Framework Convention on Climate Change

TEC/2022/25/21

Technology Executive Committee

01 September 2022

Twenty-fifth meeting

In-person meeting, 6–8 September and 9 September 2022 (TEC-CTCN Joint session

Draft joint work programme of the Technology Mechanism for 2023-2027

Cover note

I. Introduction

A. Background

1. Parties through decision 9/CP.26 paragraph 2 and decision 15/CMA.3 paragraph 2 invited the TEC and the CTCN to strengthen their collaboration 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.

2. The TEC and the CTCN Advisory Board, at their joint session held in March 2022, initiated the discussion regarding the development of a joint work programme for the Technology Mechanism, including looking at a comparative analysis of the TEC's rolling workplan, the CTCN's Programme of Work, and relevant documents, according to the five themes of the Technology Framework.[1]

3. At this meeting the two bodies requested the joint TEC-CTCN task force to continue its work inter-sessionally on developing a joint work programme, taking into account comments made by members during the joint session.

4. The joint taskforce included the development of a joint work programme of the Technology Mechanism as one of the joint activities of the TEC and CTCN for 2022-2023 agreed by the two bodies in May 2022.[2] The joint taskforce met in a series of meetings virtually and in hybrid mode (at the margins of SB56 in June 2022) to look into possibilities of synergies across the workplans of the two bodies that at the same time were being developed.

5. The joint task force subsequently agreed on a consolidated work programme document that would show how activities, whether conducted separately or jointly by the two bodies, address common themes and are complementary. The consolidated work programme document would also include separate sections with the workplan of each body.

B. Scope of the note

6. The annex to this note contains the draft Technology Mechanism work programme for 2023-2027, based on the document outline agreed by the joint task force.

7. This note does not include the draft TEC workplan or the draft CTCN Programme of Work, as both documents will be considered by the TEC and the CTCN Advisory Board, respectively, at their upcoming meetings.

[1] TEC/2022/24/13.

[2] Joint activities TEC and CTCN for 2022-2023.

C. Possible action by the Technology Executive Committee and the Advisory Board of the Climate Technology Centre and Network

8. The TEC and the CTCN Advisory Board will be invited to consider the draft work programme of the Technology Mechanism for 2023-2027 and provide guidance for the Chairs and Vice-Chairs of the TEC and the CTCN Advisory Board to finalize it, taking into account the discussion on draft TEC workplan and draft Programme of Work of the CTCN considered at TEC 25 and CTCN AB 20, respectively.

Annex

Draft UNFCCC Technology Mechanism joint work programme for 2023-2027

Accelerating Climate Action through Technology Development and Transfer

Supporting countries to achieve the goals of the Paris Agreement and the United Nations Framework Convention on Climate Change and to implement national climate plans through transformative technologies

I. Introduction

A. Technology Mechanism

1. COP 16 established the Technology Mechanism, comprising the TEC and the CTCN, to facilitate implementation of enhanced action on technology development and transfer to support action on mitigation and adaptation in order to achieve full implementation of the Convention.[1]

2. The TEC is the Technology Mechanism's policy body. It analyses climate technology issues and provides policy recommendation that facilitate country efforts to enhance climate technology development and transfer. The Committee consists of 20 technology experts representing both developed and developing countries.

3. The CTCN is the implementation body of the Technology Mechanism. Its main purpose is to catalyse, coordinate and stimulate technology cooperation and enhance the development and transfer of technologies to developing country parties at their request. It does this through three core services: 1). Providing technical assistance at the request of developing countries on technology issues; 2). Creating access to information and knowledge on climate technologies; 3). Fostering collaboration among climate technology stakeholders via its network of national, regional, sectoral and international organizations which support it to undertake its services. The CTCN is accountable to and guided by Parties through an advisory board, comprised of 30 members including government representatives representing both developed and developing countries, non-governmental representatives, and representatives of constituted bodies, including the TEC.

4. Both the TEC and the CTCN report to the Conference of the Parties (COP) and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) through subsidiary bodies.[2]

B. Technology framework and Glasgow climate pact

5. The Paris Agreement, adopted in 2015, highlights the importance of technology for the implementation of mitigation and adaptation actions, and the importance of strengthening cooperative action on technology development and transfer.

6. Article 10, paragraph 4, of the Paris Agreement established the technology framework. The framework to provides overarching guidance to the Technology Mechanism in implementing the Paris Agreement through promoting and facilitating enhanced action on technology development and transfer. By improving the effectiveness and efficiency of the work of the Technology Mechanism, it seeks to address the transformational changes envisioned in the Paris Agreement and the long-term vision for technology development and transfer.

7. At COP24 (CMA1) in 2018 in Katowice, Parties agreed to the elaboration of the technology framework and to operationalise it through a series of actions, to be undertaken by the TEC and

[1] Decision 1/CP.16, para. 117.
[2] Decision 17/CP.20, paragraph 4, by decision 15/CMA.1, paragraph 4.

CTCN, organised under five key themes.[3] The key themes for the technology framework are: Innovation, Implementation, Enabling environment and capacity building, Collaboration and stakeholder engagement, and Support. The Katowice decision also underlines the pressing need to accelerate and strengthen technological innovation and the importance of upscaling and diffusing emerging climate technologies.

8. The Glasgow Climate Pact, agreed at COP26 in 2021, calls upon Parties to accelerate the development, deployment and dissemination of technologies to transition towards low-emission energy systems. The pact also emphasises the importance of cooperative action on technology development and transfer, including accelerating and enabling innovation, and the importance of predictable, sustainable and adequate funding to the Technology Mechanism.[4]

9. Further, Parties through decision 9/CP.26 paragraph 2 and decision 15/CMA.3 paragraph 2 invited the TEC and the CTCN to strengthen their collaboration 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.

10. The work of the TEC and CTCN in the near and long term is therefore guided by the technology framework and other relevant decisions by Parties, along with the functions and mandate of the Technology Mechanism set out originally by COP16.

C. Scientific context

11. The key messages from the 2018 IPCC Special Report on Global Warming of 1.5 °C (SR 1.5)[5] and the report from IPCC Working Group I on the physical science underpinning climate change[6] are clear: urgent, immediate, rapid and large-scale reductions in greenhouse gas emissions are needed to keep within reach the global goal of limiting warming to close to 1.5°C or even 2°C.

12. This message was further highlighted in the latest report from IPCC Working Group III on the mitigation of climate change[7] (IPCC SWG III) which stressed that the time for action is now to halve emissions by 2030, pointing to the increasing evidence of climate action. The tools and know-how required to limit warming are available and what is needed now is to scale up efforts at a faster pace.

13. The report highlights that to limit global warming will require major transitions in the energy sector and points out a number of key areas for high potential of emission reductions such as: cities/urban, industry, agriculture, forestry, and land use to sequester CO2 at scale.

14. Further, chapter 16 of the IPCC SWG III focuses on innovation and technology development and transfer. Key insights from this chapter are as follows:[8]

(a) Strong 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 the least developed ones;

(b) Technology can be an enabler to an accelerated mitigation and a key dimension of potential feasibility for climates responses and adaptation options;

(c) Technology development is not linear. A systemic perspective on technological change can provide insights to 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 inform how innovation systems that vary across technologies, sectors and

[3] Decision 15/CMA.1.

[4] Decision 1/CMA.3, paragraphs 36 and 60.

[5] https://www.ipcc.ch/sr15/chapter/spm/.

[6] https://www.ipcc.ch/report/ar6/wg1/.

[7] https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/.

[8] 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 WGIII contents. Full presentation is accessible in: https://unfccc.int/event/roundtables-on-the-first-technical-dialogue-td11-of-the-global-stocktake.

countries, can be strengthened. It can also play a role in clarifying the synergies and trade-offs between technological innovation and the SDGs;

(d) The speed of technological change could be explained with 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 digitalization;

(e) 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 performing research; Demand-pull instruments support market creation or expansion and technology transfer and thus, promote learning by doing, economies of scale, and automation;

(f) Developing countries have lagged in benefitting from technological opportunities. Technological change is inhibited if technological innovation system functions are not adequately fulfilled, this inhibition occurs more often in developing countries;

(g) 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 such activities are most effective when approached as result oriented "innovation cooperation" that engenders a holistic, systemic view of innovation requirements, is done between donors and recipients, and develops local innovation capabilities;

(h) Emerging ideas for international cooperation on innovation such as promoting developing country participation in technology programmes, climate-related innovation system builders, developing countries universities as central hubs of capacity-building, sectoral agreements, international emission standards;

15. The two bodies of the Technology Mechanism will strive to take into account the findings from IPCC reports in their future work, in particular by focusing on transformative technologies as highlighted in these reports.

D. Activities of the Technology Mechanism

16. In the past few years, the TEC and CTCN have undertaken their mandated functions through rolling workplans and Programmes of Work, respectively. The last workplan and programme of work for 2019-2022 were aligned with the Technology Framework of the Paris Agreement and the five key themes and activities that Parties defined therein. In addition, the CTCN also implements annual operating plans, which set targets on an annual basis in line with the resources available to support its operations and provide detail on the specific activities to be carried out annually, building upon the Programme of Work.

17. The TEC and the CTCN have undertaken joint activities. These activities have enhanced collaboration of the TEC and CTCN, improved synergies in their work, and provided a coherent contribution by the Technology Mechanism to the broader activities of the UNFCCC:

(a) In 2021, the TEC and CTCN conducted a joint work on technology and nationally determined contributions (NDCs), comprising a comprehensive analysis and synthesis of information on technology needs and challenges, linkages between policy and implementation, and linkages between NDCs and national adaptation plans (NAPs). The joint work resulted in the first Technology Mechanism publication[9] and the first joint key messages and recommendations to the CMA on this topic;[10]

(b) The TEC and the CTCN in collaboration with the gender team of the UNFCCC secretariat supported the integration of gender considerations into the UNFCCC process, including by disseminating briefs prepared by the gender team about gender integration under the UNFCCC process, raising awareness of gender equality issues on International Women's Day and organizing a meeting with other UNFCCC constituted bodies to share experience on mainstreaming gender in

[9] See https://unfccc.int/ttclear/tec/techandndc.html.

[10] See Joint annual report TEC and CTCN for 2021 FCCC/SB/2021/5.

their respective activities. The TEC and the CTCN also initiated a discussion with the gender team on operationalizing an online gender expert roster in 2022;

(c) Joint sessions and joint events provide important spaces for the TEC and the CTCN to enhance collaboration and foster deep engagement on issues of mutual relevance to the two bodies. They also provide space for discussing challenges and lessons learned regarding technology transfer and development as one voice – as the Technology Mechanism. As examples, the TEC members moderated and presented the findings of their work at the regional forums for national designated entities (NDEs) from the African, Asia-Pacific, and Latin America and the Caribbean regions, organized by the CTCN as part of the UNFCCC regional climate weeks, while the CTCN facilitated the participation of NDEs in TEC events held during the regional climate weeks.

(d) The TEC and CTCN have a feedback mechanism between the two bodies: TEC policy work could, among other sources of information, be more systematically grounded in case studies and lessons learned from the operational activities of the CTCN and vice versa. Other joint arrangements such as the joint task force proved helpful in guiding the implementation of joint activities;

(e) The TEC and the CTCN jointly developed a monitoring and evaluation system, which includes a biennial NDE survey to track the impacts of activities under the Technology Mechanism. The results from the NDE survey help the two bodies provide more coherent outputs, and the data on outcomes strengthen their reporting on the impacts of their work. They also conducted a joint analysis of NDE survey implementation in 2022, taking into account NDE feedback, aimed to improve its design and allow for easier, systematic collection of verifiable data.

(f) The TEC and the CTCN have identified common issues to make use of each other work. One example was on endogenous capacities and technologies, where needs, gaps and challenges, identified from feedback from NDEs, could inform the implementation support provided by the CTCN. The TEC work on TNA guidance has also been used by the CTCN in the implementation of the technical assistance responding to requests by countries.

18. COP 26 and CMA 3 invited the TEC and the CTCN to strengthen their collaboration 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.

19. This overarching work programme of the Technology Mechanism was developed to coordinate the work of both bodies in responding to Parties guidance and latest scientific findings described above. The work programme should facilitate further coherence, synergy and impact of the work of the two bodies, while allowing flexibility for each body to perform their respective functions.

20. The work programme provides flexibility for the incorporation of any potential new guidance from Parties, including for example a response to the first periodic assessment of the Technology Mechanism at COP27 in November 2022 in Sharm-el-Sheik, Egypt and outcomes of the Global Stocktake at COP28.

II. Purpose

21. The purpose of the Technology Mechanism’s work programme is to accelerate climate action by increasing the impact of the TEC and CTCN and the Mechanism as a whole. focus the efforts of the TEC and CTCN on defined programme areas. By focusing the efforts of the TEC and CTCN on defined programme areas, this joint work program ensures that the work of both bodies is mutually supportive while allowing for activities to be held jointly and separately. Further, the joint work programme serves to ensure that the TEC and CTCN collectively implement all the mandates and guidance of the Technology Framework of the Paris Agreement.

III. Overview of the joint work programme of the Technology Executive Committee and the Climate Technology Centre and Network (2023 – 2027)

22. The section highlights how activities of the TEC and the CTCN under this joint work programme, whether conducted separately or jointly by the two bodies will address common issues, and thus increasing the coherence and amplifying the impact of the work of the Technology Mechanism as a whole. It also identifies opportunities for joint work, for example, areas highlighted in the findings from existing joint work, joint activities agreed to be undertaken in the period 2022-2023.[11] Some of these joint activities will be carried over into 2023 and thus will become part of the joint work programme of the TEC and CTCN for 2023-2027.

23. The TEC and CTCN are uniquely positioned to strengthen the ability of the UNFCCC and Paris Agreement processes to accelerate climate action. The work of the TEC and CTCN will be directed at facilitating and stimulating the uptake of technologies to support NDC ambition and implementation, Enhancing the role of innovation in deploying technological solutions at a faster pace and at scale will contribute to more ambitious mitigation and adaptation actions, supporting the achievement of national climate goals and of the collective goals of the Paris Agreement..

1. National System of Innovation

24. National system of innovation (NSI) is a topic highlighted under the Innovation key theme of the Technology Framework. Specifically, the framework guides the TEC and CTCN to support Parties to incentivise innovation through the improvement of enabling environments for establishing and/or strengthening national systems of innovation.[12]

25. The IPCC emphasizes the transformative potential of a focus on NSI in developing countries. Strengthening institutions and building local capacity to promote innovation can serve as the basis for enhanced enabling environments, another key Framework theme, and set the stage for enhanced technology development and transfer in support of climate and other sustainable development goals across multiple sectors.[13]

26. As the TEC already has undertaken work on NSI since 2015[14], for 2023-2027 it plans to continue work on NSI, building on work on compilation of good practices and lessons learned on the setup of NSI and taking into account the outcomes of IPCC AR6 Working Group III report relevant to strengthening national system of innovation, focusing on policy frameworks that are effective enablers for research & development and innovation, including the access to funding (Reference activity A1.1 in draft TEC workplan – see document TEC/2022/25/16).[15] Two potential deliverables from this activity are “Update of TEC policy brief on NSI” and “Role of NDEs within NSI, institutional arrangements, capacity building needs for such arrangements”. The TEC will conduct the analysis using inputs and lessons learned from CTCN technical assistance on NSI.

27. The CTCN Programme of Work, [16] through its technical assistance programmes under innovation that aims to strengthen the institutional capacities in the context of NSI, fully complements the TEC effort, as elaborated in Table 2, Action 1.1. “1.1 Support policies institutional and regulatory frameworks and planning processes on innovation and strengthening National Systems of Innovation”. When an update of TEC brief on NSI becomes available, the CTCN could introduce the brief through its technical assistance process. The TEC and the CTCN could also jointly reach out to NDEs in promoting awareness of the role of NSI in fostering innovation.

28. Further, the TEC plans to explore ways, in collaboration with funding entities, to support readiness and capacity building process to enable direct access,[17] where appropriate, for innovation

[11] Joint activities TEC and CTCN for 2022-2023.
[12] Decision 15/CMA.1, Annex, paragraph 8(a).
[13] IPCC Working Group III on the mitigation of climate change, Chapter 16.
[14] TEC Brief on National Systems of Innovation TEC Brief on National Systems of Innovation
[15] Draft TEC workplan 2023-2027.
[16] CTCN Programme of Work 2023-2027 ver 23 August 2022
[17] https://www.adaptation-fund.org/about/direct-access/ ; https://www.greenclimate.fund/document/gcf-brief-direct-access

from climate funds, capacity building for accessing finance for innovation (Reference activity A.1.2. in draft TEC workplan).

29. The TEC and the CTCN could also jointly design a capacity building workshop or guidelines for direct access, where appropriate, for NDEs to enhance their capacity for designing funding proposals.

2. Technology roadmap

30. Technology needs assessments (TNAs), technology action plans (TAPs), and technology roadmaps (TRMs) form the architecture of a strategic approach to maximizing the potential for deploying technologies to achieve climate objectives. This includes embedding TNAs, TAPs, and TRMs in NAPs and NDCs, and in plans to implement NDCs and support net-zero development pathways.

31. The agreed joint activities of the TEC and CTCN for 2022-2023 includes preparation of a background paper on TRMs, built on, *inter alia* the TEC work on roadmap,[18] and include (see activity 2.1 of the Joint activities of TEC and CTCN for 2022-2023):

(a) Analysis of success stories and lessons learned from experiences from CTCN technical assistance, stakeholders and other international organisation's work on TRMs, in preparing sectoral climate technology roadmaps and their implementation to stimulate the uptake of technologies in support of NDC implementation;

(b) Analysis of steps to prepare TRMs, including potential links to TNAs and TAPs;

(c) Considerations on how to make such roadmaps implementable in development (looking beyond the links to NDCs and long-term low greenhouse gas emission development strategies) and explore the links to financial resources needed for the development, transfer and deployment of climate technologies.

32. Based on the findings above, the TEC and CTCN will identify potential future further work.

33. The TEC workplan recognizes a potential sectoral focus of the work on technology roadmap, namely to ".. identify potential technology roadmapping in transport sector that can be rapidly deployed in developing countries to support the implementation of their NDCs" (Reference draft TEC workplan activity B.2.1).

34. On the CTCN part, Electro mobility is one of the systems transformations it plans to achieve in the context of drivers for technology transfer, consisting of technical assistance among of them on ": 2.1. Shared mobility regulation development; 2.2: Deployment of low emissions vehicles" (Reference Figure 11 of the draft CTCN Programme of Work).

35. There is a clear coherent and ample opportunities to enhance synergies of the work of the TEC and CTCN, starting with jointly working on a background paper on technology roadmap, and build on the findings of the paper, continue work together on tangible output such as guideline or pilot roadmap.

3. Food-water-energy nexus

36. The CTCN Programme of Work highlights "Water-Energy-Food nexus" as one of the main system transformations it plans to achieve in the context of drivers for technology transfer (see Figure 11 of Draft CTCN Programme of Work). It gives a number of examples of technical assistance areas relevant to this: 1.1 Sensor deployment to aid food and crop resilience; 1.2: Improved water management, accounting, and productivity; 1.3 Enhanced platforms and tools for collaboration in learning and application of knowledge on agri-food technology development and transfer, supporting the development of national strategies; and 1.4. Using digital technologies for climate smart precision farming.

37. The TEC in its draft workplan under workstream Transformative and Innovation solutions, Agri-food-water system intends to "analyse knowledge gaps on the nexus of agriculture, water, food security, energy and climate and identify relevant adaptation technologies (including indigenous),

[18] TEC Brief on using roadmapping to facilitate planning and implementation of climate technologies

innovation and potential digitalization to strengthen adaptation planning (NAP) and NDCs in agriculture." (Activity C1.1. of TEC draft workplan for 2023-2027).

38. These two activities are complementary in a way that gaps analysed by the TEC could be built upon various technical assistance the CTCN has undertaken and the analysis on innovative adaptation technologies and the potential role of digitalization could feed back into the CTCN work in responding to related requests from developing countries.

39. In addition, potential joint activities of the TEC and CTCN in this nexus could be identified, for example work on agro-forestry, or circular economy approach to agriculture.

4. Digitalization

40. The TEC workplan refers to general purpose technologies that provide solutions that could be applied across sectors and industries by creating technological platforms for a growing number of interrelated innovations. The Programme of Work, the CTCN identifies digitalization as enabler to accelerate and amplify impact of system transformation. It will explore how digital technologies and circular design can bring significant potential in reductions in the global carbon footprint, and focus on promoting access to Digital public goods that will enable the design of policies, that support climate risk assessments, planning for adaption and resilience at country level, promotion of low emission pathways and informing climate investment decisions.

41. The two bodies will work together to explore role of digitalization in various areas of work such as energy, agriculture, early warning system, buildings and so on.

5. *place holder for any other common areas of work identified during the consideration of TEC 25, joint session TEC-AB, and CTCN AB 20.*

Other areas

42. There are rapidly emerging global technology issues and respective decisions and outcomes of the COP; CMA and high level activities that may require urgent attention of the technology mechanism within the period of the implementation of current respective plans and programmes discussed here that could be given due consideration as well. As such reporting may not be confined to what has been planned for here.

IV. Workplan of the Technology Executive Committee (2023 – 2027)

43. *Draft workplan of the TEC 2023-2027 to be considered and agreed by the TEC at TEC25.*

V. Programme of Work of the Climate Technology Centre and Network (2023 – 2027)

44. *Draft Programme of work of the CTCN 2023-2027 to be considered and agreed by the CTCN Advisory Board at CTCN AB 20.*