

United States' Submission on the Third Technical Dialogue of the First Global Stocktake

April 2023

- The United States welcomes the opportunity to provide views to the third and final technical dialogue.
- This submission provides the United States' views on key messages on collective progress towards achieving the goals of the Paris Agreement and recommendations to enhance action and support that should be reflected in the outputs of the technical assessment component.
- The GST represents a unique and critical opportunity to focus the world's attention on the efforts needed to put us on track towards the Paris Agreement's goals. The technical dialogues have provided a valuable opportunity for the exchange of information and ideas among Parties, non-Party stakeholders, and experts that sets the stage for the consideration of outputs component.
- The GST outcome at COP28 must provide a clear political signal on the need for the world to step up climate action in this critical decade and beyond and recommendations for enhanced, immediate, and tangible actions, including to inform Parties' nationally determined contributions (NDCs), based on the findings from the technical assessment component.

Procedural issues related to the third Technical Dialogue

- The third Technical Dialogue should continue to be an engaging and inclusive process, drawing on the successful organization of the first and second Dialogues including participation of Parties and non-Party stakeholders.
- It is important to allot sufficient time for the Technical Dialogue and to avoid, to the extent practicable, conflicts with other mandated events. It is also worth considering how to leverage events like the mandated IPCC Special Event on the Synthesis Report in the Technical Dialogues and avoid duplication of presentations and content.
- Since this is the final Dialogue in the first GST, there should be a strong emphasis on identifying clear, concise key messages across each of the themes to support the consideration of outputs component.
- We also encourage the co-facilitators to consider how to most effectively present, in short and direct statements, the key findings from the Technical Dialogues in the final summary report and synthesis report to support the consideration of outputs component and inform a substantive outcome of COP28.

Key messages to be reflected in the GST outputs

- Though the technical assessment phase is not yet complete, several key messages have already emerged that should be reflected in the GST's various outputs.
- The key messages for the three thematic areas (mitigation, adaptation, and means of implementation) are divided here between **collective progress** towards achieving the relevant goal of the Paris Agreement and **recommendations** to enhance action and

support, consistent with 19/CMA.1. In this way, they are roughly divided between “backward looking” and “forward looking” messages, respectively.

- In addition, we have proposed key messages for response measures and loss and damage, noting that the GST “may take into account, as appropriate, efforts related to” these two areas.¹

Mitigation:

Collective progress towards achieving Article 2.1(a):

- **Article 2.1(a) has had an enormous impact on global mitigation action.**
 - The Paris goal of limiting warming to below 2°C and pursue efforts to limit it to 1.5°C has driven mitigation action by Parties and non-Party stakeholders alike.
 - Not only have Parties undertaken NDCs, long-term strategies, sectoral initiatives, and other efforts in a “Paris-aligned manner,” but the Paris temperature goal has become the North Star of a wide range of actors, including, e.g., sub-national actors, companies, and financial institutions.
 - Parties and non-Party stakeholders have widely adopted the “net zero” concept derived from Article 4.1 of the Paris Agreement.
 - International organizations have also embraced Paris-aligned goals. The International Civil Aviation Organization, for example, agreed last year on a Paris-aligned net zero goal, and the International Maritime Organization is considering this year how to update its Initial GHG Strategy to bring it into alignment with Paris.
 - The International Energy Agency (IEA)’s estimates reflect the significance of the Paris Agreement and its implementation. While its pre-Paris business-as-usual scenario indicated warming of 3.5°C by 2100, it has estimated that progress since Paris has reduced expected business-as-usual warming by 2100 to 2.5°C based on current policies, and that various pledges to date would, if fully implemented, limit warming to 1.7°C by 2100.²
- However, as these numbers demonstrate, **collective progress is still not on track.**
 - There remains a **significant ambition gap**, i.e., existing commitments, goals, and pledges are not yet sufficient to limit warming to 1.5°C.
 - There is also a **significant implementation gap**, i.e., there is currently inadequate implementation of existing commitments, goals, and pledges.
 - Even where Parties have taken on Paris-aligned efforts -- and some have not even done that -- they have not consistently reflected such efforts in their NDCs. The most recent UNCCC Secretariat NDC synthesis report found that implementation of all submitted NDCs is estimated to lead to global GHG

¹ 19/CMA.1, paragraph 6(b).

² International Energy Agency, 2022. “World Energy Outlook 2022.” Available at: <https://www.iea.org/reports/world-energy-outlook-2022>.

emissions only 0.3% below 2019 levels in 2030. Thus, there is also a **significant practice gap**, in that some Parties are taking on Paris-aligned, stretch NDCs, while others are not.

- According to the IEA, **there are four key pillars of action needed to keep 1.5°C within reach**. These include:
 - putting the **global energy and industrial sectors on a pathway to net zero CO₂ emissions** by mid-century;
 - **reducing deforestation** to net zero by 2030 and significantly reducing other GHG emissions from land use;
 - **cutting non-CO₂ GHGs**, especially methane, nitrous oxide, and other short lived climate pollutants; and
 - scaling up the **innovation and deployment of carbon management technologies**.
- However, in each of those areas, **collective progress to date has been insufficient**.
 - **On the energy sector**, the IPCC found that projected cumulative future CO₂ emissions over the lifetime of existing and currently planned fossil fuel infrastructure, without additional abatement, exceed the total cumulative net CO₂ emissions in pathways that keep 1.5°C within reach.³
 - **On deforestation**, the annual rate of deforestation has declined over the last 30 years, but the world is still losing more than 4 million hectares annually, which is incompatible with achieving net zero deforestation by 2030.⁴
 - **On non-CO₂ GHGs**, methane emissions have continued to rise, increasing from 10.2 Gt CO₂-equivalent in 2015 to 10.8 Gt in 2021.⁵ N₂O and F-gas emissions have also continued to increase.⁶
 - **Carbon management technologies**: The IEA found that carbon management facilities operating today can capture roughly 45 Mt CO₂ per year, but by 2030 this number needs to increase to around 1.2 Gt CO₂ per year to keep 1.5C within reach.⁷

Recommendations to enhance action and support:

- **Urgent efforts are required by all actors, particularly by those Parties from which emissions reductions are necessary to keep 1.5°C alive**, to bridge the ambition, implementation, and practice gaps.
- There are **significant opportunities in all sectors and across all GHGs to take action** to place the world on a 1.5°C trajectory, but the action is needed in this critical decade of

³ IPCC AR6 WG3 SPM, Section B.7.

⁴ UNFAO Forest Resource Assessment.

⁵ The EDGAR Emissions Inventory is available via the IPCC Data Distribution Center at: <https://www.ipcc-data.org/ar6landing.html>

⁶ Ibid.

⁷ IEA, 2022. World Energy Outlook 2022. Chapter 3: An updated roadmap to Net Zero Emissions by 2050. Available at: <https://www.iea.org/reports/world-energy-outlook-2022>

the 2020s.

- **All actors will need to focus efforts** across the range of sources in order to limit the temperature increase to 1.5°C. In particular:
 - To put the **global energy and industrial sectors on a pathway to net zero CO₂ emissions** by mid-century:
 - Phasing down unabated fossil fuel generation steadily and rapidly. The IPCC suggests a pathway involving a reduction of unabated coal use by 75% from 2019 levels by 2030.⁸
 - Rapidly increasing the deployment of zero emissions energy sources. The IPCC suggests a global pathway involving over 1,000 GW of wind and solar installed per year by 2030 and a global total of around 15,000 GW of wind and solar in 2035.⁹ Nuclear, geothermal, hydro, and other clean energy sources must also see accelerated deployment. Also, as in 2022, we must continue the trend of annually deploying zero-carbon electricity sources to meet 90 percent of all new electricity demand.¹⁰
 - Improving across the board end use energy efficiency, including through electrification.¹¹
 - **To reduce deforestation** to net zero by 2030 and significantly reduce other GHG emissions from land use:
 - Addressing major drivers of deforestation and forest degradation in the tropics, including agricultural expansion and conversion of forest to cropland.¹²
 - Enhancing sequestration in the AFOLU sector, including by restoring degraded forests, and engaging in afforestation efforts.
 - **To cut non-CO₂ GHGs**, especially methane and other short lived climate pollutants:
 - Reducing methane at least 30% by 2030 and 40% by 2035,¹³ and developing associated national action plans.
 - Implementing the Kigali Amendment to the Montreal Protocol and national action plans to cut other F-gases.
 - Reducing N₂O emissions 13% from 2019 levels by 2030, and 17% by 2035, with further reductions by 2050.¹⁴

⁸ IPCC AR6 WG3 SPM Section C.3.2, Chapter 3 Section 3.5.

⁹ This data for pathways that limit warming to 1.5°C (>50%) with no or limited overshoot comes from the IPCC AR6 Scenarios database, available via the IPCC Data Distribution Center: <https://www.ipcc-data.org/ar6landing.html>.

¹⁰ IEA, CO₂ Emissions in 2022, [iea.org/reports/co2-emissions-in-2022](https://www.iea.org/reports/co2-emissions-in-2022).

¹¹ IPCC AR6 WG3 SPM, Section C.3.

¹² Ibid. B.5.3 {2.6.1.2, 4.1.5, 4.3.2, 4.5.3, 4.8.1.3, 4.8.3, 4.8.4} <https://www.ipcc.ch/srccl/chapter/summary-for-policy-makers/>

¹³ These numbers represent the lower end of the range for pathways in the IPCC AR6 Scenarios Database. This data for pathways that limit warming to 1.5°C (>50%) with no or limited overshoot comes from the IPCC AR6 Scenarios database, available via the IPCC Data Distribution Center: <https://www.ipcc-data.org/ar6landing.html>.

¹⁴ This data for pathways that limit warming to 1.5°C (>50%) with no or limited overshoot comes from the IPCC AR6 Scenarios database, available via the IPCC Data Distribution Center: <https://www.ipcc-data.org/ar6landing.html>.

- To scale up the **innovation and deployment of carbon management technologies**:
 - Investing in pilot projects and R&D efforts for CCUS and CDR and supporting efforts aimed at scale commercialization.
 - Increasing global carbon management capacity to capture 1.5 Gt CO₂ annually by 2035, with a particular focus on industrial sectors.¹⁵
- **Specific guidance for NDCs:**
 - Those Parties from whom emissions reductions are necessary to keep 1.5°C within reach should include all greenhouse gases, sectors, and categories in their NDCs and be aligned with keeping 1.5°C within reach. Specifically, according to the IPCC, the following global emissions reductions are required by 2035:
 - In order to have a greater than 50% chance of limiting warming to no more than 1.5°C, net greenhouse gas emissions need to fall to 59% below 2019 levels by 2035.¹⁶
 - Global net CO₂ emissions need to be reduced by 63% from 2019 levels by 2035.¹⁷
 - Global methane emissions need to be reduced by 41% from 2019 levels by 2035.¹⁸
 - Global N₂O emissions need to be reduced by 17% from 2019 levels by 2035.¹⁹
 - Global emissions of F-gases need to be reduced by 81% from 2019 levels by 2035.²⁰
- **Accelerate efforts to decarbonize aviation and maritime emissions:**
 - For the **aviation sector**, Parties and the private sector will need to substantially scale up low-carbon technologies and sustainable aviation fuels. Through 2035, global aviation fuel efficiency measured in fuel/RTK needs to improve by 1.42 to 1.60% per year.²¹
 - The **international shipping sector** – acting primarily, but not exclusively, through the IMO – should:
 - Reduce its total annual GHG emissions on a lifecycle basis by at least 37% by 2030 compared to a 2008 baseline;²²
 - Have at least 5% of the global deep-sea fleet measured by fuel

¹⁵ This data for pathways that limit warming to 1.5°C (>50%) with no or limited overshoot comes from the IPCC AR6 Scenarios database, available via the IPCC Data Distribution Center: <https://www.ipcc-data.org/ar6landing.html>.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

²¹ International Civil Aviation Organization, ICAO Committee on Aviation Environmental Protection: Report on the Feasibility of a Long-Term Aspirational Goal (LTAG) for International Civil Aviation CO₂ Emission Reductions (2022).

²² According to the Science Based Target Setting for the Maritime Transport Sector, total annual GHG emissions on a lifecycle basis should be reduced by 36% by 2030 compared to a 2020 baseline. This goal converted to a 2008 baseline turns to total annual GHG emissions reduction of at least 37% by 2030.

consumption to be made of ships capable of running on well-to-wake zero-emission fuels – such as green hydrogen, green ammonia, green methanol, and advanced biofuels.²³

- Phase out GHG emissions from international shipping to zero emissions no later than 2050.²⁴

Efforts related to response measures (*also see U.S. submission on views on efforts related to addressing the social and economic impacts of response measures for additional details²⁵):

- Since the Paris Agreement was adopted, Parties and non-Parties have taken **significant action to assess and address the positive and negative socioeconomic impacts of response measures** domestically and under the 6-year workplan of the response measures forum and its Katowice Committee of Experts on the Impacts of the Implementation of Response Measures (KCI).
 - For example, many regions and countries, including the United States, have established national just transition commissions or task forces and related national policies to support creation of green jobs and reskilling and retraining workers.
- **Just transition of the workforce and economic diversification and transformation, supported by strong domestic policies and investments, can help to facilitate the transition to a net-zero GHG economy, in line with Article 2.1(a) of the Paris Agreement**, and should be complementary policies to the implementation of response measures.
 - The response measures forum and its KCI have helped Parties build capacity to implement domestic just transition policies. The new work programme on just transition, established at COP27, should build on this work and further highlight ways in which Parties can simultaneously undertake response measures while supporting their impacted workers and communities.
- There are significantly more economic growth and job opportunities in pursuing a 1.5°C pathway than a BAU trajectory. Parties should therefore make efforts to maximize these opportunities by fostering domestic policy enabling conditions and maximizing such positive co-benefits from implementing response measures.
- Lack of implementation of response measures, especially by major emitters, and/or building new unabated fossil fuel infrastructure not only contributes to global GHG emissions, but also risks stranded assets and economic/job losses.

Adaptation:

- Article 7, paragraph 14 of the Paris Agreement identifies several issues for the GST to address. This section responds to and reflects these various issues throughout.

²³ Mission Innovation, "Zero Emission Shipping." Available at: <http://mission-innovation.net/missions/shipping/>.

²⁴ Declaration on Zero Emission Shipping by 2050.

²⁵ U.S. submission can be found here: www4.unfccc.int/sites/SubmissionsStaging/Documents/202303172317---USA_GST_RM_Submission.pdf

Collective progress towards achieving Article 2.1(b) and Article 7.1

- **There remains a planning and implementation gap in adaptation.** The impacts of the climate crisis are being felt all around the world and we know that we face unavoidable hazards even as we strive to keep a 1.5°C warming future alive.
 - Urgent, transformational adaptation action is needed, but as reflected in the AR6, IPCC Working Group II report, **progress has been incremental and somewhat fragmented**, reflecting a greater need for integrating adaptation across national and subnational development and sectoral policies, creating enabling conditions for implementing those policies, and managing longer-term risks as opposed to focusing only on short-term or current impacts.²⁶
- Despite this gap, Parties and other stakeholders have made **progress towards enhancing adaptive capacity, strengthening resilience, and reducing vulnerability since the adoption of the Paris Agreement.**
- This **progress has come through a variety of context-specific national and local level actions to increase resilience to a changing climate.** We have seen improvements to planning processes and enhancements of adaptation action, including through the development and implementation of national adaptation plans, adaptation communications, and other strategies by many Parties.
 - For example, according to the 2022 UNEP Adaptation Gap Report, at least **84 percent of Parties have established national adaptation plans, strategies, laws and policies, while 50 percent of Parties have two or more planning instruments in place.**²⁷ This same report also identifies that countries are making good progress toward improving the implementation of adaptation policies, including by: defining clear visions, goals and objectives to guide actions and to serve as the basis for assessing achievement of outcomes; clearly articulating trends in climate changes to strengthen the climate science basis of adaptation interventions; clearly prioritizing adaptation actions with indicative time frames; and building capacity and the partnerships needed to ensure effective implementation. The report also identified that 90 percent of adaptation laws and policies studied included gender and other disadvantaged group considerations.
 - Parties have utilized adaptation communications, adaptation components of NDCs, and NAPs to articulate greater adaptation ambition.²⁸ **This includes expanding consideration of additional sectors, integrating more stakeholders in planning processes, outlining actions that benefit from adaptation-mitigation synergies, and better aligning adaptation efforts with a national vision for climate resilience and development, as well as in the context of achieving sustainable development goals.**

²⁶ IPCC WGII AR6 Summary for Policy Makers, paragraph C.1.2

²⁷ The data and information cited can be found in the 2022 UN Environment Programme Adaptation Gap Report found here: <https://www.unep.org/resources/adaptation-gap-report-2022>.

²⁸ 2022 GST Synthesis Report on the state of adaptation efforts, experiences, and priorities, which can be found here: <https://unfccc.int/sites/default/files/resource/Synthesis%20report%20on%20the%20state%20of%20adaptation%20efforts%2C%20experiences%20and%20priorities.pdf>.

- At the time of this submission, 55 countries and the European Union have already prepared and submitted one adaptation communication.²⁹ **Adaptation communications have provided useful vehicles to accelerate adaptation action.** In the context of countries that have already submitted NAPs, adaptation communications have been useful to reflect on NAP implementation as well as monitoring, evaluating, and learning. In contexts where a country is still in the process of developing their NAP, adaptation communications have played a helpful role in allowing countries to still articulate their adaptation priorities in tandem with their NAP formulation process.
- By 2022, 76 developing countries had reported adaptation costs in their NDCs or NAPs, representing a significant increase from the round of initial-NDC submissions, when only 44 developing countries reported adaptation costs.³⁰ **This work has resulted in the development of good practices, like inter-ministerial collaboration between Ministries of Finance and other line ministries as well as climate budget tagging exercises that have shown to have positive benefits in the financing of adaptation.**
 - There has been progress made by developing countries in progressing their adaptation cost estimates further toward investment plans. These include prioritized interventions, which have programmatic modalities, institutional responsibilities, and implementation plans.³¹ In addition, more developing countries Parties are including disaster risk reduction (DRR) in their national adaptation planning processes, including by aligning their NAPs with international DRR planning. For example, as of 2020, 11 countries had integrated DRR into their NAPs while three countries in the Asia-Pacific region have completed Joint National Action Plans (JNAPs), which work to combine adaptation with disaster risk reduction.³²
- **Political momentum on adaptation is continuing to ramp up, with a large increase in multi-stakeholder initiatives** that bring Parties and others together to address adaptation priorities and support.
 - For example, at the 2019 UN Climate Action Summit, the Risk-Informed Early Action Partnership (REAP) was launched to drive a systemic shift towards acting earlier to reduce the impacts of disasters and continues to mobilize action. Last year, the UN Secretary General announced a call to provide early warning systems worldwide in the next five years through the “Early Warnings for All” initiative, which has helped galvanize political attention and financial flows toward the challenge. At COP27, the United States announced over \$45 million in support for efforts that contribute to this goal.

²⁹ This information is based on the Adaptation Communications Registry on the UNFCCC website, found here: <https://unfccc.int/ACR>.

³⁰ Detailed in the 2021 Adaptation Committee Report: How developing countries are addressing hazards, focusing on relevant lessons learned and good practices.

³¹ 2022 Adaptation Committee Report: [Efforts of developing countries in assessing and meeting the costs of adaptation: Lessons learned and good practices](#)

³² Detailed in the 2021 Adaptation Committee Report: [How developing countries are addressing hazards, focusing on relevant lessons learned and good practices](#).

- **Significant technical and political attention has advanced our review of progress made toward achieving the global goal on adaptation (GGA).** There have been improvements in the quality and quantity of methodologies assessing the adequacy and effectiveness of adaptation action and support.
 - In 2021, the Adaptation Committee released a technical paper³³ on approaches to reviewing the overall progress made in achieving the global goal on adaptation. This report helpfully identified various approaches for assessing collective progress on adaptation building on the best available literature.
 - One way to further improve our understanding of collective progress is through understanding countries efforts to identify, implement, and track adaptation actions in line with the enhanced transparency framework.
 - The Adaptation Committee, in collaboration with the Least Developed Countries Expert Group, Nairobi Work Programme partners, users and developers, launched a pilot inventory of methodologies that Parties are using to inform their adaptation planning efforts. **As of this submission, the pilot inventory includes 241 case studies, 145 tools for assessment, 11 technical reports, 3 educational training resources, and 2 online portals collecting specific sectoral information.**³⁴
 - The knowledge base in adaptation best practice illustrates that there is no one approach to measuring adaptation progress and, **for most countries, a suite of tools that includes quantitative and qualitative assessments will provide the best picture of adaptation progress.** The IPCC WGII report makes clear that the lack of comparability between methodologies for assessing adaptation risks, needs, and outcomes prevents easy comparisons of adaptation progress between different regions and spatial scales.³⁵
 - **It is also important to note that measuring progress against the GGA is not about progress to a fixed end-state of fully realized adaptation.** Rather, it is based on understanding and evaluating progress across stages of implementation and iteratively improving on previous efforts. It is clear that no fixed global scale for tracking collective progress exists.
 - An initial analysis of methodologies made it clear that no quantum of finance is inherently “effective” or “adequate” and therefore cannot be examined in isolation of effectiveness. A Joint Working Group is continuing to evaluate and communicate approaches to assessing the adequacy and effectiveness of adaptation and support using bottom-up and top-down approaches.³⁶

³³ The technical paper produced by the Adaptation Committee in 2021 on Approaches to reviewing the overall progress made in achieving the global goal on adaptation can be found here: <https://unfccc.int/documents/273844>.

³⁴ The registry can be found here: <https://www4.unfccc.int/sites/NWPStaging/Pages/SearchAsses.aspx>.

³⁵ Cross-Chapter Box PROGRESS: Approaches and Challenges to Assess Adaptation Progress at the Global Level. In: Intergovernmental Panel on Climate Change (IPCC) (2022). *Climate Change 2022. Impacts, Adaptation and Vulnerability. Working Group II contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, pp. 17-96 – 17-99.

³⁶ From the Adaptation Committee’s report, “Methodologies for reviewing the adequacy and effectiveness of adaptation and support,” found here: <https://unfccc.int/documents/302837> and at the Adaptation Knowledge Portal here: <https://www4.unfccc.int/sites/NWPStaging/Pages/SearchAsses.aspx>

Recommendations to enhance action and support:

- As a general matter, the **GST's recommendations should comprehensively address a variety of contexts and systems, consistent with the GGA framework currently under development**, particularly through consideration of examples of national and local progress within each stage of the adaptation planning cycle. In addition, there are a number of concrete ways for Parties to strengthen the effectiveness of adaptation action, in turn contributing to progress towards the GGA. A few recommendations are listed below.
 - **Deepen global understanding of climate risks, vulnerabilities, and adaptation solutions.** One-third of the world – including 60 percent of people in Africa – do not currently have access to or the ability to use climate information services to make informed decisions about how to address the risks posed by a changing climate.³⁷ Having better quality observations, monitoring, and forecasting systems will help support the development of decision-support tools for decision makers and facilitate longer term planning in key development sectors. Equipping the next generation of practitioners to understand and plan for climate risks will be a crucial workforce development strategy to support comprehensive, longer term adaptation action.
 - **Mainstream adaptation into policies, plans, budgets, and strategies across multiple sectors.** NAPs, adaptation communications, and adaptation components of NDCs provide a helpful basis for articulating adaptation priorities and needs, implementation actions, and evaluation of progress. Only 40 countries have submitted NAPs, while many more have developed adaptation strategies or policies.³⁸ Formulating and implementing NAPs provides countries with a way to integrate adaptation into national and subnational planning and development efforts and provides for better alignment of local adaptation actions with national priorities. Moreover, local communities are often on the frontlines of climate impacts, and integrating locally-led approaches to adaptation planning and implementation can help bring context-specific and inclusive solutions forward. This includes integrating climate risk and impacts into the design of different systems, such as:
 - **Infrastructure:** Sustainably and inclusively planning, designing, implementing, and operating climate resilient infrastructure recognizing that climate change will stress infrastructure in new ways so efforts will be needed to adapt current and future infrastructure to projected climate conditions, as well as assess the need for new infrastructure to adapt to climate impacts.
 - **Water:** Rapidly improving water storage capacity, efficiency, and quality through improved management and nature-based solutions as well as

³⁷ More information on early warning coverage can be found in the 2022 joint report from the World Meteorological Organization and UN Office for Disaster Risk Reduction, found here: <https://www.undrr.org/quick/74257>.

³⁸ National Adaptation Plans submitted to the UNFCCC can be found in NAP Central, here: <https://napcentral.org/submitted-naps>.

enhancing the climate resilience of water, sanitation and hygiene services.

- **Health:** Planning for and responding to the impacts of climate change on health systems as well as enhancing the resilience of key health and health care delivery services recognizing that climate change threatens access to and delivery of health care and increases the potential for novel threats to emerge.
 - **Food:** Building more climate-resilient food systems by improving food system productivity, output, diversity, and nutrition through climate-smart approaches and advancing responsive adaptation policies and measures in agriculture, livestock, aquaculture, and fisheries management.
 - **Nature-based solutions:** Targets 8 and 11 of the recently adopted Global Biodiversity Framework³⁹ acknowledge the linkages between conserving nature and building resilience to the impacts of climate change. Parties should take a holistic approach to adaptation planning that includes both the potential impacts of adaptation actions to nature as well as the potential benefits of restoring and conserving nature for adaptation.
- **Screen for and minimize maladaptation.** As indicated in the AR6, IPCC WGII report, there is increasing evidence of maladaptation across many sectors and regions which can create lock-ins of vulnerability, exposure and risks that are difficult to address and exacerbate existing inequalities. Proactively screening for maladaptation will help prevent some of these issues. This can include:
 - Considering whether a project contributes to negative climate-related outcomes or reduces communities' ability to respond to impacts.
 - Holistically considering short term benefits or losses against longer-term benefits or losses.
 - Considering whether interventions that benefit some groups inadvertently harm or leave out other groups, particularly historically disadvantaged groups.
 - **Translate adaptation policies and plans into investible projects.** Countries have made progress in articulating adaptation policies and priorities, but more focus is needed on translating these policies and priorities into investment plans that produce bankable projects. Improving the bankability of adaptation projects will also crowd in global, regional, and local sources of private finance which can play a complementary and significant role in mobilizing resources for adaptation.
 - **Communicate and learn from adaptation progress.** One concrete outcome of the first GST could be to encourage countries to submit or update their voluntary adaptation communications by 2025 and update them regularly thereafter. This will allow for improving the assessment of progress on adaptation between the first and second GST and beyond.
 - **Climate resilient development:** As defined by the IPCC AR6 WGII, climate resilient development combines strategies to adapt to climate change with actions to reduce

³⁹ The Kunming-Montreal Global Biodiversity Framework can be found: <https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf>.

greenhouse gas emissions to support sustainable development for everyone.⁴⁰ As countries focus on meeting the Sustainable Development Goals by 2030, integrating climate resilient development into these efforts can result in lasting reductions in poverty and hunger, improvements to health and livelihoods, more people with clean energy and water, and strengthened safeguards for ecosystems.

Efforts related to loss and damage:

- Countries and communities in every region of the world are already experiencing loss and damage. With every increment of additional warming, loss and damage will increase. Urgent action is required to avoid these impacts.
- Since the Paris Agreement was adopted, there have been **significant advancements in international cooperation** to avert, minimize, and address loss and damage in developing countries that are particularly vulnerable to the adverse effects of climate change.
- Within the UNFCCC, the **Warsaw International Mechanism (WIM) has made progress on all three of its functions**. The Executive Committee and its expert groups, which include a broad range of organizations, networks, and experts, have served as a useful venue for enhancing knowledge, strengthening coordination, and enhancing action in addition to producing helpful technical products.
 - In 2018, the Task Force on Displacement produced a set of recommendations on integrated approaches to averting, minimizing and addressing displacement related to the adverse impacts of climate change, which were adopted at COP24. The new Plan of Action for the task force focuses on activities to assist with the implementation of the recommendations and maximizing synergies among relevant stakeholders and processes.
 - As a contribution to the Plan of Action of the Technical Expert Group on Comprehensive Risk Management, the UN Office for Disaster Risk Reduction (UNDRR) developed the *“Technical guidance on comprehensive risk assessment and planning in the context of climate change”*. The technical guide is intended to help disaster risk reduction and climate change adaptation decision-makers, take a comprehensive risk management approach and UNDRR is providing technical support to fifteen countries to implement this approach.
- The **Santiago Network was established to catalyze demand-driven technical assistance** for the implementation of relevant approaches to avert, minimize, and address loss and damage at the local, national, and regional level in developing countries that are particularly vulnerable to the adverse effects of climate change.
- At CMA4, Parties decided to **establish new funding arrangements for loss and damage, including a fund focused on the most vulnerable developing countries**. The decision also recognizes that the global response to loss and damage requires a mosaic approach, engaging a wide range of actors, and identifying and expanding sources of support.

⁴⁰ IPCC WGII of AR6, Summary for Policy Makers Section D.

- The advancements within the UNFCCC have catalyzed action and international cooperation outside of the UNFCCC on areas outlined in Article 8.4 of the Paris Agreement, for example:
 - Early warning systems: Early warning systems save lives and save money. The number of lives lost decreased almost three-fold in the past 50 years because of implementation of early warning systems. The Sendai Framework recognizes the significant benefits of early warning systems by incorporating them into one of its seven global targets. As noted above, the UN Secretary General’s “Early Warning for All” initiative, is further galvanizing international cooperation to close remaining gaps. For example, the recently launched Systematic Observations Financing Facility (SOFF) supports countries to generate and exchange basic surface-based observational data critical for improved early warning systems and climate services.
 - Emergency preparedness: The Food and Agriculture Organization estimates that every dollar they invest in anticipatory action could give families seven dollars in benefits and avoided losses. The number of pilot initiatives delivering support to vulnerable communities before disasters strike have grown in number and size. The United Nation’s Office for the Coordination of Humanitarian Affairs has facilitated the development of eleven anticipatory action pilots. REAP, another innovative initiative, aims to make 1 billion people safer from disasters by 2025. To achieve these goals, REAP brings together the climate, humanitarian and development communities. We know that we need stronger and more consistent coordination, collaboration and partnership among these different stakeholders.
 - Risk insurance facilities, climate risk pooling and other insurance solutions: Insurance solutions can help bolster early action in the face of a disaster and speed up recovery; in doing so, they protect against loss and damage. The insurance solutions available and the coverage of insurance has increased. Since the Caribbean Catastrophe Risk Insurance Facility (CCRIF) was established fifteen years ago, three more sovereign catastrophe risk pools have been created (the Pacific Catastrophe Risk Insurance Company (PCRIC); the African Risk Capacity (ARC); and the newly established Southeast Asia Disaster Risk Insurance Facility (SEADRIF). Together, the regional risk pools protect about 40 low- and middle-income countries and total insurance coverage has reached \$1.2 billion. Since inception, these pools have been innovating to better respond to the needs of their members. In addition, global initiatives have increased the access to insurance in developing countries. The World Bank’s Global Facility for Disaster Reduction and Recovery is developing insurance solutions and providing finance to help vulnerable countries proactively manage disaster risks. The InsuResilience Global Partnership, aims to stimulate the creation of effective climate risk insurance markets and has expanded coverage to 150 million people across more than 100 countries. The Global Shield against Climate Risks builds on this experience. The Global Shield shall integrate the existing activities and make them more readily accessible, while mobilizing additional finance at the same time.

- These initiatives represent significant advancements, but gaps remain, particularly reaching the most vulnerable communities. Additional efforts to close these gaps could significantly help households, communities, and countries manage the adverse impacts of climate change.
- In addition to these multilateral initiatives and processes, it is important to recognize national efforts to respond to loss and damage, such as establishing national loss and damage frameworks, integrated disaster risk management and adaptation plans, and mechanisms to channel funding to the local level to support activities relevant to averting, minimizing, and addressing loss and damage.
- Finally, while not all loss and damage can be avoided through mitigation and adaptation, urgent mitigation action is crucial to avoiding loss and damage.

Means of implementation and support:

Collective progress towards achieving Article 2.1(c):

- While Article 2.1(a) and 2.1(b) articulate the long-term goals of the Paris Agreement for mitigation and adaptation, **Article 2.1(c) – making financial flows consistent with a pathway toward low greenhouse gas emissions and climate-resilient development – represents the means of implementation for achieving these goals.** Achieving Article 2.1(c) will require a whole-of-economy approach, including enhanced efforts from all countries and the full engagement of the public and private sector.
- There are three central aspects to achieving Article 2.1(c):
 - first, **creating the demand for climate-smart investments**, primarily through policies and measures;
 - second, **increasing the supply** of finance by mobilizing capital from all sources, public and private, international and domestic; and
 - third, **managing climate-related financial risks** across investment portfolios and assets.
- **Creating the demand for climate-smart investments:**
 - Parties have developed and submitted NDCs, NAPs, and other relevant national climate plans and strategies, which provide clear signals to firms and investors about their climate priorities. However, these plans and strategies vary widely in their levels of ambition, specificity, and implementation.
 - Policies and measures specifically related to green finance have continued to increase but remain unevenly distributed.
 - According to the Green Finance Platform,⁴¹ in 2021, there was a 16% increase in the number of policy and regulatory measures for green finance, bringing the total to 648 measures registered in over 100 jurisdictions globally. Of these measures, 37% originate from developing and emerging economies and 63% from developed countries.
 - Beyond climate- and green finance-specific policies and measures, efforts to develop legal systems that promote contract enforceability, good governance

⁴¹ Green Finance Platform (2023). “Green Finance Measures Database.” Available at <https://www.greenfinanceplatform.org/financial-measures/browse>

practices, the implementation of strong fiscal policies, and support for robust and accountable institutions continue but remain insufficient to improve general investment climates.

- Overall, **significantly more work is required to develop and implement policies and measures to incentivize investments in climate action globally.**
- **Increasing the supply of finance:**
 - According to the IPCC,⁴² there is sufficient global capital and liquidity to close global investment gaps, given the size of the global financial system, but there are barriers to redirect capital to climate action both within and outside the global financial sector. According to the Standing Committee on Finance⁴³, climate finance flows, while increasing, remain relatively small when viewed in the context of other finance flows, investment opportunities, and costs. In this regard, **it is essential to focus efforts on shifting financial flows toward the goals of the Paris Agreement, including scaling-up investments in climate- aligned activities and scaling-down investments in activities which actively detract from our achievement of these goals.**
 - On scaling-up, efforts have dramatically increased in the private sector to shift financial flows toward consistency with the goals of the Paris Agreement. However, significant work remains to capitalize on the high private sector interest and channel finance flows toward needed investments on the ground.
 - The Climate Bonds Initiative⁴⁴ reported the issuance of over half a trillion (USD 522 billion) green bonds in 2021, a 75% increase from 2020.
 - The Glasgow Financial Alliance for Net Zero (GFANZ)⁴⁵ now includes over 450 financial firms from 45 countries with more than USD 130 trillion in assets.
 - Over 2,000 investors reported data in 2020 against the UN Principles for Responsible Investment: Climate Snapshot,⁴⁶ representing over USD 97 trillion in assets, a 350% increase from 2019.
 - Tracked climate finance flows have continued to increase globally, though significant opportunities exist for them to grow further, particularly in emerging markets and developing economies.
 - The Fifth Biennial Assessment of Climate Finance Flows⁴⁷ found that global climate finance flows have grown 12% in the 2019-2020 period to an average of USD 802 billion per year.
 - On scaling-down, investment activities which run directly counter to the goals of the Paris Agreement remain concerningly high but are showing signs of decreasing. According to the Standing Committee on Finance⁴⁸:
 - In 2019-2020, investments in unabated fossil fuels were USD 892 billion,

⁴² IPCC (2022). Climate Change 2022: Mitigation of Climate Change. E.5.2.

⁴³ Standing Committee on Finance (2022). Fifth Biennial Assessment of Climate Finance Flows. Paragraph 333.

⁴⁴ Climate Bonds Initiative (2023). "Market Data." Available at: <https://www.climatebonds.net/market/data/>

⁴⁵ Glasgow Financial Alliance for Net Zero (2023). "About." Available at: <https://www.gfanzero.com/about/>

⁴⁶ UN PRI (2020). "Climate Change Snapshot 2020." Available at: <https://www.unpri.org/climate-change/climate-change-snapshot-2020/6080.article>

⁴⁷ Standing Committee on Finance (2022). Fifth Biennial Assessment of Climate Finance Flows. Paragraph 333.

⁴⁸ Standing Committee on Finance (2022). Fifth Biennial Assessment of Climate Finance Flows. Figure 5.

- a 13% decrease from 2017-2018.
 - In 2019-2020, fossil fuel subsidies were USD 450 billion, a 23% decrease from 2017-2018.
- **Climate-related financial risks:**
 - There is a high degree of interest from governments, financial institutions, and firms in the identification and reporting of climate-related financial risks.
 - The Task Force on Climate Related Financial Disclosure (TCFD)⁴⁹ now has over 2,600 supporters with a combined market capitalization of USD 25 trillion and financial institution assets under management of USD 194 trillion.
 - Of these, over 50% of public company TCFD supporters made climate-related financial disclosures, 13% reported on the resilience of their strategies under different climate scenarios, and 20% disclosed the financial impacts of identified risks.
- **Overall, substantial progress has been made toward the collective implementation of Article 2.1(c) of the Paris Agreement, though it has been uneven across sectors, regions, and actors.** The Paris Agreement played a critical part in spurring many of these efforts, but significant opportunities remain to accelerate and enhance them.

Recommendations for enhanced action and support:

- **Parties should continue to take steps to create the demand for Paris-aligned investments, most importantly by developing and implementing NDCs that are aligned with Article 2.1(a) of the Paris Agreement.** Ambitious NDCs send clear signals to the private sector about the direction and scale of climate action in a given context, providing needed confidence to the market. Further, ambitious NDCs also serve as the foundation for more detailed policies and measures which aim to incentivize climate action domestically.
- **Parties and non-Party stakeholders should collectively enhance existing efforts to improve the supply of financing for climate action, including scaling-up investments in areas that support the Paris Agreement’s goals, and scaling-down investments in those which actively counteract them.** The private sector has already taken significant steps in this regard and must continue to do so, while public sector actors can continue to facilitate those efforts, including through de-risking and blended finance approaches to channel investments where it is most needed.
 - It is also essential to continue to develop robust pipelines of bankable activities, creating clear opportunities for the growing pool of interested investors to engage in.
 - Lastly, there is a need to continue to enhance transparency measures around these efforts, working to assure that investment opportunities labeled as having positive climate impacts are indeed effectively contributing to achieving the goals of the Paris Agreement.
- **Parties and non-Party stakeholders should continue to improve the disclosure of**

⁴⁹ Standing Committee on Finance (2022). Fifth Biennial Assessment of Climate Finance Flows. Table 2.11.

climate-related financial risks, including by encouraging more organizations to disclose, and further developing the tools and methodologies needed for firms to effectively implement the TCFD’s recommendations.

- Finally, **there is a need for a consistent, dedicated space in the Paris Agreement architecture for Parties to discuss their respective efforts related to the achievement of Article 2.1(c).** While the Standing Committee on Finance has produced a number of standalone products,⁵⁰ there has been little opportunity for Parties to engage with them, share experiences, and decide on steps which would further enhance action. The Sharm el-Sheikh Dialogues established at COP27 are an important step in this regard, but Parties should consider how to create the most appropriate institutional architecture to facilitate enhanced action on Article 2.1(c) going forward.

Collective progress on the mobilization and provision of support: finance

- Continuing to mobilize and provide support for developing countries is another essential aspect of the Paris Agreement. **Developed countries remain fully committed to the goal of jointly mobilizing USD 100 billion through to address the needs of developing countries, through to 2025, in the context of meaningful mitigation actions and transparency on implementation.** The \$100 billion goal has played an important role in inspiring Parties to the Paris Agreement to mobilize resources and support the efforts of developing countries to take ambitious mitigation action and build climate resilience.
- Though official data first available in 2022 shows that contributors did not fully achieve the USD 100 billion goal in 2020, developed countries remain fully committed to the goal. In 2021, the Climate Finance Delivery Plan: Meeting the USD 100 Billion Goal⁵¹ outlined the expectation that **developed countries will make significant progress toward the USD 100 billion goal in 2022 and expressed confidence that it would be met in 2023.** This has been reaffirmed by the Climate Finance Delivery Plan Progress Report,⁵² published in 2022.
- In 2022, the SCF published the Report on progress toward achieving the goal of mobilizing jointly USD 100 billion per year to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation.⁵³ This critical report found that:
 - It is essential to consider all three dimensions of the USD 100 billion goal (i.e., mobilizing jointly USD 100 billion per year by 2020 and through to 2025; addressing the needs of developing countries; and the context of meaningful

⁵⁰ Standing Committee on Finance (2022). Synthesis of Views Regarding Ways to Implement Article 2.1(c) of the Paris Agreement; Standing Committee on Finance (2022). Mapping of Available Information Relevant to Article 2.1(c) of the Paris Agreement, including its Reference to Article 9 Thereof.

⁵¹ COP26 Presidency (2021). Climate Finance Delivery Plan: Meeting the USD 100 Billion Goal. <https://ukcop26.org/wp-content/uploads/2021/10/Climate-Finance-Delivery-Plan-1.pdf>

⁵² Government of Canada (2022). Climate Finance Delivery Plan: Progress Report. <https://www.canada.ca/en/services/environment/weather/climatechange/canada-international-action/climate-finance/delivery-plan/progress-report-2022.html>

⁵³ Standing Committee on Finance (2022). Report on progress toward achieving the goal of mobilizing jointly USD 100 billion per year to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation.

mitigation actions and transparency on implementation). While there has been significant focus on the first dimension, there has been remarkably less on dimensions two and three.

- **Climate finance has continued to steadily increase from 2013 to 2020, reaching USD 83.3 billion in 2020** according to the OECD, including an increase of 42% since 2016. Of this support, the proportion for adaptation has also continued to increase, reaching 34% in 2020, in addition to 7% of activities which supported both mitigation and adaptation objectives. In absolute terms, this has significantly exceeded projections of adaptation finance made in the 2016 Climate Finance Roadmap.
- While the USD 100 billion goal was never intended to meet the totality of developing countries' needs, **the sectoral, thematic, and geographic distribution of needs expressed by developing countries is well-aligned with the distribution of climate finance provided and mobilized through 2020.**
- Regarding transparency on implementation, the submission of biennial update reports (BUR) of developed country Parties has been increasing, though only 51% of parties had submitted at least one BUR at the time of the report and only two Parties had submitted all four as of 2020. **Many countries, including those with substantial capacity for reporting, have not submitted timely BURs, which are the foundation of transparency in the UNFCCC and the Paris Agreement.**
- Critically, climate finance is a means to an end. While the financial value of investments in climate action is a useful indicator of progress, **the true test of climate finance is its ability to effectively reduce greenhouse gas emissions and build climate resilience**, supporting the achievement of the long-term goals of the Paris Agreement. Unfortunately, according to the Fifth Biennial Assessment of Climate Finance Flows, **there is little high-quality evidence on climate finance effectiveness** and challenges remain to track results and measure impacts.⁵⁴ This information is essential for providers to have clear evidence that their investments are leading to results, improving confidence for future work, and for recipients to increase learning and drive the selection of interventions which are most impactful.
- While reporting on actual results remains difficult, many multilateral climate funds have reported on the expected results of their investments at the portfolio level, including:
 - **The Adaptation Fund** across 121 projects reducing the vulnerability of over 31 million beneficiaries, introducing 414 early warning systems, and protecting over 160 thousand meters of coastline.
 - **The Least Developed Countries Fund** across 288 projects reducing the vulnerability of over 52 million beneficiaries and introducing over 3000 policies that mainstream climate resilience.
 - **The Green Climate Fund** across 152 projects reaching 588 million beneficiaries and mitigating 1980 Mt of CO₂-equivalent.
 - **The Clean Technology Fund** across 104 projects mitigating nearly 70 Mt of CO₂-

⁵⁴ Standing Committee on Finance (2022). Fifth Biennial Assessment of Climate Finance Flows. Paragraph 300.

equivalent per year, installing over 26 GW of solar electricity generation capacity, and providing over 2.1 million passengers per day with low-carbon public transportation.

Recommendations for enhanced action and support:

- **All countries should continue to step-up efforts to enable the full delivery on the USD 100 billion goal as soon as possible across all three of its dimensions.**
 - For contributors, this includes through efforts to scale up public finance, redoubling efforts to mobilize private finance, engaging new climate finance contributors, and continuing to explore innovative sources of finance.
 - For recipients, this includes continuing to improve the demand for climate finance, developing relevant capacities, strengthening domestic enabling environments, including through policies and measures, and developing robust pipelines of bankable projects, and submitting timely biennial reports.
- **Efforts must continue to better align the needs expressed by developing countries with finance provided and mobilized.** In particular, more work needs to be done to increase both the quantity and accessibility of adaptation finance, especially for the poorest and most vulnerable countries and communities. Relatedly, there is a need to continue to improve methodologies for and transparency of needs assessments.
- **There is a clear need to improve reporting related to meaningful mitigation actions and transparency on implementation,** including exploring the relationships between ambitious NDCs and enhanced domestic climate action with the finance mobilized, and, how finance mobilized translates into impactful outcomes on the ground.
- **We must continue to shift focus toward the effectiveness of climate finance,** improving our understanding of how investments translate to tangible outcomes and contribute to achieving the goals of the Paris Agreement. This will continue to increase confidence for both contributors and recipients, thereby enhancing access and supporting future efforts to direct climate finance toward the most impactful activities and effectively support the most vulnerable communities.

Collective progress on the mobilization and provision of support: capacity-building

- Capacity-building is critical to long-term durable, independent, and rapid climate action and sustainable development.
- Successful capacity-building work is inclusive. It operates with strong multi-stakeholder engagement (a broad range of Party and non-Party stakeholders, including academia, civil society, indigenous peoples, youth, and the private sector) and at all levels (national and subnational levels).
- Successful capacity-building is locally- and nationally-owned, and ultimately can be maintained and enhanced independent from international support.
- Successful capacity-building has direct finance benefits (e.g., through building capacity for more resource-efficient approaches to climate action, the climate action itself saves costs and is more durable), in addition to creating a positive feedback loop of additional and sustained mitigation and adaptation action.

- The Paris Committee on Capacity-building (PCCB) has taken a number of steps to enhance coherence and coordination of capacity-building under the Paris Agreement. The PCCB Network can continue to strengthen its knowledge platform and peer-to-peer support.

Collective progress on the mobilization and provision of support: technology development and transfer

- The development and transfer of technology supports the achievement of the goals of the Paris Agreement.
- Article 10 of the Paris Agreement and the Technology Framework provide a framework for cooperative action on technology, “a 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.”
- The Technology Mechanism, comprising the Technology Executive Committee (TEC) and the Climate Technology Center & Network (CTCN), is the principal vehicle through which Parties can strengthen cooperative action on technology development and transfer policy guidance and implementation.
- The Joint Work Program of the UNFCCC Technology Mechanism for 2023-2027 provides a constructive structure through which Parties and stakeholders can make meaningful progress through cooperation on technology development and transfer.
- Effective action on technology requires targeted support by international financial mechanisms, development assistance, and public policy that aligns private sector investment with climate objectives.
- Strengthening domestic and local enabling environments to foster trade and investment in technology development and transfer that is voluntary and on mutually agreed terms is central to effective international cooperation.
- The IPCC and the Technology Mechanism have emphasized that promoting innovation, including national systems of innovation in developing countries, is critical to drive the most impactful technologies and to lower costs for the deployment of climate technologies.
- The IPCC and the Technology Mechanism have also identified digitalization as a general-purpose technology that offers potentially transformative effects, which policy makers should promote to accelerate progress toward climate and sustainable development objectives.

Additional considerations:

- *Consideration of equity and best available science:* As decided in 19/CMA.1, equity and best available science will be considered in a Party-driven and cross-cutting manner throughout the GST.
 - **Equity** is already reflected throughout the articles of the Paris Agreement and is germane to the entire global stocktake.
 - In particular, efforts to keep 1.5°C within reach are essential for

- minimizing adverse impacts – especially in relation to poor and vulnerable populations – which is core to equity.
- In this regard it is imperative that all Parties whose emissions matter most for the achievement of the Paris Agreement temperature goal have NDCs that genuinely reflect efforts to limit global average temperature to below 1.5°C.
 - Such Parties that have not substantially revised their NDCs upward since 2015 to take advantage of the considerable real-world evolution in cost and availability of zero emissions technologies will need to do so in order to achieve an outcome that is both ambitious and equitable.
 - Additionally, it will be essential that all Parties, in particular those whose emissions matter to keeping 1.5C within reach, will act in a manner that is as ambitious as they can.
 - And the most capable Parties, including the United States and other Parties with considerable capability, should support the overall global effort through various actions, including support for developing countries. The scope of countries that are capable of such support has evolved considerably since 2015, and the stocktake should reflect their responsibility in the decade of the 2020s and beyond.
- Utilizing the **best available climate change science** is essential to improve our collective understanding of the pathways to achieve the Paris Agreement temperature goal, impacts of climate inaction, and the opportunities available for both mitigation and adaptation.
 - In particular, Parties must make efforts to broaden the availability, accessibility and useability of climate information to equip decision makers with the skills and knowledge to understand, anticipate and prepare for climate impacts. This information is critical to ensure that Parties’ actions reflect the latest climate change science.
 - There are also important topics where further research is needed, including tipping points and understanding ecosystem thresholds, including the potential for nature-based solutions.
 - *International cooperation*: As noted in 19/CMA.1, paragraph 14, the outputs of the GST should inform opportunities for “enhancing international cooperation for climate action.”
 - International cooperation is essential to achieve the goals of the Paris Agreement, as highlighted throughout the key messages above.
 - As noted in IPCC AR6 Working Group III report, international cooperation is a critical enabler for achieving ambitious climate action and encouraging development and implementation of climate policies, but gaps remain.⁵⁵ In particular, there are opportunities for more effective and inclusive engagement of multiple actors across

⁵⁵ IPCC, 2022: Summary for Policymakers. In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA

sectors and levels of governance. Building coalitions and partnerships is a central tenet of climate action. This includes focusing on inclusive engagement of civil society, Indigenous Peoples and local communities, and the private sector to spur innovation and ambition.

- The IPCC AR6 Working Group III report also found that the Paris Agreement reshaped international cooperation and is helping to catalyze non-state and sub- and transnational actions at multiple levels and across sectors by sending strong signals to these various actors to create the political, economic, and social enabling conditions for ambitious climate action.⁵⁶

⁵⁶ Patt, A., L. Rajamani, P. Bhandari, A. Ivanova Boncheva, A. Caparrós, K. Djemouai, I. Kubota, J. Peel, A.P. Sari, D.F. Sprinz, J. Wettestad, 2022: International cooperation. In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK and New York, NY, USA.