



Rolling workplan of the Technology Executive Committee for 2023–2027¹

1. The Technology Executive Committee (TEC) is the policy arm of the Technology Mechanism established in 2010 by the COP at COP16 in Cancun, to enhance action on technology development and transfer in support of action on mitigation and adaptation. At this COP, Parties decided on the functions of the TEC, the mandate to further implement the technology transfer framework established under the Convention,² the consideration of priority areas, and the promotion of coherence and synergies within the Technology Mechanism.³

2. At COP17, Parties further decided on six key elements of the TEC's modalities, namely analysis and synthesis: policy recommendations; facilitation and catalysing; linkage with other institutional arrangements; engagement of stakeholders; and information and knowledge-sharing.⁴ Parties also stressed the importance of the TEC's engagement with a broad range of stakeholders, which would allow the TEC to mobilise a wider range of expertise and resources.⁵

3. Article 10 of the Paris Agreement mandates the Technology Mechanism to serve the Paris Agreement. At CMA 1 in 2018 in Katowice, Parties gave further guidance to the TEC and the CTCN in the form of a technology framework established under Article 10.4 of the Paris Agreement, and elaborated on the scope and modalities for the periodic assessment of the Technology Mechanism.⁶ The technology framework outlines actions to be undertaken by the TEC and the CTCN to promote and facilitate enhanced action on technology development and transfer to support the implementation of the Paris Agreement across five key themes: Innovation; Implementation; Enabling environment and capacity-building; Collaboration and stakeholder engagement; and Support. The Glasgow Climate Pact adopted by COP26 gave the following guidance to the Technology Mechanism:

35. Welcomes the joint annual reports of the Technology Executive Committee and the Climate Technology Centre and Network for 2020 and 2021 and invites the two bodies to strengthen their collaboration;

36. Emphasizes the importance of strengthening cooperative action on technology development and transfer for the implementation of mitigation and adaptation action, including accelerating, encouraging and enabling innovation, and the importance of predictable, sustainable and adequate funding from diverse sources for the Technology Mechanism;

4. Decision 9/CP.26, paragraph 2, called for increased collaboration between the TEC and CTCN, including, *inter alia*, consideration of a joint programme:

Welcomes the continuing collaboration of the Technology Executive Committee and the Climate Technology Centre and Network and invites them to strengthen their collaboration and the provision of feedback between them with a view to ensuring coherence and synergy and effective implementation of the mandates of the Technology Mechanism, inter alia by exploring the preparation of a joint programme;

A. Guiding principles

5. The new TEC workplan was developed with the guidance of the following considerations and principles:

¹ Updated to incorporate TEC decisions from TEC27 (September 2023).

² Framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention adopted by decision 4/CP.7 and enhanced by decision 3/CP.13.

³ Decision 1/CP.16, paragraphs 121, 119, 120, 127.

⁴ Decision 4/CP.17, paragraph 4.

⁵ Decision 4/CP.17, paragraph 5.

⁶ Decision 15/CMA.1, decision 16/CMA.1.

a) Be responsive to Parties' guidance: The Technology Mechanism works under the guidance of Parties under the Convention and the Paris Agreement, therefore the TEC will work to ensure that efficiency and effectiveness are achieved by avoiding duplication of activities, whilst still being responsive to the specific guidance of each governing body;

b) Be aligned with the mandates and functions of the TEC: The TEC undertakes its work based on the mandates and functions assigned to it through decision 1/CP.16 paragraphs 119-122. It strives to create opportunities to collaborate with the CTCN to enhance the coherence and synergy of the Technology Mechanism. In performing its functions, the TEC will endeavour to build on its previous work, ensure clarity, and maintain the coherence of its activities in order to maximise the impacts of its work;

c) Embed components of the technology framework in the activities of the TEC: To enhance cohesiveness and reduce the fragmentation in the implementation of the technology framework, the new workplan will embed, to the extent possible, the guidance provided by Parties under the five key themes of the framework, namely Innovation; Implementation; Enabling environment and capacity-building; Collaboration and stakeholder engagement; and Support. The TEC will also take into consideration the principles of the technology framework on coherence, inclusiveness, results-oriented approach, transformational approach, and transparency to guide the work of the TEC;

d) Be informed by science and be transformative: The TEC's work will be guided by and take into consideration the findings of IPCC reports, including contributions from Working Group II and Working Group III to the Sixth Assessment Report (. Specifically, the TEC looked into the WG III report, which contains a specific chapter on Innovation and Technology Development and Transfer. By considering these findings, The TEC will strive to pursue actions that are most likely to have transformational and long-lasting impacts. Key insights from the IPCC Sixth Assessment Report that inform the TEC's new workplan are the following:⁷

(i) Substantial unit cost reductions in several granular technologies: some options are increasingly technically viable, rapidly becoming cost-effective, and have relatively high public support; many options face institutional barriers; adoption of low emission technologies is slower in most developing countries, particularly in the least developed countries;

(ii) Technology can be an enabler to accelerated action on mitigation and is a key dimension to the potential feasibility of climate responses and adaptation options;

(iii) Technology development is not linear. A systemic perspective on technological change can provide insights for policymakers supporting their selection of effective innovation policy instruments. This systemic view of innovation considers the role of actors, institutions, and their interactions and can shed light on how innovation systems, that vary across technologies, sectors and countries, can be strengthened. It can also play a role in clarifying the synergy and trade-offs between technological innovation and the Sustainable Development Goals (SDGs);

(iv) The speed of technological change can be explained by the key drivers of innovation: R&D, learning-by-doing and spill-over effects. In addition, new innovations are sometimes enabled by the development of general-purpose technologies, such as digitalisation;

(v) Policies can influence changes in technologies, as well as changes to the systems they support. Technology-push policy instruments stimulate innovation by increasing the supply of new knowledge through funding and by performing research. Demand-pull instruments support market creation or expansion and technology transfer, thus promoting learning by doing, economies of scale, and automation;

(vi) Developing countries have lagged in benefitting from technological opportunities. Technological change is inhibited if technological innovation system functions are not adequately performed. This most often occurs in developing countries;

⁷ Extracted from the presentation by Ambuj Sagar and Heleen de Coninck during the roundtable on the first technical dialogue of the first Global Stocktake taking place in June 2022 and chapter 16 of IPCC WGIII report. The full presentation is accessible at: <https://unfccc.int/event/roundtables-on-the-first-technical-dialogue-td11-of-the-global-stocktake>.

(vii) International cooperation on technological innovation is one of the enablers of climate action in developing countries on both mitigation and adaptation. Experiences with international cooperation on technology development and deployment suggest that the cooperation is most effective when approached as “innovation cooperation” as it engenders a holistic and systemic view of innovation requirements, is done via an equitable partnership between donors and recipients, and develops local innovation capabilities;

(viii) Emerging ideas for international cooperation on innovation include promoting developing country participation in technology programmes, climate-related innovation system builders, universities in developing countries that play the role of central hubs for capacity-building, sectoral agreements, and international emission standards;

e) Support NDC implementation and ambition: The Paris Agreement recognises the role of technology in supporting countries to implement their mitigation and adaptation actions. The work of the TEC will be directed towards facilitating and stimulating the uptake of technologies in support of NDC implementation and enhancing the role of innovation in deploying technological solutions at a faster pace and at scale, thus contributing to more ambitious mitigation and adaptation actions;

f) Contribute to the achievement of climate goals and the Sustainable Development Goals: There are strong links between climate change and sustainable development as embodied in the SDG 13, which urges action on climate change and its impacts. Previous IPCC reports have highlighted that the impacts of climate variability and change, climate policy responses, and associated socio-economic developments will affect the ability of countries to achieve the SDGs. On the other hand, the pursuit of sustainable development goals impacts climate policies. Therefore, the work of the TEC should contribute to Parties’ efforts in achieving the goals of the Paris Agreement as well as the SDGs;

g) Be gender-responsive: The Enhanced Lima work programme on gender and its gender action plan invited all constituted bodies to mainstream gender consideration across their respective activities;

h) Be mindful of resource implications: Resources to support the work of the TEC are included as part of the UNFCCC biennium budget and are not unlimited. Therefore, the TEC will strive to use all available resources strategically and effectively, while continuing to pursue supplementary resources. As per the rules of procedures of the TEC, once the workplan is adopted by the TEC, the secretariat shall prepare information on the financial requirement for the implementation of the workplan for consideration by the TEC.⁸ Information that will be made available includes the availability of resources under the 2022-2023 biennium budget as well as estimates of resources needed to fully implement the workplan, which will be included in the 2024-2025 biennium budget. Resources needed to implement the joint activities of the TEC and CTCN for 2022-2023, as approved by both bodies in May 2022, will also need to be considered;

i) Take a pragmatic approach: The scope and breadth of activities should be balanced by considering available resources, the likelihood of delivering impactful results and the need to respond to relevant mandates, all while producing an ambitious and transformative workplan. A key part of this approach is nurturing existing partnerships and developing new collaborative relationships with a broader range of stakeholders on the implementation of activities to enhance the outputs of the TEC’s work through co-creating products and the contribution of complementary areas of expertise, amongst others. In addition, flexibility and versatility should aid in the prioritisation and implementation of said activities.

6. In the implementation of its new workplan the TEC will ensure the following:

a) CTCN engagement and systematic feedback: To ensure continued complementarity and closer collaboration with the CTCN, every TEC activity will be implemented with CTCN engagement and will consider the potential for complementing CTCN activities. Engagement with the CTCN can take multiple forms, including the provision of inputs; consultations to ensure coherent approaches (e.g. on what constitutes impactful technology); the use of CTCN technical assistance data to inform the TEC’s analytical work and vice versa, the use of TEC policy findings and recommendations to inform the implementation of CTCN activities (e.g. on roadmap); and finally, the implementation of joint activities, etc. Moreover, the TEC and the CTCN will jointly plan and implement various high-level and regional events, knowledge-sharing activities on

⁸ Decision 4/CP.17, Annex II paragraph 58.

available technologies, policy work and highlight key thematic issues. The TEC will also seek to engage the CTCN for joint submissions, as appropriate, and will solicit the CTCN's participation in TEC engagements with UNFCCC constituted bodies and processes;

b) Stakeholder engagement: The TEC will engage various stakeholders in undertaking its work, by inviting participation of representatives from admitted observer organisations and UNFCCC constituency groups in its task forces, and through partnerships and collaborations with interested institutions and organisations. Through the CTCN, it will also invite CTCN network members and CTCN observers, to provide inputs and feedback on TEC publications. This exercise is expected to also generate opportunities for relevant organisations to engage in co-production and collaborate in implementing the activities of the workplan;

c) Communication and outreach: Responding to COP and CMA guidance to the TEC to enhance its communication and outreach, the TEC will endeavour to use various communication and outreach (CO) tools. This may include TT:CLEAR, events at the subsidiary body meetings, COPs and regional climate weeks, social media engagements, and joint CO activities with the CTCN to promote and disseminate the TEC's activities and outputs/deliverables. In particular, engagement with NDEs should be undertaken in a more systematic manner to ensure that the work of the TEC is useful and relevant to the NDEs. A communication and outreach strategy will be developed as soon as the workplan is adopted to ensure that TEC products are understood and reach the intended audience. The communication and outreach strategy should also aim to enhance public awareness of the role of climate technologies in supporting mitigation and adaptation action;

d) Gender mainstreaming: TEC will continue to enhance its efforts in ensuring gender considerations, balance and mainstreaming in the implementation of activities of its workplan and strengthen the role of its Gender Focal Points;

e) Monitoring and evaluation: As guided by the Technology Framework, the TEC, jointly with the CTCN, will continue to improve its monitoring and evaluation system to track and assess the impacts of its activities;

f) Review of the workplan: The TEC will periodically review the implementation of its workplan and may make adjustments accordingly, taking into account new mandates and future priorities set by the COP and CMA, for example, the outcomes of the first periodic assessment of the Technology Mechanism to be held at COP 27 and the Global Stocktake at COP 28.

B. Structure of the workplan

7. Taking into consideration the guiding principles above-mentioned and the inputs received in the development of the workplan, the activities of the TEC for the period 2023-2027, are grouped into the following four workstreams:

- Workstream 1: National Systems of Innovation and Collaborative Research, Development and Demonstration and General-Purpose Technologies;
- Workstream 2: Technology needs assessments and technology planning tools to support NDC implementation;
- Workstream 3: Transformative and innovative solutions;
- Workstream 4: Collaboration and engagement with other UNFCCC processes and constituted bodies and other UN agencies.

8. While the structure of the proposed workplan does not explicitly mirror the Technology Framework and its five key themes, careful considerations and efforts have been carried out in order to ensure the integration of the guidance and relevant activities listed in the Technology Framework. The four workstreams presented seek to underline the transformative areas of focus for the TEC while simultaneously embedding the key themes of the Technology Framework, and taking into account that both entities of the Technology Mechanism respond to the technology framework.

9. **Workstream 1: National Systems of Innovation, Collaborative Research, Development and Demonstration and General-Purpose Technologies:** National Systems of Innovation (NSI) and Research, Development and Demonstration (RD&D) are mentioned many times in the Innovation key theme under the technology framework. Actions to be undertaken by the Technology Mechanism on these topics range from supporting Parties through the improvement of enabling environments for establishing

and/or strengthening NSI, and promoting collaboration on RD&D, to identifying ways to increase the effective participation of developing countries in collaborative approaches to RD&D, promoting the development, deployment and dissemination of existing innovative technologies, and accelerating the scale-up and diffusion of emerging climate technologies.

10. The TEC has undertaken work related to these topics, including work on accelerators and incubators⁹ and emerging technologies which are relevant to NSI and RD&D. The TEC's work on emerging technologies has touched upon both the energy supply sector in 2021 and continued with the transport sector in 2022.¹⁰

11. Nonetheless, more could be done by building on these works and connecting them with other aspects of the Technology Framework, such as capacity building and support, and moving towards actual implementation. This could be accomplished through the creation of partnerships and harnessing more engagement with the private sector and academia, who are both active in these fields.

12. Furthermore, IPCC reports have highlighted that adaptation actions will become more prominent in the future. Therefore, the TEC will assess emerging technologies for adaptation, building on its previous work on emerging technologies and the outcomes of Technology Day events that have focused on innovative approaches on adaptation technologies.¹¹

13. General purpose technologies (GPTs) provide solutions that can be applied across multiple sectors and industries by creating technological platforms for a growing number of interrelated innovations. Several GPTs, relevant for climate mitigation and adaptation, emerged as a result of digitalisation, which involves the adoption or increase in the use of information and communication technologies (ICTs) by citizens, organisations, industries and countries, and the associated restructuring of several domains of social life and the economy surrounding digital technologies and infrastructures. Although digital technologies require energy, they also increase efficiency and have the potential to offer technology-specific GHG emission savings. They also have larger system-wide impacts. In industrial sectors, robotisation, smart manufacturing (SM), the internet of things (IoT), artificial intelligence (AI), and additive manufacturing (AM or 3D printing) have the potential to reduce material demand and promote energy management. Smart mobility is changing transport demand and efficiency. Smart devices in buildings, the deployment of smart grids and the provision of renewable energy, increase the role of demand-side management, and support the shift away from asset redundancy. Digital solutions are equally important with regards to the supply side, for example, by accelerating innovation with simulations and deep learning, or offering flexible and decentralised opportunities through energy-as-a-service concepts, such as Pay-As-You-Go. Nevertheless, digitalisation could increase energy demand and negatively impact equality unless appropriately governed.¹²

14. The **expected outcome** from this workstream is: Enabling policies to incentivise and nurture a supportive environment for technological innovation and innovative climate solutions enabled by general purpose technologies, including strengthened national systems of innovation and increased participation of developing countries in international cooperation in innovation and RD&D, are introduced and promoted.

15. **Workstream 2: Technology needs assessment and technology planning tools to support NDC implementation:** One of the TEC's functions as per 1/CP.16 para 121(g) is to catalyse the development and use of technology road maps or action plans at the international, regional and national levels, through cooperation between relevant stakeholders, including the development of best practice guidelines as facilitative tools for action on mitigation and adaptation. Further, as per 1/CP.16 para 119, the TEC was mandated to continue working on technology needs assessments (TNAs). The recent TEC work on TNAs explored linkages between the TNA and NDC processes as a planning tool for countries' actions on climate.¹³ Furthermore, as countries are now submitting their long-term low-emission development strategies (LT-LEDS), it is important for the TEC to assess how technology planning tools such as TNAs, technology roadmaps, and long-term technological pathways could support the implementation of NDCs,

⁹ <https://unfccc.int/ttclear/tec/rdandr/#Compilation>; <https://unfccc.int/ttclear/incubators/#fullreport>.

¹⁰ <https://unfccc.int/ttclear/tec/energysupplysector.html>, [Background paper on decarbonization technologies for sustainable road mobility](#).

¹¹ <https://unfccc.int/ttclear/coastalzones/>; https://unfccc.int/ttclear/events/2020/2020_event07.

¹² https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FinalDraft_Chapter16.pdf.

¹³ <https://bit.ly/3PD5eyn>.

NAPs and LT-LEDS, and identify the challenges and enablers and ways in which countries can be supported.

16. The **expected outcome** from this workstream is: Technology plans and tools are mainstreamed and integrated into national climate plans, including NDCs, LT-LEDS, to support implementation.

17. **Workstream 3: Transformative and innovative solutions:** The IPCC report has highlighted the need to accelerate the reduction of greenhouse gas emissions to align with the Paris Agreement goal of 1.5 degrees.¹⁴ Transformative technological and innovative solutions are very much needed in this regard. The TEC is the only body under the UNFCCC process that focuses on technology policy, therefore it plays a leading role in these matters, and can make a significant contribution by providing relevant recommendations based on its work, directly to Parties, and through its collaboration with the CTCN.

18. The following sectoral focuses are proposed under this workstream, taking into account recent IPCC reports, inputs from TEC stakeholders, and the CTCN's five system transformations as highlighted in its new Programme of Work. These sectoral focuses are as follows:

- a) Water-Energy-Food systems;
- b) Buildings and infrastructure;
- c) Transformative industry;
- d) Nature and ecosystems.

19. With regards to a specific focus on energy systems, the TEC has undertaken substantive work in this sector addressing energy supply (distributed renewable energy generation) and energy demand (industrial energy efficiency). Therefore, the current workplan does not include a dedicated focus on energy systems, but instead embeds the topic in other areas (for example, as part of the RD&D, water-energy-food system and transformative industry activities).

20. The **expected outcome** from this workstream is: Transformative and innovative technological solutions are promoted and used to help countries implement their NDCs and achieve the goals of the Paris Agreement and the SDGs.

21. **Workstream 4: Collaboration and Engagement with UNFCCC processes and constituted bodies, and other UN agencies:** In previous years, the TEC has engaged in the work of other UNFCCC processes and bodies through mandates of the COP or CMA, or through voluntary collaborations proposed by collaborating bodies. The TEC has standing work in providing inputs to SCF on draft guidance for the operating entities of the Financial Mechanism. The TEC has also been requested by the COP to engage in the UNFCCC pre-2020 ambition and implementation, through the provision of inputs to Parties and engagements at regional technical expert meetings. Most recently, the TEC contributed to the Global stocktake (GST) technical phase through the provision of inputs. In a less formal way, the TEC has been active in the work of the Adaptation Committee, the Paris Committee and Capacity-building, and the GCF by regularly participating in working groups and annual meetings established by these bodies. The Gender Focal Points of the TEC have also regularly engaged with the Gender team of the UNFCCC secretariat.

22. As the work to address climate change becomes larger and more complex, more coordination with other constituted bodies is needed to avoid duplication of work under the UNFCCC process. In the broader context, the TEC also needs to be mindful of the technology-related work undertaken by other UN agencies and therefore needs to ensure coordination, so as to avoid any overlap and improve synergy and collaboration.

23. The **expected outcome** from this workstream is: Meaningful and strategic engagement with UNFCCC processes and the work of UNFCCC bodies and other UN agencies.

24. The table below presents the TEC's workplan activities to be undertaken as part of the above-mentioned workstreams.

¹⁴ IPCC Special report on global warming of 1.5 degrees <https://www.ipcc.ch/sr15/chapter/spm/>.

Table: Technology Executive Committee workplan 2023–2027 (number in brackets next to outputs indicate applicable provision(s) of the technology framework¹⁵)

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
A. Workstream 1: National Systems of Innovation, Collaborative Research, Development and Demonstration, and General Purpose Technologies							
Expected outcomes: Enabling policies to incentivise and nurture a supportive environment for technological innovation and innovative climate solutions enabled by general purpose technologies are introduced and promoted, including policies that seek to strengthen NSIs and the increased participation of developing countries in int. cooperation in innovation and RD&D.							
Activity A.1. Identify and analyse ways to support countries in establishing and/or strengthening national systems of innovation to incentivise innovation, including by improving enabling environments, capacity building, and access to funding for innovation.							
Climate objectives: Cross-cutting							
A1.1	<p>NSI: Continue the work on NSIs, building upon the TEC’s compilation of good practices and lessons learned on the setup and implementation of NSIs, and consider the following:</p> <p>i) The possible inclusion of examples of gender responsive practices, and</p> <p>ii) The findings of the IPCC AR6 Working Group III report relevant to strengthening NSI and, in particular, the policy frameworks that are effective enablers for Research & Development and Innovation, including access to funding.</p> <p>*Output agreed as per 2019-2022 Work Plan</p>	<p>i. Compilation of good practises and lessons learned on the setup and implementation of NSI * (8a, 12e, 16a) (Completed)</p> <p>ii. Summary for policymakers and targeted stakeholders (8a, 12e, 16b, 16d) (Completed)</p> <p>iii. Regional events to present and discuss NSI compilation findings (8a, 12e 16a, 16f, 20a, 20c, 20d) (Completed)</p>		<p>iv. Knowledge product on NSI (8a, 12e 16a, 20d)</p>	<p>v. Tool to identify country needs for the setup and implementation of NSI (8a, 12e, 20d)</p>	<p>vi. Mapping of country needs, including the needs of NDEs, for the setup and implementation of NSI (8a, 12e 16b, 20c, 20d)</p>	<p>Ongoing engagement and consultation with potential partners</p>

¹⁵ [Technology framework under Article 10, paragraph 4 of the Paris Agreement](#)

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
A.1.2	NSI: Building on the findings of the TEC’s work on NSIs and the TEC’s initial work on innovative financing at different stages of the technology cycle, explore ways to support country readiness and capacity building processes that seek to facilitate access to financing from climate funds for innovation and transformational impact. This could include carrying out an analysis of potential barriers that are embedded in these processes and identifying opportunities for improvement.	i. Engagement and consultation with the Adaptation Fund (AF), the GCF, and the GEF, including at TEC meetings, to define the scope of work (16g, 25a, 25b, 25c)		ii. Thematic dialogue at TEC 30 (16g, 20d, 25a, 25b, 25c)			Ongoing engagement and consultation with potential partners
A.2. Stimulate climate technology RD&D through partnerships, strengthening the roles of innovators and incubators and accelerators, and the participation of developing country Parties in collaborative approaches to RD&D.							
Climate objectives: Cross-cutting							
A.2.1	RD&D: Building on the TEC’s work on collaborative RD&D, analyse the needs for RD&D for high-impact emission-reduction technologies to help countries implement their NDCs and other mitigation strategies, and ensure long-term environmentally sustainable energy supply. Identify ways to increase participation of developing country Parties in collaborative approaches to RD&D.	i. Survey on Future Needs of Cleantech Research, Development and Demonstration (Completed)	ii. Initiate work on energy storage		iii. Knowledge product (8b, 16a)		FCA Ongoing engagement and consultation with potential partners
A.2.2	Incubators and Accelerators: Building on the TEC’s previous work on incubators and accelerators, work with Parties to promote their use and support the development of funding proposals for submission to the entities of the Financial Mechanism that incorporate incubators and accelerators and seek to build effective ecosystems for start-ups (e.g. looking at sources of funding, IPR systems and practices, industry-academia partnerships, public-private partnerships and SME engagement).	i. Engagement and consultation with potential partners to define the scope of work, inter alia, during TEC meetings, workshops, events, etc. (8h, 20a, 25a, 25c)				ii. Knowledge product (8h, 16a)	Ongoing engagement and consultation with potential partners

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
A.3. Identify and analyse emerging and transformational adaptation technologies that contribute to reducing vulnerabilities and strengthening resilience.							
Climate objectives: Adaptation							
A.3.1	Emerging and transformational adaptation technologies: Building on the TEC’s work on innovative approaches on adaptation technologies (Technology Day), identify and analyse emerging and transformational technologies for adaptation (e.g. early warning systems and disaster risk management), including the role of finance and the private sector in supporting their deployment.	i. Engagement with potential partners to identify areas for collaboration (8c, 20a, 25b) (Completed)	ii. TEC-GEO knowledge product on innovation for risk knowledge (8c, 16a, 25b)				Group on Earth Observation (Lead partner) Early Warnings for All partners
A.4. Explore innovative climate solutions enabled by general purpose technologies							
Climate objectives: Cross-cutting							
A.4.1	Digital Technologies: Explore the role of AI and applied machine learning as enablers of climate solutions. Topics which could be further explored include: a) Individual AI models for distinct climate challenges based on satellite imagery analysis, atmospheric analysis, and AI acoustics. b) Integration and networking techniques to connect AI data sources (climate sensors, AI model outputs, research databases, etc.). c) Cross-correlation AI models and frameworks	i. Introduction /Presentation on AI and applied machine learning at TEC 27 (8c, 16a, 16f) (Completed) ii. Workshop/event to raise awareness of the role of AI and applied machine learning as technologies that can be used to address specific climate challenges (8c, 16a, 16f) (Completed) iii. Technology	viii. Inputs on AI to TEC knowledge product on EWS ix. Workshop on AI for climate action, including representatives of LDCs and SIDS x. Technical paper on AI for climate action, including risks and challenges on the use of AI xi. Short information note on AI for climate action xii. AI Innovation Grand Challenge Award at COP 29	xiii. Policy brief on opportunities, risks and challenges of AI for climate action xiv. Inputs on AI to TEC knowledge products xv. Concept note on practical means to support AI implementation for transformative climate solutions considering the impact of AI on climate change in developing countries, with a focus on LDCs	xvi. Inputs on AI to TEC knowledge products xvii. Knowledge product/event on the local development of AI-powered solutions for climate action in LDCs and SIDS, including perspectives of women, indigenous, children, youth and marginalized groups on the use of AI for climate action (e.g. link youth innovation		Enterprise Neurosystem UNIDO UNU Ongoing engagement and consultations with other potential partners

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
	(higher order climate analysis and modes of course correction) d) AI model and database catalogues (AI technology transfer and data access) e) AI development approaches and education, including the avoidance of bias.	Mechanism Initiative on AI for Climate Action (Launched) iv. Events at the Regional Climate Weeks (Africa and Asia-Pacific) on AI for climate action (Completed) v. COP 28 high-level event on AI for climate action vi. Launch the AI Innovation Grand Challenge (Completed) vii. Compilation and dissemination of COP 28 events, on AI for climate action (Completed)		and SIDS, such as an AI climate accelerator	labs to the works of the initiative)		
B. Workstream 2: Technology needs assessment and technology planning tools to support NDC implementation							
Expected outcomes: Technology plans and tools are mainstreamed and integrated into national climate plans, including NDCs, LT-LEDS and NAPs, to support implementation.							
B.1. Facilitate the undertaking and updating of TNAs, as well as enhancing the implementation of their results, and promote the links between TNAs and NDCs and NAPs and LT-LEDS							
Climate objectives: Mitigation & Adaptation							

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
B.1.1	<p>TNA: Update TNA guidance taking into account:</p> <ul style="list-style-type: none"> - COP/CMA guidance; - CTCN's experience providing support for TNAs; - results of the implementation of earlier guidance on incorporating gender in TNAs <p>Include considerations on how developing countries can be supported in updating their TNAs and implementing their TAPs and TNA outcomes.</p>	<p>i. Gap assessment of guidance on TNA as the basis for initiating the update of the guidance (12a, 12c, 12e) (Completed)</p> <p>ii. Event with financial actors to raise awareness of TNA results (12a, 16a, 25a) (Completed)</p>	<p>iii. Analysis of success stories of implemented TAPs and identification of key elements of success (12a, 12b, 12c)</p> <p>iv. TNA guidebook on the energy sector, including aspects of just transition</p>	<p>v. Updated guidance based on findings of gap assessment and analysis of success stories (12a, 12b, 12c)</p> <p>vi. Knowledge product on how developing countries can be supported in updating their TNAs and implementing their TAPs and TNA outcomes. (12a, 12b, 12c, 12e, 16k, 25c)</p>			<p>UNEP-CCC (Lead partner)</p> <p>UNIDO</p> <p>GCF</p>
B.2. Promote the role of long-term technological pathways in order to implement countries' NDC actions on mitigation and adaptation							
Climate objectives: Cross-cutting							
B.2.1	<p>Long-term technological transition pathways:</p> <p>Building on the TEC's previous work on linkages between the TNA and NDC process and its work on technology roadmaps, identify and analyse how the TEC can support countries in the development of long-term technological transition strategies, through to the uptake of climate technologies.</p>		<p>i. Engagement with UNFCCC Regional Collaboration Centers on workshops/events on Long-term Low Emissions Development Strategies - LT-LEDS (8d, 16f, 20d)</p>				<p>UNFCCC Regional Collaboration Centers</p>

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
C. Workstream 3: Transformative and innovative solutions							
Expected outcomes: Transformative and innovative technological solutions are promoted and used to help countries implement their NDCs and achieve the goals of the Paris Agreement and the SDGs							
C.1. Promote innovative technology practices and solutions related to water-energy-food systems to support countries in the implementation of their NDCs in these sectors, to build inclusive agrifood systems and achieve food security							
Climate objectives: Adaptation							
C.1.1	Water-Energy-Food Systems: Building on the TEC’s previous work on climate-smart agriculture, analyse knowledge gaps on the water-energy-food nexus and identify relevant adaptation technologies, including indigenous, innovative and digital technologies (e.g. early warning systems), to strengthen adaptation planning (NAPs) and NDC ambitions in the agriculture sector.	i. Thematic dialogue in collaboration with FAO on the water-energy-food nexus (8c, 11, 16f, 16h, 20d) (Completed)	ii. Policy publication in collaboration with FAO, on “Climate Technologies for Agrifood systems transformation” (8c, 11, 16a, 16h, 20d) iii. Event at COP with FAO (8c, 11, 16f, 20d)				FAO (Lead partner)
C.2. Promote innovative technology practices and solutions related to sustainable buildings and infrastructure to strengthen resilience and support countries in the implementation of their NDCs in these sectors							
Climate objectives: Adaptation and Mitigation							

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
C.2.1	Buildings and infrastructure: Explore the use of low carbon materials in buildings, green building codes and green zoning systems that promote energy efficiency and resilience.		i. Engagement with relevant partners, initiatives and processes to identify areas where the TEC can add value (8c, 16a, 16d, 16e, 20a, 20d)	ii. Knowledge product, informed by relevant engagements to date (8c, 16a, 16d, 16e)			GlobalABC (Lead partner) Ongoing consultation with potential partners
C.3. Promote innovative technology practices and solutions related to hard-to-abate industrial sectors to support countries in the implementation of their NDCs in these sectors							
Climate objectives: Mitigation							
C.3.1	Transformative industry: Promote low and near zero emission production and products (e.g. steel, cement) through the support of innovation, enabling environments, sustainable purchasing commitments, and financing in order to inform NDC planning and implementation.	i. Mapping of existing initiatives to identify areas where the TEC could add value (8c) (Completed)	ii. Technology Day at COP 29 (8c, 16a, 20a, 20c) iii. Policy brief on integrating hard-to-abate industries in updated NDCs	iv. Synthesis report providing an analysis of standards for low and near zero emission production and products (e.g. steel, cement) (8c, 8h, 16a, 16d)	v. Policy brief/ recommendations for the CTCN and other stakeholders (8c, 8h, 12e, 16d, 16e)		UNIDO (Lead partner) NDE Germany
C.4. Promote innovative technology solutions related to nature and ecosystems							
Climate objectives: Adaptation and Mitigation (co-benefits)							

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
C.4.1	Innovative Ocean Climate Solutions: Building on the TEC's previous work on innovative technological and ecosystem-based approaches to strengthening ocean and coastal adaptation, analyse the contributions of innovative solutions and technological innovations for ocean-based actions, including how technology can help address issues related to marine protected areas and achieve the SDG 14.	i. Participation in the UNFCCC Ocean and Climate Change Dialogue (8c, 16a) (Completed) ii. Key messages and recommendations (Completed)	Participation in the UNFCCC Ocean and Climate Change Dialogue (8c, 16a)				Ongoing engagement and consultation with potential partners
D. Workstream 4: Collaboration and engagement with UNFCCC processes and constituted bodies, and other UN agencies							
Expected outcomes: Meaningful and strategic engagement with UNFCCC processes and the work of UNFCCC bodies and other UN agencies.							
D.1. Collaborate and engage with the Standing Committee on Finance and the operating entities of the Financial Mechanism							
Climate objectives: Cross-cutting							
D.1.1	Provide inputs to the SCF on the draft guidance to the Operating Entities of the Financial Mechanism (OE FM)	i. Inputs to the draft guidance to OE FM (25a) (Completed)	ii. Inputs to the draft guidance to OE FM (25a)	iii. Inputs to the draft guidance to OE FM (25a)	iv. Inputs to the draft guidance to OE FM (25a)	v. Inputs to the draft guidance to OE FM (25a)	SCF
D.1.2	Participate in the annual meetings between the GCF and UNFCCC constituted bodies.	i. Inputs to the GCF annual meeting (25a)	ii. Inputs to the GCF annual meeting (25a)	iii. Inputs to the GCF annual meeting (25a)	iv. Inputs to the GCF annual meeting (25a)	v. Inputs to the GCF annual meeting (25a)	GCF
D.1.3	Provide inputs to the GCF strategic plan	i. Inputs to the GCF Strategic Plan (25a) (Completed)					GCF
D.2. Collaborate and engage with the Adaptation Committee and LDC Expert Group							
Climate objectives: Adaptation							
D.2.1	Participate as a member in the Adaptation Committee Taskforce on NAPs, which includes nominees from the Least Developed Countries Expert Group (LEG).	i. Inputs to the AC and LEG (16f, 20a) (On-going)	ii. Inputs to the AC and LEG (16f, 20a)	iii. Inputs to the AC and LEG (16f, 20a)	iv. Inputs to the AC and LEG (16f, 20a)	v. Inputs to the AC and LEG (16f, 20a)	AC LEG
D.3. Collaborate and engage with the Paris Committee on Capacity Building							
Climate objectives: Cross-cutting							

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
D.3.1	Participate in the Informal Coordination Group (ICG) of the PCCB as a member and in other related activities, as appropriate.	i. Inputs to ICG (16f, 16i, 20a) (On-going) ii. Submission to PCCB call for its annual focus area (Completed)	iii. Inputs to ICG (16f, 16i,20a)	iv. Inputs to ICG (16f, 16i, 20a)	v. Inputs to ICG (16f, 16i ,20a)	vi. Inputs to ICG (16f, 16i, 20a)	PCCB
D.4. Collaborate and engage with the UNFCCC Gender Team¹⁶							
Climate objectives: Cross-cutting							
D.4.1	Collaboration and engagement with the UNFCCC Gender Team on mainstreaming gender in the work of the TEC.	i. Participation in the dialogue among constituted bodies on progress in integrating a gender perspective into their processes (Completed)	ii. TEC brief gender-responsive technology and infrastructure for sustainable urban mobility (16c) iii. Participation in the dialogue among constituted bodies on progress in integrating a gender perspective into their processes	iv. Participation in the dialogue among constituted bodies on progress in integrating a gender perspective into their processes	v. Participation in the dialogue among constituted bodies on progress in integrating a gender perspective into their processes	vi. Participation in the dialogue among constituted bodies on progress in integrating a gender perspective into their processes	UNFCCC Gender team
D.5. Provide input to the Global Stocktake of the Paris Agreement							
Climate objectives: Cross-cutting							
D.5.1	Provide inputs to the technical phase of the Global Stocktake					i. TEC inputs to the second GST (25e)	
D.6. Collaborate and engage with the UNEP-Copenhagen Climate Centre							
Climate objectives: Cross-cutting							

¹⁶ Information on gender mainstreaming in the work of the TEC is contained in paragraph 6 of this document

Activity ID	Activity	Expected outputs/deliverables					Partners
		2023	2024	2025	2026	2027	
D.6.1	Contribute to the UNEP-CCC Climate Technology Progress Report (CTPR) series.	i. Contributions to the development of the annual CTPR, including participating as a member of the Steering Committee (16a) (Completed) ii. Participation in related events and activities, as appropriate (16a, 16f, 20d) (Completed)	iii. Contributions to the development of the annual CTPR, including participating as a member of the Steering Committee (16a) iv. Key messages and recommendations based on CTPR 2022 and 2023 v. Participation in related events and activities, as appropriate (16a, 16f, 20d)	vi. Contributions to the development of the annual CTPR, including participating as a member of the Steering Committee (16a) vii. Participation in related events and activities, as appropriate (16a, 16f, 20d)	viii. Contributions to the development of the annual CTPR, including participating as a member of the Steering Committee (16a) ix. Participation in related events and activities, as appropriate (16a, 16f, 20d)	x. Contributions to the development of the annual CTPR, including participating as a member of the Steering Committee (16a) xi. Participation in related events and activities, as appropriate (16a, 16f, 20d)	UNEP-CCC
D.7. Collaborate and engage with the Facilitative Working Group (FWG) of the Local Communities and Indigenous Peoples Platform (LCIPP)							
Climate objectives: Cross-cutting							
D.7.1	Collaborate with Facilitative Working Group (FWG) of the Local Communities and Indigenous Peoples Platform (LCIPP) on indigenous technologies, sciences, and innovations for climate resiliency	i. Contribution to the concept note of the multi-stakeholder dialogue at the 9th meeting of the FWG (Completed) ii. Organization of a joint in-session roundtable at COP 28 (Completed)					FWG of the LCIPP

Abbreviations and acronyms

AC	Adaptation Committee
AF	Adaptation Fund
AI	Artificial intelligence
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
CO	Communication and outreach
COP	Conference of the Parties
CTCN	Climate Technology Centre and Network
CTPR	Climate Technology Progress Report
FAO	Food and Agriculture Organization of the United Nations
FCA	Future Cleantech Architects
GCAP	Global Climate Action Partnership
GCCA	Global Cement and Concrete Association
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse gas
GlobalABC	Global Alliance for Buildings and Construction
GPTs	General purpose technologies
ICG	Informal Coordination Group of the PCCB
IDDI	Industrial Deep Decarbonisation Initiative
IEA	International Energy Agency
IPCC	Intergovernmental panel on climate change
IPR	Intellectual property rights
IUCN	International Union for Conservation of Nature
LCIPP	Local Communities and Indigenous Peoples Platform
LDC	Least developed country
LEDs GP	Low Emission Development Strategies Global Partnership
LEG	Least Developed Countries Expert Group
LT-LEDs	Low-emission development strategies
MIT	Massachusetts Institute of Technology
NAP	National adaptation plan
NDC	Nationally determined contribution
NDE	National designated entity
OE FM	Operating Entities of the Financial Mechanism
PALO	Partnership and Liaison Office
PCCB	Paris Committee on Capacity-building
R&D	Research and development
RD&D	Research, development, and demonstration
SCF	Standing Committee on Finance
SDG	Sustainable Development Goal
SME	Small and medium-sized enterprise
TAP	Technology action plan
TEC	Technology Executive Committee
TNA	Technology needs assessment
UN	United Nations
UNEP-CCC	United Nations Environment Programme Copenhagen Climate Centre
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
WBCSD	World Business Council for Sustainable Development
WECF	Women Engage for a Common Future
WGC	Women and Gender Constituency
WIM	Warsaw International Mechanism
WIPO	World Intellectual Property Organization
WRI	World Resources Institute