenging the mindsets and practices currently embedded within global military institutions. Further opportunities can be found in the stringent regulation of corporations, the phaseout of heavily emitting industries and establishing comprehensive and diplomatic leadership that recognises the scale and urgency of the climate crisis.

The Enabler cluster consists of orthodox schools of economics and financialization, dominant forms of mitigation modelling, and energy supply systems. Barriers within this cluster include the reinforcement of a perpetual growth economy, grounding of neoclassical economic theory in IAMs, and the lack of commercialisation of low-carbon energy sources. Orthodox schools of thought and research traditions need to be challenged and replaced with (or complemented by) more heterodox approaches, and the direct regulation of economic production and consumption behaviour could act as an effective means of controlling pollution. Growing financialization of the environment, such as through carbon markets, can reduce policy choices to abstract monetary values and thus delay climate mitigation until the "price is right". An effective strategy for delivering the PA will involve challenging the dominance and ideology of economic growth, price-making markets, and the financialization of the environment (Spash, 2020) as well as seizing opportunities that the ingrained philosophy of current market forces. Here, another critical opportunity is to ensure the use of IAMs is accompanied by a diverse array of approaches and perspectives to promote pluralistic, realistic, and more informed decisions regarding the realities of the future climate.

The Ostrich and Phoenix cluster encompasses the underlying dynamics of inequity, the psychology and social practices of high-carbon lifestyles, and social imaginaries for post-carbon futures. This cluster in particular poses potential openings for achieving deep-seated transformation. Some historic barriers relating to this cluster include the decoupling of the vulnerable from the powerful, a social tolerance for unequal harms, the erosion of social trust, reinforcement of elite preferences hostile to mitigation, routinisation of high-carbon lifestyles and activities in industrial nations and wealthy communities, and a failure to imagine desirable lifestyles that are not associated with a carbon economy or are not dependent on continued growth. Transformations require a quintessential

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reconfiguration of long-run sociocultural and political-economic norms and institutions that are currently producing the problems stimulating climate change. Key opportunities lie in dismantling the socio-political mindset and the associated knowledge infrastructures that support it (Haarstad and Wanvik, 2017), participatory democracy and citizens assemblies, aligning indigenous and decolonial traditions of thought, critical future studies, anticipation studies, and empathetic aspects of education around fossil-free imaginaries. Altering the social infrastructure that support high-carbon routines and normalising low-carbon alternatives or low-carbon practices, whilst diminishing high-carbon practices (e.g., practices associated with fast fashion; changing the 'norm' mode of transport from private cars to public transport) can provide a prime opportunity for decarbonisation (Hoolohan and Browne, 2020). By drawing attention to equity, high-carbon lifestyles, the conditions that enable new social imaginaries, and identifying new targets for intervention that expand and sustain high-carbon lifestyles, there is great potential to disrupt the dominant and high-carbon development pathways.

Achieving the PA temperature target will also require the large-scale deployment of CDR technologies. However, large knowledge gaps remain that we must urgently close to move on to CDR implementation and enhance our mitigation and adaptation opportunities (see Grant et al., 2021). Fuss et al. (2021) have identified a number of barriers, opportunities, research avenues and partnerships to achieving the 1.5°C target with CDR technologies:

Key innovation gaps and barriers currently include:

- Maturity of CDR
- Socio-economic attractiveness
- Potential unintended consequences

Recent developments that may close these gaps include:

- Demand-side reductions in emissions, which may reduce the need for CDR technologies
- Natural climate solutions and their associated co-benefits
- BECCS
- Engineering options for GHG removal, such as cost reductions in DAC and the potential capture of other GHGs.

Further solutions, which can reduce the dependence on a single CDR option and complement low-cost and ready-to-be-deployed practices, such as CCS at industrial facilities, include:

- Commercialisation and large-scale deployment: the majority of research into CDR has focused on R&D, however, exploring new pathways – such as exploiting new opportunities and transitioning towards a more circular economy – needs to be a focus of future research, as well as experimental and demonstration projects.
- More integrated R&D approaches: increased cooperation and coordination across different disciplines and modelling is required to account for uncertainty and advances in our knowledge base, and to understand the full climate consequences and collateral effects of CDR.
- Building a social licence to operate: for example, improved health through less carbon-intensive diets in industrialised countries can motivate society whilst freeing up land for CDR. Building a social licence to operate CDR itself will require closing the knowledge gaps that remain, and addressing the subsequent challenges in consultation with society.
- Exploring new contexts of governance: addressing governance challenges, such as the monitoring and

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comprehensive verification of a diverse range of decarbonisation concepts (e.g., climate neutrality, net zero, GHG neutrality), are critical for policy success.

- Net zero framework for policy: in the long-term, net zero could provide a framework for policy, as every tonne emitted would require to be offset by a tonne sequestered. Thus, creating a case for pricing emissions and financing carbon removals, turning each unit price charged for emissions into financial support for CDR.

Combining these factors to create a broader alliance towards net-zero targets – bringing together research, policy, industry, and the broader public – will reduce many of the major challenges to early climate action.

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