

Submission to the First Technical Dialogue of the Global Stocktake

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About the Stockholm Environment Institute

The Stockholm Environment Institute (SEI) is an independent research institute with a reputation for rigorous and objective scientific analysis. SEI has over 30 years of experience engaging in environment and development issues at local, national, regional and global policy levels. SEI's goal is to bring about change for sustainable development by bridging science, policy, and practice. SEI is regularly ranked among the top influential environmental think tanks in the world in the Global Go To Think Tank Index compiled by the University of Pennsylvania.

SEI is grateful to the chairs of the Subsidiary Bodies of the United Nations Framework Convention on Climate Change (UNFCCC) and the co-facilitators of the Technical Dialogue of the Global Stocktake for the opportunity to submit its views and contributions.

Executive Summary

Governments are not aligning their fossil fuel production plans with Paris Agreement goals and are instead planning on producing more than twice the amount of oil, gas, and coal than would be compatible with limiting warming to 1.5°C, and 45% more than would be compatible with limiting warming to 2°C. Changing this trajectory, minimizing risks, and ensuring equitable low-carbon transitions requires governments to move quickly in mitigation, adaptation, and means of implementation.

Mitigation

- The continued support for, and expansion of, fossil fuel production is a key barrier to achieving the long-term goals of the Paris Agreement. Countries can align their production with Paris temperature targets by: placing restrictions on fossil fuel exploration and extracting; phasing out government support for fossil fuel production; addressing fossil fuel production in their nationally determined contributions (NDCs) and long-term, low greenhouse gas emission development strategies (LT-LEDS); and providing financing to countries highly dependent on production that have limited financial and institutional capacity to transition.
- A total of 136 countries, covering 90% of global GDP and 88% of greenhouse gas emissions, have adopted net zero emissions targets. However, many net zero targets lack important details around scope, policy planning, and requirements for near-term action. Achieving global net zero will require more deliberate coordination based on equity, with particular attention paid to avoiding both the climate and equity risks that could come with an over-reliance on land-based removals and negative emission technologies.
- Several countries have taken actions to maximise climate, health, and air quality benefits, such as setting black carbon reduction targets, quantifying the health benefits of hitting NDC targets, and specifying target reductions for short-lived climate pollutants. These actions – identified by the Climate and Clean Air Coalition – link sustainable development to climate change mitigation, which can increase climate ambition under the Paris Agreement.

Adaptation

- All countries are exposed to transboundary climate risks, regardless of development, power or wealth. Research shows that when it comes to agricultural trade, for example, the US, China and Brazil are significant sources of risks that affect dependent importing countries, including in Central and Latin America, the Caribbean, Asia, and Africa. Countries need to work together via multilateral institutions and processes to achieve the mutually beneficial goal of systemic resilience in global agricultural markets, thus strengthening global food security.
- Much of the discussion around the links between adaptation and disaster risk reduction (DRR) remains hazard-focused; progress requires more attention on risk in the holistic/systemic sense of the word, as well as on exposure, and vulnerability. This

includes more radical, transformative approaches centered on social equity and justice.

- To date, only 34 countries have submitted national adaptation plans (NAPs) to the NAP registry, and [126 out of 154 developing countries](#) are in various stages of formulating their NAPs. The focus of most NAPS is limited to climate risks within a country's borders, brought about by a local hazard and affecting a domestic sector. There is a need for supplementary NAP guidance that supports countries in assessing such transboundary climate risks and in considering options to manage these risks. Another overlooked issue in current NAPs is the incorporation of human rights principles.
- Web-based platforms that focus on climate change adaptation knowledge play a key role in supporting sectors, national governments, local governments, practitioners, businesses, and the public understand, plan for and act on adaptation. These platforms could be leveraged to help monitor progress, increase equity in knowledge sharing, scale up climate action, and share learning from the implementation of adaptation interventions.

Means of implementation, including finance flows

- Though green investments have increased since 2015, investments to “brown” sectors, such as oil and gas, have also increased. Some Multilateral Development Banks and G20 development finance institutions are changing their policies, however, with more than US\$2 trillion in finance held by institutions that prohibit future finance to go to fossil fuel production activities.
- Developing countries face the lack of an “enabling environment” for private finance. Improving those conditions can help better mobilize such funding, as can increasing awareness of climate impacts among private sector actors.
- While progress is being made on technology development and transfer, significant challenges remain. In order to increase the uptake of gridless technologies, for example, more attention to the needs and preferences of potential users is needed, as well as to the technological appropriateness of certain options in specific contexts, and to issues of social equity and distributional justice.

Response measures and loss and damage

- On just transitions, public commitments have been increasing but do not always translate into action and collective progress is uneven in practice. Countries with less dependence on fossil fuels and greater capacities need to take the lead in moving away from fossil fuel production and provide support to those with high dependence and low capacity to make the shift. Also, the concept of a just transition has to extend beyond the energy sector and encompass other GHG-intensive sectors to accomplish the radical transformations needed to limit global warming below 1.5°C or 2°C.

- Progress on addressing loss and damage (L&D) has been limited, despite the fact that L&D is already a lived reality for the poorest countries and communities around the world. To avert, minimise and address L&D, countries with historically high emissions could start bilaterally pledging L&D financial support, the Warsaw International Mechanism for Loss and Damage and the modalities of the Santiago Network could support thorough needs assessments in individual countries and countries could aim to establish a new financial facility for L&D under the UNFCCC in the longer term.

Cross-cutting

- The equity of our global society's response to the climate crisis is linked to its effectiveness. Those most responsible for GHG emissions are not those most vulnerable to their consequences; in other words, those most highly motivated to reduce the pressures we place on our environment and those exerting these pressures are two different groups. Inequality reinforces socio-political lock-in and political economic barriers to change. It also undermines social trust, which is essential to ambitious and cooperative climate mobilization. The nature of a low-carbon and resilient transformation that is equitable – and the lessons learned on how to implement it – are highly context- and society-specific. But beyond solutions, an equitable transition requires a change in existing processes, including how climate research is conducted and who is involved in shaping the research agenda and proposed solutions.
- It takes time for both mitigation and adaptation actions to result in measurable changes, and that makes it necessary to develop proxy indicators that are regularly tracked at the national level. The UNFCCC secretariat could draw out a set of core indicators and present them to multiple stakeholder groups to engage with. Multilateral funds, bilateral donors and/or philanthropic sources should support developing countries in accessing data and building capacity to analyse and monitor it.
- To ensure that market-based approaches are used to accelerate mitigation, generate funding for adaptation, and avoid a “race to the bottom”, extensive work is required for countries to incorporate cooperative approaches into their near-term climate policies and long-term development strategies. This requires careful planning, coordination, and capacity building among “buyer” and “seller” countries. Related to this, countries looking to acquire mitigation outcomes (the “buyers”) should avoid doing so at the expense of domestic climate action. In getting to “net zero” emissions, the focus has to be on “zero” first – both to ensure global equity and to reduce systemic climate risks.
- Balancing the need for urban environmental sustainability with the need for resilience remains an ongoing challenge: the former often leads to densification, while the latter entails diversity. At the city scale, three governance challenges are key: (i) cultivating creative action by creating inclusive decision-making spaces; (ii) making trade-offs to achieve equity; and (iii) accountability of decision-makers in relation to outcomes.

Section I: Mitigation

Collective action to achieve the temperature targets of the Paris Agreement remains inadequate, as covered extensively in the most recent Intergovernmental Panel on Climate Change Working Group I report, and the UN Environment Programme's (UNEP) Emissions Gap Report series. Here, we highlight some key insights from SEI's work on mitigation.

1. What is the collective progress made towards achieving the long-term temperature goal in Article 2.1(a) of the Paris Agreement, in the light of equity and the best available science?

The Production Gap

As outlined in the 2021 Production Gap Report, governments are not aligning their fossil fuel production plans with Paris temperature targets.¹ The report's analysis – conducted by SEI, UNEP and several research organizations – finds that by 2030, fossil-fuel-producing countries collectively plan to produce over twice the fossil fuels compatible with limiting warming to 1.5°C, and 45% more than would be consistent with limiting warming to 2°C. Most major oil and gas producers are planning on increasing production out to 2030 or beyond.² Since the adoption of the Paris Agreement, public finance institutions have spent at least US\$294 billion supporting fossil fuels overseas.³ In 2020 and 2021, governments committed over US\$366 billion to fossil fuels through their COVID-19 recovery plans, more than they committed to clean energy.⁴

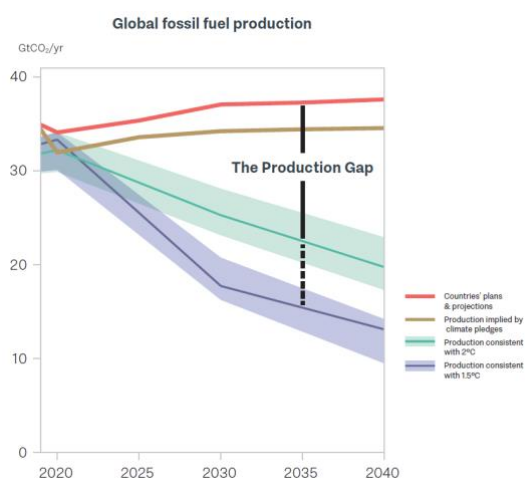


Figure 1⁵

¹ SEI, IISD, ODI, E3G, UNEP, & UNEP. (2021). The Production Gap: Special Report 2021. Stockholm Environment Institute, International Institute for Sustainable Development, Overseas Development Institute, E3G, and United Nations Environment Programme. https://productiongap.org/wp-content/uploads/2021/10/PGR2021_web_rev.pdf

² Ibid.

³ Ibid.

⁴ Energy Policy Tracker. <https://www.energypolicytracker.org>

⁵ SEI, IISD, ODI, E3G, UNEP, & UNEP. (2021). The Production Gap: Special Report 2021. Stockholm Environment Institute, International Institute for Sustainable Development, Overseas Development Institute, E3G, and United Nations Environment Programme. https://productiongap.org/wp-content/uploads/2021/10/PGR2021_web_rev.pdf

The continued support for, and expansion of, fossil fuel production is a key barrier to achieving the long-term goals of the Paris Agreement. Addressing this barrier is a challenge: many countries lack coherence between their climate and energy planning, and the Paris Agreement itself does not mention fossil fuel production. The UNFCCC thus lacks guidance and mechanisms to quantify and nationally allocate the reductions in fossil fuel production that are needed to reach production levels consistent with Article 2(a).

Some countries are implementing good practices, such as placing restrictions on fossil fuel exploration and extraction and phasing out government support for fossil fuel production. Examples of such good practices can be found in Appendix A of the Production Gap Report⁶. A small but growing number of countries are also addressing fossil fuel production in their nationally determined contributions (NDCs) and long-term low greenhouse gas emission development strategies (LT-LEDS) (Figure 2). Governments have the opportunity to take additional steps, including acknowledging in their energy and climate plans that there is a need to wind down global fossil fuel production in line with the Paris Agreement’s temperature limits. International financing is also crucial to ensuring a just, equitable, and effective transition; to this end, developed countries can provide support to countries highly dependent on fossil fuel production and with limited financial and institutional capacity. The Declaration on the Just Energy Transition in South Africa⁷ is an example of a good step in that direction.

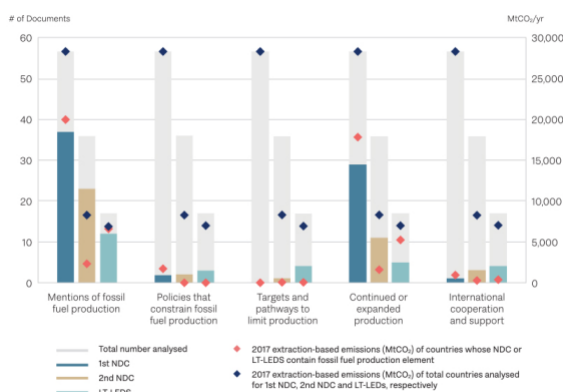


Figure 2. Inclusion of supply-side elements in relevant UNFCCC documents.⁸ Each set of three bars indicates the total number of 1st NDCs, 2nd NDCs, and LT-LEDS that includes the respective element shown on the x-axis (e.g. mentions of fossil fuel production), relative to the total number of documents analysed, as measured on the left y-axis. The diamonds show the total extraction-based emissions, as

⁶ SEI, IISD, ODI, E3G, UNEP, & UNEP. (2021). The Production Gap: Special Report 2021. Stockholm Environment Institute, International Institute for Sustainable Development, Overseas Development Institute, E3G, and United Nations Environment Programme. https://productiongap.org/wp-content/uploads/2021/10/PGR2021_web_rev.pdf

⁷ Declaration on the Just Energy Transition in South Africa. (2021, November 2). UN Climate Change Conference (COP26) at the SEC – Glasgow 2021. <https://ukcop26.org/political-declaration-on-the-just-energy-transition-in-south-africa/>

⁸ SEI, IISD, ODI, E3G, UNEP, & UNEP. (2021). The Production Gap: Special Report 2021. Stockholm Environment Institute, International Institute for Sustainable Development, Overseas Development Institute, E3G, and United Nations Environment Programme. https://productiongap.org/wp-content/uploads/2021/10/PGR2021_web_rev.pdf

measured in million tonnes of carbon dioxide per year (MtCO₂/yr) on the right y-axis. Figure and data are updated from Jones et al.⁹ and include all NDCs and LT-LEDS published as of 31 July 2021.

2. What is the collective progress made towards achieving the long-term mitigation goal in Article 4.1 of the Paris Agreement, in the light of equity and the best available science?

Net zero and equity

A total of 136 countries, covering 90% of global GDP and 88% of greenhouse gas emissions, have adopted net zero emissions targets.¹⁰ This is a welcome sign of ambition, and yet much more progress is needed to turn these pledges into meaningful action towards a global balancing of emissions and removals by midcentury. Many net zero targets lack important details around scope, policy planning, and requirements for near-term action.¹¹ Collectively, current net zero pledges still fall short of the Paris Agreement's long-term mitigation goals. Achieving global net zero will require more deliberate coordination based on equity,¹² with particular attention paid to avoiding both the climate and equity risks that could come with an over-reliance on land-based removals and negative emission technologies.¹³

3. What are the projected global GHG emissions and what actions are Parties undertaking to achieve a balance between anthropogenic emissions by sources and removals by sinks of GHGs, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty (Article 4.1 Paris Agreement, Decision 19/CMA.1, paragraph 36(b))?

Climate, health, and clean air

The Paris Agreement states that its long-term global temperature limits should be achieved “in the context of sustainable development”. Relatedly, the Glasgow Climate Pact affirms that Parties should respect people’s “right to health” when taking climate action.

Linking these goals to climate change mitigation can increase countries’ climate ambitions under the Paris Agreement. For example, Malley et al.¹⁴ outline how actions to mitigate climate change in Nigeria would directly contribute to achieving the country’s development priorities, which are in turn used to apportion national budget. By linking specific climate

⁹ Jones, N., Muñoz Cabré, M, Piggot, G. and Lazarus M. (2021). Tapping the potential of NDCs and LT-LEDS to address fossil fuel production. SEI working paper. <http://doi.org/10.51414/sei2021.010>

¹⁰ <https://zerotracker.net/>

¹¹ Rogelj, J., Geden, O., Cowie, A. and Reisinger, A. (2021). Net-zero emissions targets are vague: three ways to fix. *Nature*, 591(7850). 365–68. DOI: 10.1038/d41586-021-00662-3

¹² Dubash, N. K., Winkler, H. and Rajamani, L. (2021). Developing countries need to chart their own course to net zero emissions. *Net Zero Climate*, 5 May 2021. <https://netzeroclimate.org/a-credible-just-transition-to-net-zero-emissions/>

¹³ Lenzi, D., Jakob, M., Honegger, M., Droege, S., Heyward, J. C. and Kruger, T. (2021). Equity implications of net zero visions. *Climatic Change*, 169(3). 20. DOI: [10.1007/s10584-021-03270-2](https://doi.org/10.1007/s10584-021-03270-2); Dooley, K. and Kartha, S. (2018). Land-based negative emissions: risks for climate mitigation and impacts on sustainable development. *International Environmental Agreements: Politics, Law and Economics*, 18(1). 79–98. DOI: [10.1007/s10784-017-9382-9](https://doi.org/10.1007/s10784-017-9382-9)

¹⁴ Malley, C., Omotosho, D., Bappa, B., Jibril, A., Tarfa, P., Roman, M., Hicks, K., Kuylenstierna, J., Sandez, C. and Lefevre, E. (2021). Integration of climate change mitigation and sustainable development planning: Lessons from a national planning process in Nigeria. *Environmental Science and Policy*, 125. 66-75. DOI: <https://doi.org/10.1016/j.envsci.2021.08.022>.

change actions to multiple development priorities (including economic, health, and sustainability goals), governments can build a broader coalition of support for funding and implementation.

Moreover, there is substantial evidence that taking action on climate change can improve sustainable development and health. Particularly well studied is the link between climate change and air pollution, and its associated impacts on human health. Vandyck et al.¹⁵ found that if countries implemented the nationally determined contributions (NDCs) they submitted after ratifying the Paris Agreement, the associated reduction in air pollutants would prevent 400,000 premature deaths per year by 2050. The avoided deaths would jump to 1 million per year if countries enhanced their climate change mitigation ambitions to be consistent with limiting global temperature increases to 2°C.

The Climate and Clean Air Coalition (CCAC) has also identified specific actions that can maximise climate, health and air quality benefits^{16, 17, 18, 19}. Several CCAC Country Partners have integrated some of these actions in their NDCs. For example:

- Rwanda listed air pollution benefits as a criterion for deciding which mitigation measures would underpin its greenhouse gas (GHG) reduction target.
- Mexico, Chile and Colombia all set black carbon reduction targets, on top of their GHG reduction targets. These targets encourage additional mitigation actions, over and above those that would have been taken to achieve the GHG reduction target.
- Nigeria and Ghana became the first countries in the world to quantify the health benefits that could be achieved from implementing their NDCs. They estimated that, by 2030, 30,000 and 2,900 premature deaths, respectively, could be avoided per year from implementing their NDCs, due to the improvements in air quality.
- Several countries, including Nigeria, Ghana, Zimbabwe, Costa Rica, Colombia, Togo and Mali, included the specific mitigation measures that they will implement to achieve their climate change mitigation targets in NDC or referenced documents. This enables them to determine whether, and to what extent, an NDC can achieve (or not) other benefits to air quality, health, and sustainable development.
- Japan, Benin, Zimbabwe, Nigeria, and Togo, among others, specify reductions separately for GHGs, short-lived climate pollutants (SLCPs), and air pollutants. The majority of NDCs report an overall GHG reduction target that integrates long-lived

¹⁵ Vandyck, T., Keramidis, K., Kitous, A., Spadaro, J. V., Dingenen, R. Van, Holland, M., & Saveyn, B. (2018). Air quality co-benefits for human health and agriculture counterbalance costs to meet Paris Agreement pledges. *Nature Communications*, 9(4939).

¹⁶ CCAC SNAP. (2019). Opportunities for Increasing Ambition of Nationally Determined Contributions through Integrated Air Pollution and Climate Change Planning: A Practical Guidance document. Climate and Clean Air Coalition Supporting National Action & Planning Initiative Repo.

¹⁷ UNEP. (2018). Integrated Assessment of Short-lived Climate Pollutants in Latin America and the Caribbean. United Nations Environment Programme/Climate and Clean Air Coalition report. Available at: <http://ccacoalition.org/en/resources/integrated-assessment-short-lived-c>.

¹⁸ UNEP. (2019). Air Pollution in Asia and the Pacific: Science-based solutions. Climate and Clean Air Coalition/United Nations Environment Programme report. Available at: <http://www.ccacoalition.org/en/resources/air-pollution-asia-and-pacific-science-based-solutions>.

¹⁹ UNEP CCAC. (2021). United Nations Environment Programme and Climate and Clean Air Coalition. Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions. Nairobi: United Nations Environment Programme. ISBN: 978-92-807-3854-4. Available at: <https://www.ccac>.

GHGs, like CO₂, with short-lived climate pollutants like methane and hydrofluorocarbons (HFCs). By reporting emission reductions of each gas or pollutant separately, these countries clearly communicate how mitigation actions affect each type of GHG.

Section II: Adaptation

Paris Agreement Article 7.2 recognises that adaptation is a global challenge with local, subnational, national, regional and international dimensions, and that it is a key component of the long-term global response to climate change to protect people, livelihoods and ecosystems. Here, we share insights from our work across several of these dimensions.

4. What is the collective progress made towards achieving Article 2.1(b) of the Paris Agreement, in the light of equity and the best available science?

Adaptation, livelihoods, and Ecosystem-based Adaptation

Many of those who are vulnerable to climate risks are also vulnerable to other risks, including risks to their livelihoods. In fact, these other risks are often exacerbated by both climate change and actions to address climate change, with marginalized groups feeling the most negative impacts^{20, 21}.

Ecosystem-based Adaptation (EbA) approaches can improve livelihoods, if intentionally considered in the design, planning and evaluation of projects. A recent global survey of urban EbA projects found that steps need to be taken to ensure that projects generate income in an equitable way²², while an IISD report found that EbA can result in trade-offs that negatively affect livelihoods²³. SEI has identified the potential negative implications of EbA for social equity as a knowledge gap²⁴. SEI's recent work with residents in a semi-formal settlement in Nakuru, Kenya, clearly demonstrates the need for green-infrastructure-related adaptation planning to account for the economic realities and needs of neighbourhoods, which are at the heart of development and well-being.²⁵

Transboundary climate risks

Recent research has identified the need to prepare for "imported" climate risk, which originates elsewhere but cascades across borders. Trade is one transboundary pathway through which climate risk can spread. The trade of agricultural commodities is especially relevant in light of Paris Agreement Article 2.1(b)'s reference to food security. A recent SEI

²⁰ Olsson, L., M. Opondo, P. Tschakert, A. Agrawal, S.H. Eriksen, S. Ma, L.N. Perch, & S.A. Zakieldeen, (2014). Livelihoods and poverty. In: *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, & L.L.White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 793-832.

²¹ Ensor, J., Tuhkanen, H., Boyland, M., Salamanca, A., Johnson, K., Thomalla, F. & Mangada, L.L. (2021). Redistributing resilience? Deliberate transformation and political capabilities in post-Haiyan Tacloban. *World Development*, 140, p.105360.

²² Vidal Merino, M., Kang, Y., Arce Romero, A., Pahwa Gajjar, S., Tuhkanen, H., Nisbet, R., DeMaria-Kinney, J., Min, A.K., Atieno, W.C. and Bray, B. (2021). Climate justice for people and nature through urban Ecosystem-based Adaptation (EbA): A focus on the Global South. Zenodo. <http://www.doi.org/10.5281/zenodo.5187945>

²³ IISD (2021) Building Resilience With Nature Maximizing ecosystem-based adaptation through National Adaptation Plan processes Guidance Note.

²⁴ Barquet, K., Leander, E., Green, J., Tuhkanen, H., Omondi Odongo, V., Boyland, M., Fiertz, E.K., Escobar, M., Trujillo, M. and Osano, P. (2021). Spotlight on social equity, finance and scale: Promises and pitfalls of nature-based solutions. SEI brief. Stockholm Environment Institute. <http://doi.org/10.51414/sei2021.011>

²⁵ Cinderby, S., Archer, D., Mehta, V., Opiyo, R., Pateman, R., Muhozg, C., Tuhkanen, H., and Beale, V. (2021). A tale of two cities: inequalities in urban wellbeing in the Global South. Stockholm Environment Institute. <https://www.sei.org/featured/inequalities-in-urban-wellbeing/>

report²⁶ revealed in detail which countries are exposed to transboundary climate risks through agricultural trade and which countries are important sources of risk. The report assesses six key commodities: staple commodities (maize, rice and wheat), highly embedded commodities (soy and sugar cane), and luxury commodities (coffee).

The results suggest that all countries are exposed to transboundary climate risks, regardless of development, power or wealth. The US, China and Brazil are significant sources of climate risk for global commodity markets. This is particularly problematic for importers that depend on that trade for food security or other economic activity. Key examples include countries in Central and Latin America and the Caribbean that depend on US imports and countries in Asia and Africa who import food from China. Small Island Developing States and small globally integrated countries like Singapore and Sweden are also especially vulnerable.

Traditional approaches to managing risk in supply chains, such as substituting high-risk links with more resilient ones, or hedging risk across a diverse spread of suppliers, are unlikely to prove effective over the long term or in more extreme scenarios. Climate change drives systemic risk and will occur everywhere at once. Countries need to work together via multilateral institutions and processes to achieve the mutually beneficial goal of systemic resilience in global agricultural markets.

Disaster risk reduction and linkages with the Sendai Framework

Progress on Article 2.1(b) of the Paris Agreement cannot be achieved by the climate change community alone. It also depends on progress made in other policy domains and sectors, including disaster risk reduction (DRR). The DRR realm has its own global framework (Sendai Framework) with complementary, if not overlapping, goals and priorities. However, global policy links between the Paris Agreement and Sendai Framework remain tenuous because both are now “set in stone” and implementation mechanisms are not explicitly interdependent. This disconnect filters down through all governance levels.

Much of the discussion around the links between adaptation and DRR remains hazard-focused; progress requires more attention on risk (in the holistic/systemic sense), exposure, and vulnerability²⁷. An under-utilized cornerstone of the connection between adaptation and DRR in the Sendai Framework is the call for “more dedicated action on tackling underlying (disaster) risk drivers”, including both climate change and social inequity.

A recently published framework for global risk science²⁸ sets out priorities for communities of practice to link between adaptation and DRR. One such priority is the need to “support just

²⁶ Adams, K.M., Benzie, M., Croft, S. and Sadowski, S. (2021). Climate change, trade, and global food security: A global assessment of transboundary climate risks in agricultural commodity flows. SEI report. Stockholm Environment Institute, Stockholm. <http://doi.org/10.51414/sei2021.009>

²⁷ Schipper, E.L.F., Thomalla, F., Vulturius, G., Davis, M. and Johnson, K. (2016), "Linking disaster risk reduction, climate change and development", *International Journal of Disaster Resilience in the Built Environment*, Vol. 7 No. 2, pp. 216-228. <https://doi.org/10.1108/IJDRBE-03-2015-0014>

²⁸ ISC, UNDRR, IRDR. (2021). A framework for global science in support of risk informed sustainable development and planetary health [eds Handmer, John; Vogel, Coleen; Payne, Ben; Stevance, Anne-Sophie; Kirsch-Wood, Jenty; Boyland, Michael; Han, Qunli; Lian, Fang]; Paris, France, International Science Council; Geneva, Switzerland, United Nations Office for Disaster Risk Reduction; Beijing, China, Integrated Research on Disaster Risk. DOI: 10.24948/2021.07. <https://council.science/publications/risk-informed-sustainable-development-planetary-health/>

and equitable transitions in adaptation and risk reduction". The development of frameworks and priorities such as this in recent years suggests a general consensus that progress towards Paris Agreement (and Sendai Framework) goals is not accelerating at a sufficient pace to address the risks we face. More radical, transformative approaches centered on social equity and justice are increasingly required.

5. What is the overall progress in achieving the global goal on adaptation, in the context of climate impacts, risks and vulnerabilities (Article 7.14 (d) Paris Agreement)?

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6. What actions have been taken to increase the ability to adapt to the adverse impacts of climate change and foster the climate resilience of people, livelihoods, and ecosystem? To what extent have national adaptation plans and related efforts contributed to these actions (Decision 19/CMA.1, paragraph 36(c))?

NAPS

The national adaptation plan (NAP) process, which started in 2010, has been slow to demonstrate its utility. To date, only 34 countries have submitted NAPs to the NAP registry, and [126 out of 154 developing countries](#) are in various stages of formulating their NAPs. Below, we highlight some key elements that governments could consider emphasising in their NAPs.

NAPs and transboundary climate risk

NAPs usually focus on climate risks within a country's borders, brought about by a local hazard and affecting a domestic sector. Planners often lack the tools or capacity to consider risks from climate change impacts that originate in other countries, or that result from the systemic connections and interdependencies of our economies, societies and ecosystems. There is a need for supplementary NAP guidance that supports countries in assessing such transboundary climate risks and in considering options to manage these risks.

NAPs and human rights

Another overlooked issue in current NAPs is the incorporation of human rights principles. The Paris Agreement preamble calls on States, when taking action to address climate change, to "respect, promote and consider their respective obligations on human rights." However, in our 2022 report²⁹, we found that out of 15 NAPs examined, only two – Brazil's and Fiji's – paid extensive attention to these principles.

The role of knowledge platforms

Web-based platforms that focus on climate change adaptation knowledge play a key role in supporting a range of actors – including sectors, national governments, local governments,

²⁹ Anschell, N., Salamanca, A., Bernard, V. & Aryani, S. (2022) Human Rights in the Process of National Adaptation Planning: Insights from a review of Submitted NAPs. Stockholm Environment Institute and Raoul Wallenberg Institute, In Press.

practitioners, businesses, and the public – to understand, plan for and act on adaptation. These platforms build capacities, enable knowledge and experience sharing, connect national-level policymaking with local realities, identify research and implementation gaps, and cross-fertilise adaptation knowledge across different regions responding to similar risks.

These platforms can be leveraged to provide evidence about what has worked in the past (e.g., the [Tandem guidance for co-producing climate services](#)³⁰), to support the monitoring of progress on adaptation (e.g., Climate-ADAPT's Adaptation Support Tool³¹), to increase equity in knowledge sharing (e.g., [weADAPT](#), co-developed with users and experts), to scale up and expedite climate action across levels of government and society, and to share learning from the implementation of adaptation interventions to inform future efforts. As demonstrated in the KE4CAP Synthesis Report³², there is ambition and commitment among national and regional climate adaptation platforms to work together to achieve this. This involves making content Findable, Accessible, Interoperable and Reusable (FAIR)³³, such as through standardized metadata and increased interoperability between platforms.

7. What adaptation efforts have developing countries undertaken to address their adaptation needs (Article 7.14 (a) Paris Agreement, Decision 11/CMA.1, paragraph 9)?

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8. How adequate and effective are current adaptation efforts and support provided for adaptation (Article 7.14 (c) Paris Agreement)?

The need for “just resilience”

There is increasing recognition that adaptation – like mitigation – can create winners and losers. This means that the adequacy of adaptation is defined not only by the extent to which it reduces climate risk, but also by its justice implications. The EU Adaptation Strategy, launched in 2021, introduced the notion of “just resilience”. It recognises that we should not just protect ourselves against the impact of heat waves, windstorms, floods or droughts, but that we should do so justly. For example, just resilience involves avoiding actions that simply shift risks to other actors or reinforce existing vulnerabilities.

Just resilience is crucial to ensuring both human well-being and countries’ security, as resource scarcity and other stresses caused by climate change or by maladaptation can exacerbate conflict and even indirectly fuel violence. The aspiration for just resilience extends

³⁰ Daniels, E., Bharwani, S., Gerger Swartling, Å., Vulturius, G. & Brandon, K. (2020). Refocusing the climate services lens: Introducing a framework for co-designing “transdisciplinary knowledge integration processes” to build climate resilience. *Climate Services*, 19. 100181. DOI: 10.1016/j.cliser.2020.100181.

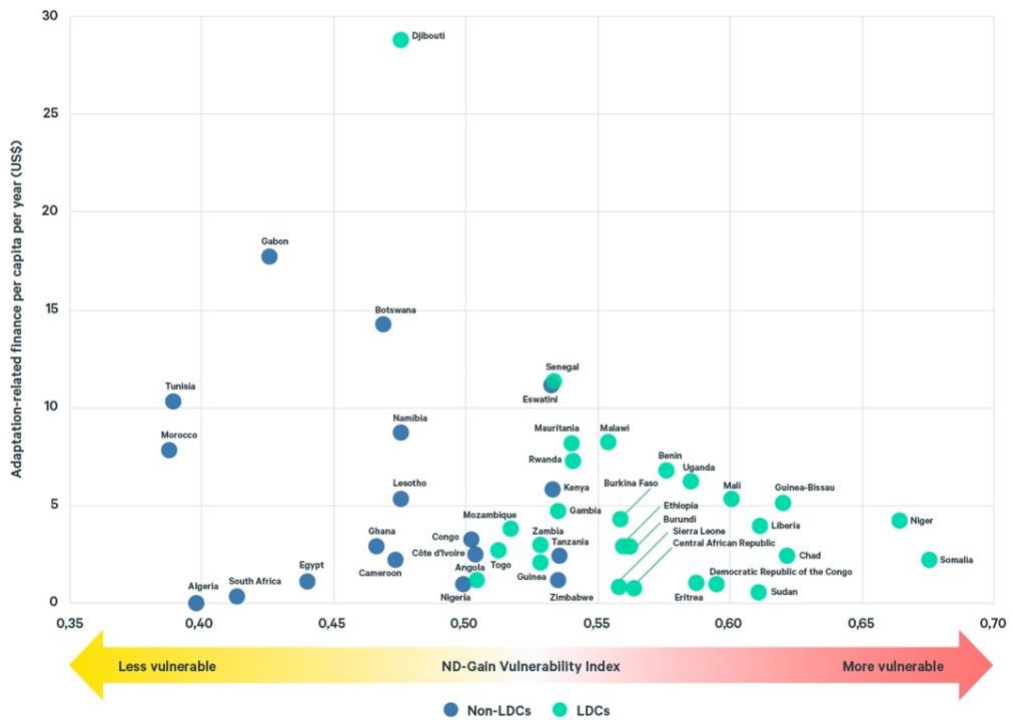
³¹ Adaptation Support tool. <https://climate-adapt.eea.europa.eu/knowledge/tools/adaptation-support-tool>

³² Chua, S.M. and Barrott, J. (2022). Stepping up knowledge exchange between Climate Adaptation Platforms: Impacts, learning and ways forward. Oxford: University of Oxford.

³³ Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data* 3, 160018 (2016). <https://doi.org/10.1038/sdata.2>

with higher vulnerability to climate changes, according to the University of Notre Dame’s Global Adaptation Initiative (ND-GAIN) Country Index – and those that are not.

Adaptation-related commitments for each African country, per capita per year, 2014–2018 (US\$/person, constant prices), ND-GAIN Vulnerability Index and LDC status (as of September 2020).



Source: OECD DAC 2020



The study further showed that half of all adaptation commitments for Africa were targeted at just two sectors: agriculture and water (supply and sanitation). Adaptation investments would however need to target a wide range of sectors to reduce direct and indirect climate risks and boost social and economic resilience.

A further finding of the study points to weaknesses in governance systems and challenges with regard to institutional capacity. These could explain why actual disbursements of adaptation-related finance for the period 2014–2018, excluding multilateral development banks for which data were not available, amounted to only 46% of the corresponding commitments over that period (US\$4.7 billion of US\$10.1 billion). Not only was this ratio lower than the one for funding targeting mitigation in Africa (56%), it was also much lower than the disbursement ratio for all development finance to Africa over the same period (96%).

Section III: Finance flows and means of implementation

It is well-established that global climate finance flows continue to fall short of commitments articulated in the Paris Agreement and even farther short of needs. Below we highlight some key findings from our work that clarify challenges and opportunities to enhance the provision of means of implementation.

9. What is the state of current global climate finance flow and the overall progress made towards making the financial flows consistent with the pathways towards low GHG emissions and climate-resilient development, in the light of equity and the best available science (Article 2.1(c) Paris Agreement)?

Alignment with low-GHG emissions pathways

The current level of investment in clean energy is only one-third of what is required to align with a GHG pathway that achieves the 1.5°C target, according to the IEA.³⁶

Recent SEI research provides further insights into the challenges of aligning finance with low-GHG pathways. An analysis of Green Climate Fund (GCF) proposals (2015-2018) found, for example, that the GCF largely neglected high-impact countries most in need of energy access support and that energy access interventions received significantly less funding than energy projects that do not support the energy poor.³⁷ Green bonds have the potential to help fill the financing gap for infrastructure projects, for instance in Africa,³⁸ but research finds that there is little pressure on green bond issuers to achieve ambitious science-based targets.³⁹

Overall, there is a lack of clarity around how financial flows are shifting to green investments, and the area requires more transparency and analysis. Though green investments have increased since 2015, investments to “brown” sectors, such as oil and gas, have also increased; ongoing SEI research suggests, for example, that the asset portfolios and capital flows of Sweden’s five largest banks only have limited alignment with Article 2.1c of the Paris Agreement. Increasing the availability of data – and clearly categorizing what constitutes “green” investment – is necessary to gain a complete picture of what constitutes capital flows to a Paris-compliant trajectory.

³⁶ IEA (2021), *Net Zero by 2050*, IEA, Paris <https://www.iea.org/reports/net-zero-by-2050>

³⁷ Dorman, D. and Ciple, D. (2020). *Bridging the Gap: Finance for Energy Access in the Green Climate Fund*. SEI Report, May 2020. Stockholm Environment Institute, Stockholm.

³⁸ Marbuah, G. (2021). *Scoping the green bond landscape in Africa*. SEI Brief. Stockholm Environment Institute. <https://www.sei.org/publications/green-bond-landscape-africa/>

³⁹ Tuhkanen, H., Vulturius, G. (2020). *Are green bonds funding the transition? Investigating the link between companies’ climate targets and green debt financing*, *Journal of Sustainable Finance & Investment*, DOI: <https://doi.org/10.1080/20430795.2020.1857634>

There are some positive signals, however. Some Multilateral Development Banks and G20 development finance institutions have adopted policies that no future finance will go to fossil fuel production activities; more than US\$2 trillion in finance is now held by institutions with such policies⁴⁰.

Alignment with climate-resilient development

Aligning financial flows with climate resilient development is a stark challenge. Architecture for adaptation finance is emerging but continues to face legitimacy issues.⁴¹ For instance, SEI found that adaptation projects supported by the Least Developed Countries Fund (LDCF) strengthened nationally significant infrastructure, enhanced institutional capacity and awareness, and improved community assets – but also suffered from uncertainty, a convoluted management structure, and an inability to fully respond to climate risks.⁴² Green bonds for adaptation also play only a small role, and a recent study recommends an increase in revenue-generating, large-scale, or poolable projects.⁴³

10. What is the collective progress made towards provision and mobilization of means of implementation, including finance, technology development and transfer and capacity-building?

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11. What are the barriers and challenges, including finance, technology development and transfer and capacity-building gaps, faced by developing countries?

Shortcomings in seed and concessional financing

Multilateral funds should think creatively about how to support diverse energy sources that currently have trouble attracting financing. For example, off-grid solar has significant potential as a renewable energy solution, but multilateral climate funds account for only a fraction of total investment.⁴⁴ This shortcoming in seed and concessional financing is likely due to the complexity of approving projects that integrate mitigation, adaptation, and development benefits, the focus on larger projects, and a lack of guidance for off-grid solar companies.

⁴⁰ SEI, IISD, ODI, E3G, UNEP, & UNEP. (2021). The Production Gap: Special Report 2021. Stockholm Environment Institute, International Institute for Sustainable Development, Overseas Development Institute, E3G, and United Nations Environment Programme. https://productiongap.org/wp-content/uploads/2021/10/PGR2021_web_rev.pdf

⁴¹ Lebel, L., Salamanca, A., and C. Kallayanamitra (2017). The governance of adaptation financing: pursuing legitimacy at multiple levels. *International Journal of Global Warming*, 11(2).

⁴² Sovacool, B.K., B.-O. Linnér and R.J.T. Klein (2017). Climate change adaptation and the Least Developed Countries Fund (LDCF): Qualitative insights from policy implementation in the Asia-Pacific. *Climatic Change*, 140(2), 209–226.

⁴³ Tuhkanen, H. (2020). Green Bonds: A Mechanism for Bridging the Adaptation Gap? SEI Working Paper, February 2020. Stockholm Environment Institute, Stockholm.

⁴⁴ Vulturius, G. and Tuhkanen, H. (2020). Matchmaking power: expanding climate finance for off-grid solar electricity. SEI Discussion Brief, April 2020. Stockholm Environment Institute, Stockholm.

Lack of enabling environments

One significant challenge developing countries face is the lack of an “enabling environment” for private finance. SEI recently developed and tested a conceptual framework that allowed users in Kenya and Rwanda to create an overview of each country’s enabling environment, mobilization, and delivery of finance for adaptation benefits – an initial step that can help governments consider ways to improve these conditions.⁴⁵ While an enabling environment is an important first step in the mobilization of private finance, it is also crucial for national governments to enforce existing policies and consistently install and apply safeguard mechanisms, as well as to create awareness of climate impacts among private sector actors.

The potential of readiness funds

“Readiness funds” can help countries put in place public instruments and good governance structures for effective adaptation implementation. Latin American countries, for example, used the GCF readiness fund to develop novel institutional arrangements to enhance transparency and enable broad stakeholder participation, including that of vulnerable groups.⁴⁶

12. What is the collective progress made towards achieving the long-term vision on the importance of fully realizing technology development and transfer in order to improve resilience to climate change and to reduce greenhouse gas emissions referred in Article 10.1 of the Paris Agreement? What is the state of cooperative action on technology development and transfer?

Regulation, information and cooperation

Significant challenges remain in accelerating progress on technology development and transfer. A recent SEI study found that stakeholders believe gridless technologies are hampered by regulatory gaps and lack of information on their compatibility with existing systems.⁴⁷ Expanding uptake of gridless solutions requires more attention to the needs and preferences of potential users, the technological appropriateness of certain options in specific contexts, and issues of social equity and distributional justice. Specific insights are needed about the scalability of certain options, as well as better financial know-how to help secure investments in innovation and start-ups.

Cooperation is also vital to technology transfer. A recent study [of cooperation on transboundary air pollution in three Northeast Asian countries](#) (China, Japan, and the Republic of Korea)⁴⁸ assessed which aspects of regional collaboration could be transferred from Europe

⁴⁵ Dzebo, A. and Pauw, P. (2019), A framework for mobilizing private finance and tracking the delivery of adaptation benefits. SEI Working Paper. Stockholm Environment Institute, Stockholm.

⁴⁶ Javier Gonzales Iwanciw (2017). Adaptation Governance and Green Climate Fund Readiness in Latin America and the Caribbean. AdaptationWatch Briefing. AdaptationWatch.

⁴⁷ Macura, B., Barquet, K., Lambe, F. and Soto Trujillo, A. (2021). Perceived unknowns about gridless water, sanitation and energy services. SEI report. <http://doi.org/10.51414/sei2021.032>

⁴⁸ Choi, G., Kuylenstierna, J., Lee, S.K., Palmer, E., Hicks, K., Lee, E., Jun, D., Nikam, J., Archer, D., Ågren, C., Williams, M. (2021) Developing regional cooperation on air pollution in Northeast Asia. Transferring lessons from Europe and North America, progress and future development. SEI Report. Stockholm Environment Institute.

and North America. It found that while data and information sharing is a good start, reducing emissions requires also developing appropriate strategies, measures, and policies.

13. What progress been made on enhancing the capacity of developing country Parties to implement the Paris Agreement (Article 11.3 Paris Agreement)?

Coproduction of climate information

Coproduction of climate information, in which producers and users directly collaborate, can increase the use of this information and improve climate-related decision-making. SEI research – based on case studies in Lusaka, Zambia and Durban, South Africa – illustrates local governments and universities can play a key role in devolving climate decision-making to local levels. Based on these findings, the researchers recommend that coproduction focus not only on producing better climate information, but also on using this information to enable cooperation and engagement among actors.

Section IV: Guiding questions related to efforts referred to in decision 19/CMA.1, paragraph 6 (b), 1 that:

The low carbon transition invariably creates winners and losers, and progress on mitigating losses needs to be faster and more encompassing. This includes broadening the just transitions lens to include socio-cultural implications, and sectors other than energy. Acknowledging the fact that irreversible losses are already occurring would mean giving financial support to the poorest countries and communities particularly experiencing these losses.

This section highlights insights from SEI research on just transitions and loss and damage.

Address the social and economic consequences and impacts of response measures:

14. Pursuant to Article 4.15, 4.7 of the Paris Agreement and Decision 19/CMA.1 paragraph 6(b)(i), what is the collective progress of efforts made that address the social and economic consequences and impacts of response measures, including relevant support systems while implementing mitigation policies and actions towards the achievement of the Paris Agreement goals?

Just transitions

Public commitments to just transitions have been growing, as illustrated by the 2018 Silesia Declaration on Solidarity and Just Transition (48 signatories, including 28 EU Members, the European Commission, and 20 other UN members)⁴⁹, and more recently, the Just Transition Declaration at COP26 (17 signatories, all from the Global North)⁵⁰. Moreover, various countries⁵¹ – from both the Global North and Global South – have incorporated a commitment to a just transition away from fossil fuel production into their updated NDC and/or LT-LEDS, as well as having put in place committees and other types of institutional arrangements to plan and implement just transition measures (see table below, from the 2021 Production Gap Report⁵²).

⁴⁹ A list of the signatories can be found at https://news.industrial-europe.eu/content/documents/upload/2018/12/636797104280097239_Lista%20poparcia%20dla%20deklaracji%20Just%20Transition.pdf

⁵⁰ Supporting the Conditions for a Just Transition Internationally. (2021, Nov. 4). UN Climate Change Conference (COP26) at the SEC – Glasgow 2021. <https://ukcop26.org/supporting-the-conditions-for-a-just-transition-internationally/>

⁵¹ Jones, N., Muñoz Cabré, M, Piggot, G. and Lazarus M. (2021). Tapping the potential of NDCs and LT-LEDS to address fossil fuel production. SEI working paper. <http://doi.org/10.51414/sei2021.010>

⁵² SEI, IISD, ODI, E3G, UNEP, & UNEP. (2021). The Production Gap: Special Report 2021. Stockholm Environment Institute, International Institute for Sustainable Development, Overseas Development Institute, E3G, and United Nations Environment Programme. https://productiongap.org/wp-content/uploads/2021/10/PGR2021_web_rev.pdf

Provide local and international support for diversification and just, equitable transitions			
Year	Country	Jurisdiction	Example
2021	United States	National	The US established the White House Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization to identify and deliver resources to support workers and communities reliant on the fossil fuel sector. ^{A25}
2021	Spain	National	In 2018, Spain established a Just Transition Strategy (2019–2027) that includes early retirement for miners over age 48, retraining for green jobs, and environmental restoration. Spain's 2021 Climate Change and Energy Transition Act requires the government to publish a Just Transition Strategy every five years. ^{A26}
2021	Chile	National	The government is developing a Just Transition Strategy, with local action plans to assess the needs of coal regions, mitigate the socioeconomic repercussions of coal-fired power plant closures, and maximize the benefits of the transition in affected areas. ^{A27}
2021	Scotland	National	Scotland's Just Transition Commission called for the introduction of just transition plans in high-emitting industrial sectors and support measures for workers in carbon-intensive sectors. ^{A28}
2021	United States	Subnational	The State of California, by Executive Order mandate, is designing a Just Transition Roadmap focusing on workers and communities reliant on fossil fuel industries. ^{A29}
2021, 2020	United States	Subnational	The State of Colorado developed a just transition action plan in 2020, with USD 15 million committed in 2021 toward just transition of coal-dependent communities and associated workers including economic diversification efforts. ^{A30}
2020, 2019	South Africa	National	South Africa established a Presidential Climate Change Commission to advise the government on how to ensure a just transition for communities and workers reliant on the coal sector. South Africa also includes just transition considerations as part of its energy planning. ^{A31}
2020	Germany	National	Germany's Structural Development Act provides financial support for regions affected by coal phase-out of up to EUR 40 bn (USD 46 bn) to support investments in clean energy, infrastructure, research and innovation, and labour market policies. ^{A32}
2020	Greece	National	Greece established a Just Transition Development Plan running from 2021–2027. Assistance for coal-dependent regions includes income support, social protection policies, reskilling and entrepreneurship development. ^{A33}
2020	Ireland	National	Ireland established the National Just Transition Fund (JTF) with EUR 12.5 million committed to projects related to retraining and sustainable employment as of July 2021. ^{A34}
2020	Poland	Subnational	The region of Eastern Wielkopolska set a just transition plan assuming that coal mining will be discontinued in 2030. ^{A35}
2020	Inter-governmental	Multilateral	The European Bank for Reconstruction and Development's just transition initiative aims to help those whose livelihoods are affected by the transition process through reskilling and enhancing entrepreneurship, and support for regional economic development. ^{A36}
2019	EU	Supra-national	The EU's Just Transition Mechanism offers targeted support to regions most affected by the transition, including knowledge, technical and advisory support, and the expected mobilization of at least EUR 65-75 billion over the period 2021–2027. ^{A37}
2018	Canada	National	Canada established a Task Force on Just Transition for Canadian coal power workers and communities. The government dedicated CAD 35 million (USD 26 million) over five years to support skills development and economic diversification activities. ^{A38}
2016	China	National	China's 13th Five-Year Plan for the Coal Industry included just transition support measures such as support for workers, unemployment relief, and training and job placement services (2016–2020). ^{A39}

However, in practice, collective progress is uneven, notably due to differences in institutional, financial and other capacities⁵³ to design and implement just transition plans. Commitments do not always translate into action. It is thus important that countries with less dependence on fossil fuels and greater capacities take the lead⁵⁴ in moving away from fossil fuel production and provide support to those with high dependence and low capacity to make the shift.

Furthermore, just transition plans and measures have so far largely focused on active and passive labour policy to support affected workers, and on economic diversification for carbon-intensive regions. While these are essential components of just transitions, there are other aspects⁵⁵ that deserve increased attention, such as the socio-cultural implications of transitions away from fossil fuels (including the loss of individual and collective identities, weakening of the social fabric, and demographic dynamics), and the environmental rehabilitation of mining and industrial sites.

Moreover, the momentum for a just transition has so far been mostly confined to the energy sector. We need to extend the transition to other GHG-intensive sectors to accomplish the radical transformations needed to limit global warming below 1.5°C or 2°C. For example, there is a clear lack of just transition planning to achieve a shift towards more sustainable and resilient food production.⁵⁶

Finally, it is necessary to better connect just transitions policies and measures to broader efforts that address existing inequalities, as called for in the Glasgow Climate Pact. This includes paying special attention to disadvantaged groups when designing and implementing such measures and going beyond traditional economic indicators to include, for instance, the types of jobs created, who has access to them, and the levels of broader community resilience and innovation.

⁵³ Ibid.

⁵⁴ Muttitt, G. and Kartha, S. (2020). Equity, climate justice and fossil fuel extraction: principles for a managed phase out. *Climate Policy*. <http://www.tandfonline.com/10.1080/14693062.2020.1763900>

⁵⁵ Atteridge, A. and Strambo, C. (2020). Seven principles to realize a just transition to a low-carbon economy. SEI policy report. Stockholm Environment Institute, Stockholm.

⁵⁶ Verkuil, C. and Green, J. (2021, Nov. 12). COP26's "plant-forward" menu should be the starting shot for a protein transformation. Stockholm Environment Institute. <https://www.sei.org/perspectives/cop26-plant-based-food-transformation/>

Avert, minimize and address loss and damage associated with the adverse effects of climate change:

15. Pursuant to Article 8 of the Paris Agreement and Decision 19/CMA.1 paragraph 6(b)(ii), what is the collective progress of efforts made to enhance understanding, action and support towards averting, minimizing and addressing loss and damage associated with the adverse effects of climate change, in the light of equity and the best available science?

Actions to avert, minimise, and address loss and damage

Although there has been some headway on averting and minimising loss and damage (L&D) through mitigation and adaptation efforts, progress on addressing L&D has been limited. SEI research found that loss and damage is already a lived reality for the poorest countries and communities around the world; financial support, however, is lacking, with little funding to enable communities to cope with and recover from both slow-onset and sudden-onset events.⁵⁷ Studies have estimated that the annual loss and damage finance needs in developing countries will reach between US\$200 billion and US\$580 billion by 2030.⁵⁸ At the same time, countries lack on-the-ground, thorough needs assessments to determine what “counts” as a loss and damage event, how much finance would be needed, what activities would need to be funded, and how finance could be distributed between different communities and L&D events.

To avert, minimise and address loss and damage, countries with historically high emissions could start bilaterally pledging L&D financial support on the basis of solidarity, capacity and historical responsibility. Moving forward, the Warsaw International Mechanism for Loss and Damage could support thorough needs assessments in individual countries to determine how financial support for loss and damage could be provided; the modalities of the Santiago Network could also support such a process. In the longer term, countries could aim to establish a new financial facility for loss and damage under the UNFCCC to address the aforementioned gap in financial support.

⁵⁷ Shawoo, Z., Maltais, A., Bakhtaoui, I., and Kartha, S. (2021). Designing a fair and feasible loss and damage finance mechanism. SEI brief. DOI: 10.51414/sei2021.024

⁵⁸ Markandya, A., González-Eguino, M. (2019) Integrated Assessment for Identifying Climate Finance Needs for Loss and Damage: A Critical Review. In: Mechler R., Bouwer L., Schinko T., Surminski S., Linnerooth-Bayer J. (eds) Loss and Damage from Climate Change. Climate Risk Management, Policy and Governance. Springer, Cham. https://doi.org/10.1007/978-3-319-72026-5_14

Cross-cutting:

Challenges to achieving the Paris Agreement are manifold. One central challenge lies in safeguarding the perceived legitimacy of the Paris Agreement by providing financial support for loss and damage to vulnerable communities. On a practical level, another challenge lies in the absence of strong accountability mechanisms that would ensure both collective goals and those set by individual actors are achieved. Net zero targets set by individual actors run the risk of missing the big picture of achieving global net zero and there's also a challenge in ensuring that 2050 target setting does not deflect from near-term action to reduce emissions as much and as fast as possible. Another challenge arises from difficulties in mobilising finance, and in allocating funds in a coordinated and effective manner. Making the low carbon transition just and equitable is yet another challenge – while existing inequities hamper accelerating the transition in the first place.

Here we highlight some of the insights from SEI research in equity, accountability, just transitions, climate finance, and loss and damage.

16. To achieve the purpose and long-term goals of the Paris Agreement (mitigation, adaptation, and finance flows and means of implementation, as well as loss and damage, response measures), in the light of equity and the best available science, taking into account the contextual matters in the preambular paragraphs of the Paris Agreement:

a. What are the good practices, barriers and challenges for enhanced action?

Strengthening equity

The preamble of the Paris Agreement highlights the inextricable linkages between the equity of our global society's response to the climate crisis and its effectiveness, using the strongest language negotiated since the Rio Declaration on the Environment and Development signed at the 1992 Earth Summit. The understanding of the nature and implications of these linkages has only deepened in the 7 years since the Paris COP, including through SEI research.

Inequity is simultaneously a root cause of the climate problem and a barrier to climate action^{59, 60}. Inequality is reflected in the dramatic disconnect between those most responsible for GHG emissions and those most vulnerable to the consequences; this is then responsible for a weakening of the natural feedback that occurs between the adverse impacts from pressures our societies place on the environment, and our motivation to take action to reduce those pressures. This is most dramatically revealed in the radical differences in emissions

⁵⁹ Ghosh, E., Kemp-Benedict, E., Kartha, S. and Nazareth, A. (forthcoming). Environmental Inequalities. In S. Bieri and C. Bader (Eds.). *Transitioning to Reduced Inequalities*. MDPI. <https://www.mdpi.com/books/pdfview/edition/1366>

⁶⁰ Stoddard et al. (2021). Three Decades of Climate Mitigation: Why Haven't We Bent the Global Emissions Curve? *Annual Review of Environment and Resources*, 46, 653–689. <https://www.annualreviews.org/doi/10.1146/annurev-environ-012220-011104>

arising from different income groups^{61, 62}, and is paralleled in the impacts of a fossil-fuel-intensive global economy, both globally, via climate impacts, and locally, via impacts on local communities affected by fossil fuel extraction and local air pollution. Extreme inequality also undermines social trust, which is essential to ambitious and cooperative climate mobilization. Moreover, to the extent that economic and political power have become concentrated among those individuals and firms that have thrived in this fossil-fuel-driven era, the transition beyond that era faces all the more socio-political lock-in and political economic barriers.⁶³

The nature of a low-carbon and resilient transformation that is equitable – and the lessons learned on how to implement it – are highly context- and society-specific. SEI has helped advance this understanding, including through case studies and, for example, research on how to design loss and damage finance in ways that prioritize the needs of affected communities within a context of global equity,⁶⁴ and equitable and just energy transitions.^{65, 66, 67, 68, 69}

Beyond solutions, an equitable transition requires a change in existing processes. This includes how climate research is conducted and who is involved in shaping the research agenda and proposed solutions. Our research highlights the need to challenge existing knowledge production processes and to explore how researchers can shift, rather than reinforce, unequal power dynamics⁷⁰ and strengthen collaboration and co-production processes in climate and environment research.^{71,72}

Improving accountability

A general challenge for enhanced action on climate change is the lack of strong accountability mechanisms, for ensuring due action on both collective goals and goals set by individual actors, within the framework of the Paris Agreement (i.e. individual Parties) and outside of it (e.g. local governments' targets, corporate targets). The Global Stocktake and the information

⁶¹ Kartha, S., Kemp-Benedict, E., Ghosh, E., Nazareth, A. and Gore, T. (2020). The Carbon Inequality Era: An assessment of the global distribution of consumption emissions among individuals from 1990 to 2015 and beyond. Joint Research Report. Stockholm Environment Institute and Oxfam International.

⁶² Ghosh, E., Kemp-Benedict, E., Kartha, S. and Nazareth, A. (forthcoming). Environmental Inequalities. In S. Bieri and C. Bader (Eds.). *Transitioning to Reduced Inequalities*. MDPI. <https://www.mdpi.com/books/pdfview/edition/1366>

⁶³ SEI Initiative on Carbon Lock-In. <https://www.sei.org/projects-and-tools/projects/carbon-lock-in/#publications>

⁶⁴ Shawoo, Z., Maltais, A., Bakhtaoui, I., and Kartha, S. (2021). Designing a fair and feasible loss and damage finance mechanism. SEI brief. DOI: 10.51414/sei2021.024

⁶⁵ Piggot, G., Boyland, M., Down, A. and Torre, A.R. (2019). Realizing a just and equitable transition away from fossil fuels. Discussion brief. Stockholm Environment Institute.

⁶⁶ Atteridge, A. and Strambo, C. (2020). Seven principles to realize a just transition to a low-carbon economy. SEI policy report. Stockholm Environment Institute, Stockholm.

⁶⁷ Aung, M. T. and Boyland, M. (2020). Ensuring just and equitable energy transitions. SEI synthesis brief. Stockholm Environment Institute, Stockholm.

⁶⁸ SEI, IISD, ODI, E3G, and UNEP. (2020). The Production Gap Report: 2020 Special Report. <http://productiongap.org/2020report>

⁶⁹ Muttitt, G., and Kartha, S. (2020). Equity, climate justice and fossil fuel extraction: principles for a managed phase out, *Climate Policy*, 20:8, 1024-1042, DOI: 10.1080/14693062.2020.1763900

⁷⁰ Daszkiewicz, C., Shawoo, Z., Nazareth, A., Coleoni, C., Kwamboka, E., Ghosh, E., Han, J. Y.-C., Inga, K., Tran, M. and Diaz-Chavez, R.A. (2022). Shifting power through climate research: applying decolonial methodologies. SEI brief. <http://doi.org/10.51414/sei2021.028>

⁷¹ Butterfield, R., Osano, P., (2020). Improving the co-production of climate services for agriculture: a case study from Nigeria. SEI Brief. Stockholm Environment Institute. <https://www.sei.org/publications/improving-the-co-production-of-climate-services-for-agriculture-a-case-study-from-nigeria/>

⁷² Chambers, J. M., Wyborn, C., Ryan, M. E. et al. Six modes of co-production for sustainability. *Nat Sustain* (2021). <http://doi.org/10.1038/s41893-021-00755-x>

it compiles will provide a basis for joint review and for peers holding each other mutually to account.

Considering that some emission reduction and adaptation actions will take time to result in measurable changes, there will likely be a need for proxy indicators of enhanced action. Indicators are a common methodology in global governance; for example, there are 200+ SDG indicators that are regularly tracked at the national level.

The UNFCCC secretariat could draw out from the Transparency Framework and other national reporting under the Convention or Agreement a set of core indicators of enhanced action on climate change, presented in a more accessible way to multiple stakeholder groups that could analyse and use them in their discussions. The Camda initiative⁷³ is a positive step in this direction. Data for tracking indicators on enhanced climate action is typically more lacking and more difficult in developing countries. Investments should be made in data availability and monitoring, from multilateral funds, bilateral donors and/or philanthropic sources.

Facilitating a just transition

Some of the key challenges to plan and implement just transitions include limited capacities at the subnational level, lack of transparency with regards to the phase out of fossil fuels, lack of dedicated financial resources, and inadequate legislation and enforcement of legislation on environmental rehabilitation.

A transition requires the coordination of multiple actors and considerable financial resources. It is essential to strengthen the financial and technical capacities of local authorities to anticipate and mitigate the wide range of effects from mine and industrial closure on economic development, public service delivery, and the state of the environment. Inclusive planning led by local authorities is key, as local authorities often are left with the responsibility for the crafting and implementation of economic regeneration initiatives. Cooperation and alignment between international, national, and local efforts is also important to achieve bottom-up development visions.

Transparency is also crucial. The public disclosure of information about the planning and socioeconomic implications of the transition can create better outcomes by encouraging more inclusive and participatory decision-making, as well as building trust and buy-in from affected stakeholders. Existing initiatives – such as the Extractive Industries Transparency Initiative, the Joint Organisations Data Initiative and the OECD-IEA Inventory of Support Measures for Fossil Fuels – are a good start, but available information is incomplete, inconsistent, and scattered across various, mostly voluntary, government-driven and non-governmental efforts.

⁷³ Camda Data Platforms. <https://camda.global/data/>

Financial mechanisms are also needed to enable just transitions. One example is South Africa, which has been designing a financing mechanism called the Just Transition Transaction.⁷⁴ International donors have also pledged funds⁷⁵ to support a just transition there.

Finally, a just transition also requires strengthening regulatory requirements and financial guarantees for the closure and environmental remediation of mines. This includes ensuring individual mines have closure plans in place, and that financial resources for clean-up are secured by the government. Chile provides an example of robust regulatory requirements, while Ukraine, Poland, and Romania showcase good practice,⁷⁶ with appropriate funding and regulations for modern mine closure.

b. What is needed to make finance flows consistent with a pathway towards low GHG emissions and climate-resilient development?

Ensuring effective financing mechanisms and reporting

Poor coordination⁷⁷ between funding streams and sources contributes to mobilisation and effectiveness challenges in climate finance. For example, duplication and inefficiency occur in developing countries because of overlaps between bilateral and multilateral finance, development aid and climate finance, and public and private sector finance. Such coordination challenges also arise due to political differences,⁷⁸ including divergent interests among ministries. For example, SEI research⁷⁹ on climate finance coordination in Kenya found that lack of political will and diverging agendas between government and development actors can hamper coordination.

Climate finance also needs to be dictated by national priorities and needs, as opposed to profitability and donor interests,⁸⁰ such as through greater levels of country ownership or decentralisation⁸¹ to ensure that climate and development priorities can be aligned. Decentralized finance mechanisms,⁸² such as the Climate Resilient Green Economy facility in Ethiopia and the Country Climate Change Funds (CCCFs) in Kenya, have the potential to better

⁷⁴ Forrest, N. (2020, Oct. 26). Just Transition Transaction case study – towards energy equity. University of Cape Town News. <https://www.news.uct.ac.za/article/-2020-10-26-just-transition-transaction-case-study-towards-energy-equity>

⁷⁵ Burton, J. (2022, Jan. 13). Coal in 2022: South Africa's Just Energy Transition Partnership. Third Generation Environmentalism Ltd (E3G). <https://www.e3g.org/news/coal-in-2022-south-africa-s-just-energy-transition-partnership/>

⁷⁶ World Bank Group (2018). Managing Coal Mine Closure: Achieving a Just Transition for All. <https://documents1.worldbank.org/curated/en/484541544643269894/pdf/130659-REVISED-PUBLIC-Managing-Coal-Mine-Closure-Achieving-a-Just-Transition-for-All-November-2018-final.pdf>

⁷⁷ Lundsgaarde, E., Adams, K.M., Dupuy, K., Dzebo, A., Funder, M., Fejerskov, A.M., Shawoo, Z., Skovgaard, J. (2021). The politics of climate finance coordination. Policy brief. Stockholm Environment Institute, Stockholm. <http://doi.org/10.51414/sei2021.022>

⁷⁸ Ibid.

⁷⁹ Dzebo, A., Shawoo, Z. and Kwamboka, E. (2020). Coordinating climate finance in Kenya: technical measures or political change? SEI Policy Brief. Stockholm.

⁸⁰ Lomax, J., Osborne, M., Aminga, V., Mirumachi, N. and Johnson, O. (2021). Casual pathways in the political economy of climate adaptation: Winners and losers in Turkana, Kenya solar mini-grid projects. *Energy Research & Social Science*, 82:102296. <http://doi.org/10.1016/j.erss.2021.102296>.

⁸¹ Browne, K. (2022). Global assessment shows need to support “bottom-up” adaptation. Stockholm Environment Institute. <https://www.sei.org/perspectives/global-assessment-adaptation/>

⁸² Guzmán, S., Guillen, T., Castillo, M. and Moncada, A. (2017). Toward climate finance reporting systems in Latin America. AdaptationWatch Briefing. AdaptationWatch.

account for local priorities. However, there may be a trade-off between ensuring local participation and national accountability towards long-term climate goals.

Reporting systems for climate finance also need improvement.⁸³ This could include adding effectiveness indicators and building upon a universal definition of climate finance, as well as better attribution⁸⁴ of financing. Capacity must also be built to collect and interpret climate finance information and use it in decision-making.

Mobilizing sustainable investments

Investors can help⁸⁵ decarbonize conventionally “hard to abate” industries, such as steel, by putting coordinated pressure on companies and other actors to adopt⁸⁶ new low-emissions technologies, practices and business models. Investors should focus on engaging with value chains, advancing sector wide transitions, aiming for sectorial targets, and committing to not providing financing to new oil and gas exploration and development.

The market for green bonds also has the potential⁸⁷ to help mobilize financial sources towards sustainable investments. Countries wanting to facilitate the uptake of green bonds should emphasize leadership on sustainability and collaboration between green bond issuers and investors, as well as active communication, high visibility, and thorough disclosure of sustainable finance activities.

Increasing levels of climate and adaptation finance

Finance for climate mitigation and adaptation activities has a significantly lower disbursement ratio⁸⁸ than the average for all global development finance. For example, the disbursement of climate finance for small islands of the Eastern Caribbean was less than 10% of commitments⁸⁹ from 2010 to 2015, a far lower ratio than for non-climate aid flows to the same countries. Finance also appears to be targeting a narrow range of sectors,⁹⁰ particularly in small island developing states (SIDS), making it difficult for recipient countries to align available climate funding with other development imperatives. This may limit the ability of SIDS to implement national adaptation strategies or to make effective use of limited

⁸³ Guzmán, S., Guillen, T., Castillo, M. and Moncada, A. (2017). Toward climate finance reporting systems in Latin America. AdaptationWatch Briefing. AdaptationWatch.

⁸⁴ Spalding-Fecher, R., Kohli, A., Fallasch, F., Brown, P., Fuessler, J., Broekhoff, D. and Schneider, L. (2021). Attribution: A practical guide to navigating the blending of climate finance and carbon markets. Carbon Limits. <http://www.carbonlimits.no/wp-content/uploads/2021/10/Attribution-Report-final-version-211026.pdf>

⁸⁵ Maltais, A., Gardner, T., Godar, J., Lazarus, M., Mete, G. and Olsson, O. (2021). Six insights for investing in net zero. SEI brief. Stockholm Environment Institute, Stockholm. <http://doi.org/10.51414/sei2021.027>

⁸⁶ Maltais, A., Gardner, T., Godar, J., Lazarus, M., Mete, G. and Olsson, O. (2021). What does it take to achieve net zero? Opportunities and barriers in the steel, cement, agriculture, and oil and gas sectors. SEI Report. Stockholm Environment Institute and Stockholm Sustainable Finance Centre, Stockholm. 38 pp. <https://10.51414/sei2021.023>

⁸⁷ Torvanger, A., Maltais, A. and Marginean, I. (2021). Green bonds in Sweden and Norway: What are the success factors? Journal of Cleaner Production. <http://doi.org/10.1016/j.jclepro.2021.129177>

⁸⁸ Atteridge, A. and Savvidou, G. (2020). Five things we learned about development finance while building Aid Atlas. SEI Policy Brief, June 2020. Stockholm Environment Institute, Stockholm.

⁸⁹ Atteridge, A., Canales, N. and Savvidou, G. (2017). Climate finance in the Caribbean region’s Small Island Developing States. SEI Working Paper 2017-08. Stockholm Environment Institute, Stockholm.

⁹⁰ Canales, N., Atteridge, A., Sturesson, A. (2017). Climate finance for the Indian Ocean and African Small Island Developing States. Stockholm Environment Institute, Working Paper 2017-11. <https://www.sei.org/publications/climate-finance-indian-ocean-african-sids/>

international public finance. Challenges may also exist due to the vast majority of funding⁹¹ being delivered as project-based support; direct budget support is rare. This can lead to the funding going to middle-men or development partners based in the Global North, rather than to vulnerable communities in developing countries.

Adaptation finance is also much lower than necessary in African countries and does not go to those who need it most, according to SEI's comprehensive quantitative mapping⁹² of adaptation-related finance flows to African countries to date (2014-2018), using OECD data. Least developed countries (LDCs) are not prioritised⁹³ when it comes to adaptation finance, and the countries most vulnerable to climate change are the least likely⁹⁴ to receive bilateral adaptation finance. Adaptation finance is also lacking in the health, education, biodiversity, and other sectors where it's needed; has a low disbursement ratio of 46%; and is provided as loans instead of grants for 57% of funding, which risks increasing the debt burdens of recipient countries.

c. What are the needs of developing countries related to the ambitious implementation of the Paris Agreement?

Enhanced action on loss and damage

The provision of financial support for loss and damage to developing countries is necessary⁹⁵ to protect the perceived legitimacy of the Paris Agreement and ensure that vulnerable communities have adequate support to recover from climate impacts.

Our research⁹⁶ reveals that the lack of a basic definition on what counts as loss and damage is the first barrier to enhanced action. The term "loss and damage" is not formally defined within the climate policy architecture, and different actors have interpreted and operationalised the term as serves their own agendas. The framing of loss and damage as being "residual" promotes the idea that it is something to be dealt with in the future, when all options have been exhausted, rather than acknowledging the current reality of unavoidable climate impacts. Some experts and developed country negotiators have argued⁹⁷ that loss and damage is already covered by post-disaster humanitarian aid on one side, and adaptation finance on the other, so there is no need for a dedicated L&D finance mechanism. Challenges also relate to disagreements over questions of liability. As climate litigation has proliferated around the world, some have pushed back on loss and damage provisions that could imply

⁹¹ Atteridge, A., and N. Canales (2017). Climate finance in the Pacific: An overview of flows to the region's Small Island Developing States. SEI Working Paper No. 2017-04.

⁹² Savvidou, G., Atteridge, A., Omari-Motsumi, K., and Trisos, C. (2021). Five ways climate adaptation finance falls short in Africa. SEI fact sheet. Stockholm Environment Institute, Stockholm. <http://www.sei.org/publications/five-ways-climate-adaptation-finance-falls-short-in-africa>

⁹³ Savvidou, G., Atteridge, A., Omari-Motsumi, K. and Trisos, C.H. (2021). Quantifying international public finance for climate change adaptation in Africa. Climate Policy. DOI: <http://dx.doi.org/10.1080/14693062.2021.1978053>

⁹⁴ Saunders, N. (2019). Climate change adaptation finance: are the most vulnerable nations prioritised? Working paper. Stockholm Environment Institute, Stockholm.

⁹⁵ Shawoo, Z., Maltais, A., Bakhtaoui, I., and Kartha, S. (2021). Designing a fair and feasible loss and damage finance mechanism. SEI brief. DOI: 10.51414/sei2021.024

⁹⁶ Ibid.

⁹⁷ Vulturius, G. and Davis, M. (2016). Defining Loss and Damage: The Science and Politics Around One of the Most Contested Issues within the UNFCCC. Discussion Brief. Stockholm Environment Institute, Stockholm.

legal liability or any obligation to provide finance or other compensation.

17. What is needed to enhance national level action and support, as well as to enhance international cooperation for climate action, including in the short term?

Harnessing the potential of Article 6 approaches

The finalizing of the Article 6 rulebook at COP26 provides a foundation for international cooperation involving carbon finance (using market mechanisms) and results-based climate finance. The rulebook is a major milestone, but as a basis for raising climate ambition, it is still not sufficient.

Above all, extensive work is still required for countries to incorporate cooperative approaches into their near-term climate policies and long-term development strategies. Cooperation must ensure that market-based approaches – including under Articles 6.2 and 6.4 – are used to accelerate mitigation and generate funding for adaptation, and avoid a “race to the bottom” where countries limit ambition in a quest to attract more carbon finance. This will require careful planning, coordination, and capacity building among “buyer” and “seller” countries.

Related to this, countries looking to acquire mitigation outcomes (the “buyers”) should avoid doing so at the expense of domestic climate action that aligns with the Paris Agreement’s climate goals, and reflects common but differentiated responsibilities and respective capabilities.

Cooperative approaches – including international market mechanisms – could be a key means for balancing greenhouse gas emissions and removals globally by mid-century. But in getting to “net zero” emissions, it will be imperative to minimize gross emissions – both to ensure global equity and to reduce systemic climate risks.⁹⁸

18. What is the collective progress made by non-Party stakeholders, including indigenous peoples and local communities, to achieve the purpose and long-term goals of the Paris Agreement, and what are the impacts, good practices, potential opportunities, barriers and challenges (Decision 19/CMA.1, paras 36(g) and 37(i))?

Role of Cities

The Habitat III New Urban Agenda (NUA)⁹⁹ recognizes that maximizing the benefits of urbanization requires environmentally sustainable and resilient development. How to balance the need for urban environmental sustainability (which encompasses concepts of circular economies, resource conservation, and energy efficiency) with the need for resilience (ability to withstand shocks and disasters) remains an ongoing challenge: the former often leads to

⁹⁸ Broekhoff, D. and Spalding-Fecher, R. (2021). Assessing crediting scheme standards and practices for ensuring unit quality under the Paris agreement. *Carbon Management*, 12(5). <http://doi.org/10.1080/17583004.2021.1994016>.

⁹⁹ <https://habitat3.org/the-new-urban-agenda/>

densification, while the latter entails diversity. At the city scale, our work has identified three key governance challenges for achieving the Sustainable Development Goals (SDGs): (i) cultivating creative action by creating inclusive decision-making spaces; (ii) making trade-offs to achieve equity; and (iii) accountability of decision-makers in relation to outcomes.

There is a rising awareness of the value of involving various stakeholders in the co-design, development, and delivery of mitigation and adaptation changes. To achieve the overarching goals for participation of increasing transparency and equity in decision making, there is a need to widen the range of engagement approaches to ensure greater inclusivity among currently vulnerable or excluded groups to enable a just transition.

To increase inclusion and improve decision-making outcomes, the goal for participation should be towards city authorities partnering with the public in each aspect of the decision, including the development of alternatives and the identification of the preferred solution or ultimately to placing final decision-making in the hands of the public. To achieve such urban governance transformations, a significant shift in the operational norms, goals and resource flows of city institutions towards more sustainable pathways is required. This represents a greater challenge than inclusion and co-design of urban adaptation and mitigation strategies. Without such structural changes, improvements in inclusion and outcomes alone will simply enrich existing planning processes, falling short of transforming cities and missing the opportunities embodied in the SDGs.

The integration of informal actors into formal development and decision processes remains a challenge in many urban settings. Currently informal urban systems operate in a parallel decision-making space, filling gaps in service provision or delivery of infrastructure but without proper oversight, transparency, or accountability to formal city governance systems. This leads to inefficient and inequitable delivery of city goods and services and can bypass changes intended to mitigate or adapt city systems through informal improvisations.

A final challenge at the city scale, linked to informality, is corruption in decision making processes or implementation of outcomes. Corruption affects city environments through its impact on governance, weakening the enforcement of environmental regulations and reducing the number of government guidelines adopted or affecting the compliance and behaviour of companies. Solutions are often context and case specific but recommendations including strengthening civil society organisations and social accountability.



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