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Development and transfer of technologies and implementation of the Technology Mechanism

**First periodic assessment referred to in
paragraph 69 of decision 1/CP.21**

First periodic assessment of the Technology Mechanism

Interim report by the secretariat

Summary

This report contains the preliminary findings of the first periodic assessment of the effectiveness and adequacy of the support provided to the Technology Mechanism in supporting the implementation of the Paris Agreement on matters relating to technology development and transfer. The findings address the areas of assessment suggested under the scope of the periodic assessment contained in the annex to decision 16/CMA.1, including the outputs, outcomes and impact of the Technology Mechanism. The report includes a discussion of the methodological approach to the periodic assessment.



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Abbreviations and acronyms

CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
CTC	Climate Technology Centre
CTCN	Climate Technology Centre and Network
DTU	Technical University of Denmark
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	greenhouse gas
INDC	intended nationally determined contribution
IPCC	Intergovernmental Panel on Climate Change
LDC	least developed country
MDB	multilateral development bank
NAMA	nationally appropriate mitigation action
NDA	national designated authority
NDC	nationally determined contribution
NDE	national designated entity
non-Annex I Party	Party not included in Annex I to the Convention
SBI	Subsidiary Body for Implementation
SCF	Standing Committee on Finance
SMEs	small and medium-sized enterprises
TAP	technology action plan
TEC	Technology Executive Committee
TNA	technology needs assessment
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization

I. Introduction

A. Mandate

1. COP 16 established the Technology Mechanism to facilitate the implementation of actions for achieving the objective of enhancing action on technology development and transfer.¹ The Mechanism consists of two bodies: the TEC, its policy arm, and the CTCN, its implementation arm. It also serves the Paris Agreement.²
2. CMA 1 adopted the technology framework under Article 10, paragraph 4, of the Paris Agreement to provide overarching guidance to the work of the Technology Mechanism in promoting and facilitating enhanced action on technology development and transfer in order to support the implementation of the Paris Agreement.³ CMA 1 also adopted the scope of and modalities for the periodic assessment of the effectiveness and adequacy of the support provided to the Technology Mechanism in supporting the implementation of the Paris Agreement on matters relating to technology development and transfer.⁴
3. CMA 3 initiated the first periodic assessment of the effectiveness and adequacy of the support provided to the Technology Mechanism, in accordance with its scope and modalities, with a view to it being completed at CMA 4 (November 2022).⁵
4. CMA 3 requested the secretariat to prepare an interim report on the effectiveness and adequacy of the support provided to the Technology Mechanism for consideration at SBI 56.⁶

B. Possible action by the Subsidiary Body for Implementation

5. The SBI may wish to consider this interim report and to provide guidance to the secretariat for preparing the final report on the first periodic assessment.

II. Methodology

A. Scope

6. The methodological approach to the first periodic assessment, which covers global (or, where relevant, regional or country-specific) activities carried out under the Technology Mechanism in 2017–2021, is structured around the scope of the assessment, which consists of the following two elements:⁷
 - (a) The effectiveness of the Technology Mechanism in supporting the implementation of the Paris Agreement on matters relating to technology development and transfer;
 - (b) The adequacy of the support provided to the Technology Mechanism in supporting the implementation of the Paris Agreement on matters relating to technology development and transfer.
7. For each of these elements, an evaluation grid was developed, setting out the questions, indicators and data sources to be considered (see annex I).

¹ Decision 1/CP.16, para. 117.

² Article 10, para. 3, of the Paris Agreement.

³ Decision 15/CMA.1, para. 1.

⁴ Decision 16/CMA.1, para. 1. The scope of and modalities for the assessment are set out in the annex to that decision.

⁵ Decision 17/CMA.3, para. 1.

⁶ Decision 17/CMA.3, para. 2.

⁷ Decision 16/CMA.1, annex, para. 1.

B. Workplan

8. The methodology consists of three phases of work, which had been completed to varying extents at the time of finalizing this interim report, depending on the availability of data and stakeholder inputs:

(a) **Inception**, in which the methodological approach to the assessment was developed in consultation with stakeholders: completed;

(b) **Data collection and analysis**: partially completed;

(c) **Conclusion and recommendations**, in which the outcomes of the activities undertaken in the data collection and analysis phase are considered: due to be completed by August 2022.

9. The following activities have been undertaken as part of the data collection and analysis phase:

(a) Interviews with 15 Technology Mechanism stakeholders, including TEC members and observers, CTCN Advisory Board members and CTCN staff, and representatives of the GCF, the GEF, UNEP, UNIDO and observer organizations (see annex III);

(b) A survey of TEC members and observers and CTCN Advisory Board members and staff to gather information and views (see annex V for the survey methodology). The survey had 22 responses, equating to a response rate of 34 per cent.

10. The following activities of the data collection and analysis phase are in progress:

(a) An extensive review of publications and internal documents of the TEC and the CTCN to evaluate their strategy, governance, operations, services and outcomes, as well as other relevant documents (see annex II for a list of documents already processed). The remaining documentation to be reviewed includes:

(i) The results of the 2022 NDE survey;

(ii) The terminal evaluation of the UNIDO–GEF project Promoting Accelerated Transfer and Scaled-up Deployment of Mitigation Technologies through the CTCN;⁸

(b) In-depth case studies of three countries (Dominican Republic, Thailand and United Republic of Tanzania) to assess the extent to which the outputs of the Technology Mechanism delivered expected outcomes and related impacts (see annex IV for details on the criteria for selecting these three countries and the methodology applied for the case studies).

III. Preliminary findings of the first periodic assessment

11. The preliminary findings are based on the responses to the questions defined during the inception phase of the assessment. The findings are based on inputs from stakeholders, which were cross-checked against data collected during a desk review.

A. Effectiveness of the Technology Mechanism

1. Facilitation of the transformational changes envisioned in the Paris Agreement

12. Activities under the Technology Mechanism are intended to support countries in developing and transferring climate technologies that reduce GHG emissions and improve resilience to climate change. The Technology Mechanism's role in facilitating the transformational changes towards climate resilience and low GHG emission development envisioned in the Paris Agreement is considered to be constrained by the large scale of action

⁸ UNIDO. 2022. *Promoting Accelerated Transfer and Scaled-up Deployment of Mitigation Technologies through the CTCN. Independent Terminal Evaluation*. Available at <https://www.unido.org/resources-evaluation-and-internal-oversight-evaluation/reports-project-evaluations>.

required to achieve the purpose and long-term goals of the Paris Agreement and the limited resources allocated to the Mechanism.

13. One of the aims of both the TEC and the CTCN is to help create the enabling conditions (including through capacity-building and development of national policies and measures) that will lead to transformational changes. Transformation is hard to forecast, has multiple facets and causes and occurs gradually over time. Evaluating the Technology Mechanism's contribution to facilitating transformational changes is therefore challenging and needs to be based on a sophisticated monitoring and evaluation system, the development of which itself requires substantial resources.

14. The CTCN monitoring and evaluation system focused on ex ante indicators (e.g. anticipated metric tonnes of carbon dioxide equivalent emissions reduced or avoided as a result of CTCN technical assistance, and anticipated increased economic, health, infrastructure, built environment or ecosystem resilience to climate change impacts reported by CTCN participant countries).⁹ Owing to the country-driven nature of the technical assistance provided by the CTCN, deriving a baseline or target for those indicators was not possible, and aggregated quantitative values for the indicators were not available. As part of the updated system, the indicators in the technical assistance closure reports will be used to estimate the impact of CTCN activities on GHG emissions, but the accuracy of the information reported on these indicators is contingent on the implementers and quality assurance checks by the CTCN secretariat. As to the TEC, the nature of its work prevents estimations of its impacts in terms of GHG emission reduction and enhancing resilience to climate change; as such, relevant indicators have not been included in its monitoring and evaluation system.

15. However, there is some evidence that the Technology Mechanism has had impacts in terms of mitigating GHG emissions and improving resilience to climate change. According to the 2020 NDE survey, 56 per cent of respondents considered that CTCN technical assistance supported or influenced activities that could result in reduced or avoided GHG emissions.¹⁰ The NDEs surveyed stated that CTCN technical assistance was likely to bring about sustainable mitigation and adaptation impacts, mainly by contributing to making livelihoods more climate-resilient, communities less vulnerable and ecosystems more resistant to climate-induced disturbances. An assessment of the transformational impact of CTCN support¹¹ carried out by UNEP Copenhagen Climate Centre¹² in 2020 shows that CTCN activities are expected to contribute to transformational changes by reducing GHG emissions and facilitating adaptation outcomes.

16. In addition to providing technical assistance, the TEC and the CTCN undertook analytical work to address challenges and develop solutions related to technology development and transfer, which contributed to enhancing knowledge in this area and could support Parties in making the transformational changes envisioned in the Paris Agreement. Innovation, which plays a key role in transformational change, was the focus of TEC technical papers and reports on international collaboration on research, development and demonstration for climate technologies; innovative approaches to deploying, disseminating and scaling up adaptation technologies; and emerging climate technologies. The TEC organized a thematic dialogue (jointly with the CTCN and the GCF) and virtual events on the promotion of climate technology incubators and accelerators in developing countries.

2. Contribution to the achievement of the long-term vision referred to in Article 10, paragraph 1, of the Paris Agreement

17. The work of the Technology Mechanism has created favourable conditions for the adoption of new and existing technologies by developing countries, but many of the changes arising from these conditions will only materialize over time. The purpose of the first periodic assessment is therefore to assess early signs of progress and the extent to which the

⁹ CTCN. 2020. *Climate Technology Centre and Network Monitoring and Evaluation System*. Available at https://www.ctc-n.org/sites/www.ctc-n.org/files/resources/ctcn_me_system.pdf.

¹⁰ See CTCN Advisory Board document AB/2021/17/18.1.

¹¹ Olsen et al. 2020. *Climate Technology Center and Network Transformational Impact Assessment*. Copenhagen: UNEP DTU Partnership.

¹² Formerly UNEP DTU Partnership.

Technology Mechanism is already contributing to the adoption of such technologies, or is reasonably likely to do so in the future. As concluded in the transformational impact assessment mentioned in paragraph 15 above, CTCN technical assistance facilitates the early adoption or scaling up of climate technologies by focusing research, development and demonstration on or targeting for innovation a particular area of technology. Whether the technology is ultimately adopted or scaled up depends on the extent to which the recommendations issued as part of the technical assistance are implemented, which is beyond the control of the CTCN.

18. TEC recommendations and publications have been used by stakeholders to enhance technology development and transfer. In the 2020 NDE survey, 35 per cent of NDEs indicated that they based requests for CTCN technical assistance on TEC products. However, opinions on whether TEC products have improved the capacity of national stakeholders to develop, deploy and disseminate technologies were mixed, with 14 per cent of NDEs considering the influence of the TEC in this regard to be non-existent and 36 per cent considering it to be limited.¹³ Regarding the use of TEC products by stakeholders other than NDEs, some respondents noted that Parties were not utilizing TEC resources when formulating their TNAs and NDCs and that TEC policy guidance only seemed to be taken into account after it had been adopted and recommended by the COP. There are, however, examples of TEC policy recommendations and publications being used directly by stakeholders. One such example is the definition of endogenous capacities and technologies recommended by the TEC¹⁴ being applied in the guidance for lead reviewers for the review of national communications and biennial reports.¹⁵ In addition, TEC inputs to draft guidance for the operating entities of the Financial Mechanism have played a role in decisions of the COP (e.g. decisions 12/CP.25 and 13/CP.25), and a wide range of publications, from scientific articles to guidebooks, have referenced TEC products.¹⁶

3. Contribution to strengthening cooperative action on technology development and transfer

19. The CTCN has facilitated or enabled collaboration on technology development and transfer within and between developed and developing countries, counting 26 such collaborations in 2021, including 12 South–South collaborations.¹⁷ In 2020, 13 South–South collaborations were facilitated as a result of CTCN technical assistance and 10 cooperative research, development and demonstration programmes were carried out within and between developed and developing countries.¹⁸ Examples of South–South collaboration facilitated by the CTCN include pro bono technical assistance provided by the Republic of Korea to countries in Africa and Asia;¹⁹ technical assistance provided by Network members and CTCN consortium partners from developing countries; knowledge-sharing between Latin American countries during workshops held by the CTCN; the launch of the Latin America and the Caribbean Circular Economy Coalition in 2021; and knowledge-sharing among participants of the Gender Just Climate Solutions programme.

20. TEC and CTCN events and meetings are recognized by stakeholders for their role in facilitating networking and collaboration. Since 2019, the TEC has tracked its events on technology development and transfer, by thematic area, in its monitoring and evaluation system. At the time of the review, the TEC had already exceeded most of the targets in its rolling workplan for 2019–2022²⁰ regarding number of events. In the area of innovation, the TEC organized and held 10 events on innovative climate technologies and research, development and demonstration between 2019 and 2021 (exceeding its target for 2019–2022

¹³ See TEC document TEC/2020/21/11.

¹⁴ FCCC/SB/2019/4, paras. 52–53.

¹⁵ UNFCCC. 2022. *Review Practice Guidance 2022 for Review of National Communications and Biennial Reports of Developed Country Parties*. Available at <https://unfccc.int/documents/461001>.

¹⁶ See TEC document TEC/2021/23/14.

¹⁷ See CTCN Advisory Board document AB/2022/19/11.1.

¹⁸ See CTCN Advisory Board document AB/2021/17/14.1.

¹⁹ Lee W, Bak I, Kim H-J, et al. 2020. What Leads to the Success of Climate Technology Centre and Network Pro Bono Technical Assistance? *Journal of Climate Change Research*. 11(5–1): pp.353–366. Available at <https://www.dbpia.co.kr/Journal/articleDetail?nodeId=NODE10490630>.

²⁰ Available at <https://unfccc.int/tclear/tec>.

of 1 event). Two events were organized on enabling environments and capacity-building (meeting the target) and 13 events were organized that covered multiple workstreams of the workplan. The TEC exceeded its target for 2019–2022 in the area of collaboration and stakeholder engagement (6 events) by holding 15 events in 2019–2021.

21. Since 2017, the CTCN has held an average of 30 events per year to promote networking, knowledge-sharing and matchmaking. Each year, it has met or exceeded event targets (except in 2020 owing to circumstances related to the coronavirus disease 2019 pandemic). In addition, the number of thematic events, training sessions and national events supported by the CTCN increased significantly between 2017 and 2021, with the reduction in the number of in-person events held since 2020 as a result of the pandemic being compensated by an increase in the number of virtual events. Stakeholders generally perceive CTCN events positively, agreeing that they facilitate networking and collaboration.²¹

22. The CTCN programme for SMEs, the aim of which is to help SMEs in various industries move from conventional to climate-friendly technologies and increase their efficiency and competitiveness, is viewed by SMEs involved in the programme as both relevant and promising. Following two clinics for SMEs held in 2020 in Kenya and the United Republic of Tanzania, 27 SMEs were matched with financiers and climate technology solution providers (15 in Kenya and 12 in the United Republic of Tanzania).²² In 2021, the CTCN held a technology clinic for SMEs in the agrifood industry in Thailand to raise awareness of the climate technologies available and scheduled a matchmaking event for stakeholders for April 2022.

23. The promotion of multi-country technical assistance and the regional approach of the CTCN are designed to foster cooperation among stakeholders in the same region. Multi-country requests have enhanced cooperation among countries and facilitated regional dialogue, leading to the harmonization of regulations,²³ and have provided opportunities for replication, scaling up and learning. The regional approach of the CTCN is a recent addition to the CTCN approach, which means that it is too early to assess its impact on stakeholder cooperation.

4. Enhancement of the implementation of the technology elements of nationally determined contributions and technology needs assessments

24. The CTCN has supported 16 Parties in developing or updating their TNAs to date.²⁴ Most of the technical assistance provided to support Parties in developing their TNAs has also helped them to develop TAPs. In addition, the CTCN has supported the implementation of technologies prioritized in TNAs and TAPs. In 2020, it exceeded its target for providing support to Parties for developing their TNAs and TAPs.²⁵ The CTCN Advisory Board members who took part in the survey referred to in paragraph 9(b) above had an overall positive impression of the support provided by the CTCN in this area. However, the terminal evaluation of phase II of the TNA global project (implemented by UNEP and UNEP Copenhagen Climate Centre on behalf of the GEF) suggested that the involvement of the CTCN in this project was insufficient and more proactive engagement would have been beneficial.²⁶

25. The capacity of the TEC to produce publications and formulate policy recommendations on TNAs and the uptake of existing technologies is assessed by its monitoring and evaluation system (in the thematic area of implementation). The TEC will likely meet its 2019–2022 target for number of sets of policy recommendations (a target of five for 2019–2022, with four delivered in 2019–2021). In addition, the TEC produced four publications on TNAs and existing technologies between 2019 and 2021; given that two

²¹ FCCC/CP/2021/3, para. 31.

²² See CTCN Advisory Board document AB/2022/19/11.1.

²³ FCCC/SB/2021/5, para. 77.

²⁴ See CTCN Advisory Board document AB/2022/19/11.1, p. 29.

²⁵ See CTCN Advisory Board document AB/2021/17/14.1.

²⁶ UNEP. 2020. *Terminal Evaluation of the UNEP/GEF Project “Technology Needs Assessment Phase II”*. Available at

https://wedocs.unep.org/bitstream/handle/20.500.11822/32207/4948_2020_te_unep_gef_fsp_spcc_tech_nology_needs_assessment_phase_II.pdf?sequence=1&isAllowed=y.

publications are planned for 2022, its target of six for 2019–2022 may be achieved. Through TNA syntheses on experience and lessons learned from the TNA process and publications on TNA linkages with other processes, including NDCs, the TEC aims to provide a thorough analysis of the TNAs conducted by Parties, results, outcomes and possible improvements. Most participants in the 2020 NDE survey responded somewhat neutrally when asked about the extent to which the TEC facilitates the implementation of the technology elements of TNAs and NDCs through its work.

5. Quantitative impacts resulting from technical assistance, including potential emission reductions, number of technology solutions delivered and investment leveraged

26. Recognition of the work of the CTCN and its potential benefits for developing countries is increasing, as evidenced by the significant increase in the number of technical assistance requests received in 2020 and 2021 (216 and 321, respectively). In terms of delivering technology solutions, the CTCN contributed to the adoption of new technologies mainly through pre-feasibility and feasibility studies (e.g. ocean thermal energy conversion in Nauru and solar milling for agrifood production in Senegal), which together account for 20 per cent of all requests for technical assistance.²⁷ The impacts of the work of the CTCN are generally assessed in the five thematic areas discussed in paragraphs 27–31 below.

27. **Implementation.** The number of technical assistance projects completed annually increased from 24 in 2017 to 58 in 2020. This figure decreased slightly in 2021, to 23, though the dip can be attributed to the effects of the pandemic. The number of lessons learned from implementing technical assistance, as shared on the CTCN knowledge management system,²⁸ has increased: in 2020, 10 per cent of technical assistance recipients shared lessons learned, compared with 90 per cent in 2021. Furthermore, 81 per cent of NDEs who responded to the 2020 NDE survey indicated that their countries had implemented recommendations from CTCN technical assistance on matters such as funding proposal submission and policy implementation. This indicates the extent to which technical assistance, aimed at developing and strengthening policies, plans, and legal and regulatory frameworks, as well as identifying barriers to the development and transfer of socially and environmentally sound technologies, is acted on. Examples of technical assistance include proposals to update Georgia's TNA through developing technology road maps and to formulate a 10-year national agroforestry strategy for Kenya.

28. **Innovation.** In its second programme of work (covering 2019–2022)²⁹ and by aligning its annual operating plan with the five key themes of the technology framework,³⁰ the CTCN has sought to enhance its focus on research, development and demonstration. A total of 39 countries developed, transferred and deployed new and existing climate technologies as a result of CTCN support in 2020³¹ and 2021.³² As a result of CTCN technical assistance, the number of cooperative research, development and demonstration programmes within and between developed and developing countries stood at 10 in 2020³³ and 26 in 2021 (of which 12 were between developing countries).³⁴

29. **Enabling environment.** Recommendations provided under CTCN technical assistance contribute to creating enabling environments, such as by providing information and raising awareness, creating the policy and regulatory environments needed for technology development and transfer and building institutional capacity to adopt, disseminate and scale up climate technologies. Although the CTCN achieved or exceeded most of its targets in this area for 2020 and 2021, stakeholders have rather mixed perceptions of its

²⁷ See CTCN Advisory Board document AB/2022/19/11.1.

²⁸ <https://www.ctc-n.org/>.

²⁹ See https://www.ctc-n.org/sites/www.ctc-n.org/files/ctcn_programme_of_work_2019-2022.pdf.

³⁰ Innovation, implementation, enabling environment and capacity-building, collaboration and stakeholder engagement, and support; for details, see decision 15/CMA.1, annex, chap. III.

³¹ See CTCN Advisory Board document AB/2021/17/14.1.

³² See CTCN Advisory Board document AB/2022/19/11.1.

³³ See CTCN Advisory Board document AB/2021/17/14.1.

³⁴ See CTCN Advisory Board document AB/2022/19/11.1.

contributions in this regard according to the survey conducted for this assessment (see para. 9(b) above).

30. **Capacity-building.** According to the transformational impact assessment referred to in paragraph 15 above, technical assistance commonly addresses raising awareness among government actors. However, the assessment also indicates that few interventions include direct attempts to target changing behaviour and social norms. While an aim of technical assistance tends to be to raise awareness of at least one group of change agents (most commonly government agencies), these change agents are unlikely to bring about sustained transformational change. Half of the respondents to the 2020 NDE survey indicated that the CTCN provided stakeholders with access to approaches, tools and means for assessing technologies, supported climate technology plans and increased stakeholder capacity in relation to technology development and transfer.

31. **Financial resources.** Technical assistance may focus on strengthening access to private sector finance by scaling up pre-feasibility studies, thus defining market barriers and thereby enabling investors to overcome the barriers and access those markets. CTCN technical assistance provided to the Dominican Republic is a case in point.³⁵ The extent to which technical assistance leveraged additional funding is captured by the relevant monitoring and evaluation indicator,³⁶ according to which additional funding of over USD 240 million was expected to be leveraged in 2020 from a USD 1.5 million investment from technical assistance activities,³⁷ increasing to more than USD 760 million in 2021.³⁸ According to the 2020 NDE survey, stakeholders have mixed perceptions about the capacity of the CTCN to leverage additional funding or investment. The interviews and surveys carried out for this assessment (see para. 9(a–b) above) found that stakeholders believe that technical assistance is still limited in its capacity to assist in identifying and making available financial resources to support climate technology, particularly in terms of leveraging financing from the private sector.

6. Cost-effectiveness and efficiency of work

32. According to the stakeholders interviewed for this assessment (see para. 9(a) above), the CTCN is cost-effective considering its broad mandate and the large number of activities it undertakes with limited resources. Advisory Board members who participated in the survey (see para. 9(b) above) agree that the management structure, processes, procedures, communication, and monitoring and evaluation system of the CTCN have contributed to optimizing its operations. Although the country-driven approach to technical assistance requests enables the CTCN to respond to countries' needs in a targeted manner, it may limit the cost-effectiveness of the CTCN. Under this approach, technical assistance is tailored to each country's specific needs and thus entails higher transaction costs than a standardized or large-scale approach. The regional approach of the CTCN has enhanced its efficiency by improving communication and coordination with NDEs. In addition, the multi-country projects have enabled ready-to-transfer technologies to be applied at a large scale, covering countries with common challenges and reducing transaction costs.³⁹ With fewer resources, the CTCN would have had to limit the scope of the projects or cancel some planned activities, thereby affecting the quantity and quality of outputs and outcomes delivered.⁴⁰

33. TEC members and observers interviewed and surveyed agreed that the composition, organizational set-up (with task forces), rules of procedure, planning of activities, and monitoring and evaluation system of the TEC ensured the efficiency of its operations, with effective internal communication among TEC members and observers and the nature of TEC work contributing to its cost-effectiveness.

³⁵ See <https://www.ctc-n.org/content/mapping-contribution-private-sector-mitigation-and-adaptation-targets-dominican-republic>.

³⁶ Amount of funding or investment mobilized or leveraged (in United States dollars) for all activities of the technology framework as a result of the technical assistance.

³⁷ See CTCN Advisory Board document AB/2021/17/14.1.

³⁸ See CTCN Advisory Board document AB/2022/19/11.1.

³⁹ FCCC/SB/2019/4, para. 121.

⁴⁰ FCCC/CP/2021/3, para. 44.

7. Success in implementation of workplans

34. Overall, the CTCN achieved the targets in its annual operating plans and its performance in this regard was recognized by all stakeholders interviewed. However, it appears that the operational objectives of the CTCN were mainly determined by taking into account past results and budget constraints rather than potential for improvement.⁴¹ Performance against targets in various areas of work was as follows:

(a) **Technical assistance:** since 2017, the number of technical assistance response plans being designed has fluctuated between 30 and 50 per year. Between 2017 and 2019, the yearly target output decreased from 50–70 to 30–40 for technical assistance response plans being designed and from 40–60 to 25–35 for technical assistance implemented or concluded. In 2020 and 2021, the target of 30 requests supported per year was achieved. The geographical coverage of technical assistance requests matches the mandate of the CTCN to prioritize the LDCs and other vulnerable countries. The most common type of request, namely for decision-making tools and information, has not changed significantly over the years. Technical assistance provided tends to focus less on adaptation than on mitigation;

(b) **Capacity-building:** capacity-building activities and networking events were perceived positively by stakeholders. Almost every outreach, capacity-building and enabling environment target was met in 2020⁴² and 2021.⁴³ Indicator ratings between 2017 and 2019 relating to peer-learning, capacity-building, networking and stakeholder engagement were more mixed but overall positive.⁴⁴ The CTCN partly responded to the recommendation arising from the first independent review of the CTCN⁴⁵ to continue training NDEs regularly and facilitating the elaboration of technical assistance requests through regional forums and the CTCN Incubator Programme;

(c) **Knowledge-sharing:** between 2017 and 2019, the knowledge management system of the CTCN underwent structural changes to increase the focus on supportive infrastructure and search engine optimization. As a result, content on the CTCN web pages is now more stable, tailored and accessible. The number of online tools and information materials was reduced between 2018 and 2019 to improve the clarity and relevance of content.⁴⁶ The number of knowledge partners contributing to the knowledge management system remained constant and within the target range, while the number of web page visits grew from 122,957 in 2017 to 563,655 in 2021 (equating to an average annual increase of 90 per cent).

35. The TEC performed well in implementing its workplan for 2019–2022. In terms of policy recommendations for the CMA and the COP, the TEC will most likely meet its target for the period, having delivered 8 sets of policy recommendations by the end of 2021 against the overall target of 12 for 2019–2022. As for publications, the TEC produced 12 between 2019 and 2021, which means it will be challenging to achieve its target of 18 for 2019–2022. The performance of the TEC in terms of organizing meetings and events is covered in paragraph 20 above.

8. Challenges overcome and opportunities for improvement identified

36. This section focuses on how the TEC and the CTCN have been dealing with challenges regarding monitoring and evaluation and the recommendations from previous

⁴¹ FCCC/CP/2021/3, para. 24.

⁴² The only target not met relates to the number of technology descriptions, publications, national plans and other information resources made available on the CTCN knowledge platform.

⁴³ See CTCN Advisory Board document AB/2022/19/11.1.

⁴⁴ While the number of thematic events, training sessions and national events hosted or supported by the CTCN increased significantly between 2017 and 2019, the number of secondees, new countries enrolled in the Incubator Programme, regional forums organized, NDEs trained and webinars held decreased or remained the same during the same period.

⁴⁵ See document FCCC/CP/2017/3.

⁴⁶ CTCN. 2019. *CTCN progress report 2019*. Available at <https://www.unep.org/resources/annual-report/ctcn-progress-report-2019>.

evaluations. Other challenges and opportunities for improvement are presented throughout this report.

37. The TEC, in coordination with the CTCN, developed a monitoring and evaluation framework and corresponding system to report on its activities and ensure their contribution to the transformational changes envisioned in the Paris Agreement.⁴⁷ TEC 19 agreed to implement the monitoring and evaluation system on a trial basis and that it would be reviewed by TEC 21.⁴⁸ The trial led to some adjustments being made (e.g. the addition of indicators relating to gender considerations).

38. The monitoring and evaluation system of the TEC is relatively simple in terms of the type and number of indicators involved, which is an advantage considering the resources needed for data processing but could oversimplify the reality.⁴⁹ Oversimplification is particularly relevant when assessing the complex outcomes of TEC work. As such, the system may be adequate for assessing the outputs of TEC work, but less so for assessing transformational change.

39. Regarding the CTCN monitoring and evaluation system, the findings are presented at CTCN Advisory Board meetings and taken into account when preparing CTCN annual operating plans and programmes of work. As noted during the first and second⁵⁰ independent reviews of the CTCN, assessing the impacts of CTCN activities in quantitative terms is complex as they are intended to catalyse systemic change, which is not visible in the short term. To address this issue and enhance the consistency of its reporting, as well as better measure and demonstrate the effectiveness and impacts of its services, the CTCN, in coordination with the TEC and drawing on in-kind support from the United States Agency for International Development, reviewed its monitoring and evaluation system before operationalizing a revised system in 2020. As such, most of the indicators currently included in the system are not fully comparable with those used before 2020, and not all impact indicators (baseline and targets) had been calculated at the time of this assessment.

40. The second independent review of the CTCN revealed that the CTCN had acted on recommendations from previous evaluations, including the first independent review. The management response of UNEP to the second review⁵¹ formalized the actions to be implemented in line with the recommendations from that review. The TEC has not yet been subject to an evaluation.

9. Collaboration with stakeholders

41. The TEC and the CTCN made demonstrable efforts to collaborate with stakeholders in implementing the Paris Agreement. The stakeholders interviewed and surveyed for this assessment generally agreed that the two bodies had taken into account and supported a broad range of stakeholders with regard to sustainable development, gender, the special circumstances of the LDCs and small island developing States, and endogenous capacities and technologies.

42. The 2020 and 2021 collaboration and stakeholder engagement results show that the CTCN met or exceeded all targets in this area.⁵² These results were confirmed by the NDEs and beneficiaries that responded to a survey conducted during the second independent review of the CTCN. They considered that the CTCN made a solid contribution to informal interactions, collaborations and partnerships with local organizations (public or private) and international organizations and institutions, as well as under various initiatives. To increase the representativeness of the CTCN, COP 26 agreed to amend the constitution of the CTCN Advisory Board to include representatives of indigenous peoples organizations, the women and gender constituency and youth non-governmental organizations.⁵³ Nevertheless, NDEs and beneficiaries considered that the contribution of the CTCN to collaboration and

⁴⁷ As per decisions 15/CP.23, para. 5, and 15/CMA.1, annex, para. 25(e).

⁴⁸ See TEC document TEC/2019/19/16.

⁴⁹ See TEC document TEC/2020/21/11.

⁵⁰ See document FCCC/CP/2021/3.

⁵¹ FCCC/CP/2021/3, annex VIII.

⁵² See CTCN Advisory Board documents AB/2021/17/14.1 and AB/2022/19/11.1.

⁵³ Decision 10/CP.26, para. 1, and annex, para. 1(g).

stakeholder engagement tends to be limited to governments rather than actors such as final beneficiaries, private sector stakeholders and entrepreneurs.

43. The TEC engaged many organizations in implementing its activities – over 60 in 2020⁵⁴ and over 50 in 2021⁵⁵ – such as governments, observer organizations, NDEs, private sector stakeholders, academic institutions, financial institutions and international organizations. This engagement reflects the diverse expertise that the TEC has benefited from in implementing its work. Representatives of a number of constituencies of non-governmental organizations (including business and industry; environmental; research and independent; and youth) participated in TEC task forces. Furthermore, TEC meetings helped to enhance collaboration. Nevertheless, the survey results show that some gaps remain between the expectations of observer constituencies and their actual participation in TEC work.

44. The TEC made significant progress in mainstreaming gender in its work. In 2019, the TEC agreed to mainstream gender considerations in its workplan and subsequently appointed its gender focal points in 2020. It added gender-related indicators to its monitoring and evaluation system, included a section on recommendations on gender issues in more of its published documents, issued two sets of policy recommendations taking into account gender considerations and undertook three activities that incorporated gender considerations. In 2021, the TEC achieved its goal of achieving gender balance on the panels of its events for the first time. For the CTCN, gender equality is now fully embedded in its mandate through the Gender Policy and Action Plan 2019–2022. It partners annually with the women and gender constituency to hold the Gender Just Climate Solutions Awards and implement the associated mentoring programme.⁵⁶

45. The TEC and the CTCN have engaged the private sector in various thematic areas. However, according to interviewed stakeholders, collaboration under the Technology Mechanism could be more extensive with the private sector, particularly on adaptation projects. A comparison of the rolling workplan of the TEC and the CTCN programme of work revealed that engagement of the private sector in the work undertaken by the TEC and the CTCN could be enhanced.⁵⁷ This is consistent with the finding from the second independent review of the CTCN that private sector involvement in CTCN projects is low despite the sector accounting for nearly half of Network members.

46. The TEC has engaged with the research community in its work and activities. IPCC representatives participated in TEC 18 and 23 to present findings from the IPCC Special Report on Global Warming of 1.5 °C⁵⁸ and provide a status update on the contribution of Working Group III to the IPCC Sixth Assessment Report.⁵⁹ Representatives of the constituency of research and independent non-governmental organizations participate in several TEC task forces. However, some of the stakeholders interviewed and surveyed were of the view that engagement under the Technology Mechanism with the research community in general and the IPCC in particular could be enhanced in order to strengthen the link between research and implementation of emerging technologies.

47. The CTCN enhanced its collaboration with the GCF, as observed by the increased number of technical assistance requests funded by the GCF Readiness and Preparatory Support Programme. The CTCN Partnership and Liaison Office in the Republic of Korea is

⁵⁴ FCCC/SB/2020/4, para. 40.

⁵⁵ FCCC/SB/2021/5, para. 33.

⁵⁶ Women Engage for a Common Future. 2020. *Gender Just Climate Solutions*. Available at https://www.ctc-n.org/sites/www.ctc-n.org/files/resources/GJCS_English_Final.pdf.

⁵⁷ See TEC document TEC/2022/24/13.

⁵⁸ IPCC. 2018. *IPCC Special Report on the Impacts of Global Warming of 1.5 °C above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty*. V Masson-Delmotte, P Zhai, H-O Pörtner, et al. (eds.). Geneva: World Meteorological Organization. Available at <https://www.ipcc.ch/sr15/>.

⁵⁹ 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*. PR Shukla, J Skea, R Slade, et al. (eds.). Cambridge and New York: Cambridge University Press. Available at <https://www.ipcc.ch/report/ar6/wg3/>.

expected to further strengthen collaboration at the management level. On the operational side, CTCN Advisory Board members who participated in the survey (see para. 9(b) above) were generally of the view that collaboration among NDEs, GCF NDAs, GEF operational focal points and other donors (MDBs, bilateral banks, United Nations entities) has not increased. On the basis of monitoring and evaluation indicators in the thematic area of support and its collaboration with the operating entities of the Financial Mechanism, the TEC provided inputs and recommendations to the GCF, the GEF and the SCF in 2019–2021 on five occasions, including annual inputs to the draft guidance for the operating entities of the Financial Mechanism.

10. Response to the overarching guidance provided by the technology framework, existing mandates under the Paris Agreement and guidance from Parties

48. The TEC and the CTCN structure their rolling workplans and programmes of work, respectively, around the five key themes of the technology framework. Those interviewed mentioned challenges in aligning these documents with the themes. Some were of the view that the themes should not be considered separately as doing so makes tracking the impacts of cross-cutting technologies challenging. Nevertheless, stakeholders agreed that the TEC and the CTCN had aligned their rolling workplans and programmes of work, respectively, and their reporting to the CMA with the technology framework and that they had been responsive to subsequent CMA guidance. The stakeholders interviewed considered the mandate of the CTCN too broad, making it difficult to respond to all areas equally. Examples of action taken by the TEC and the CTCN in response to guidance provided by the CMA and in accordance with the five key themes are well documented in their joint annual reports.⁶⁰

11. Collaboration between the Technology Executive Committee and the Climate Technology Centre and Network

49. The TEC and the CTCN have been working together closely to enhance coherence and synergy under the Technology Mechanism. Activities undertaken by them as a collaborative effort include organizing joint sessions of the TEC and the CTCN Advisory Board meetings; establishing a joint task force and joint activities for work on NDCs and gender; jointly developing their monitoring and evaluation systems; conducting a biennial NDE survey; undertaking joint communication and outreach work under the Technology Mechanism (e.g. side events); and participating in each other's meetings and events. Collaboration between the two bodies has improved as a result of these activities. The efforts of the TEC and the CTCN to enhance their collaboration, including through systematic feedback, is also evidenced by new joint activities proposed during a joint session held in March 2022.⁶¹

50. Stakeholders surveyed tended to agree that the institutional arrangements and the governance of the TEC (members and task forces) and the CTCN (Advisory Board) facilitated communication and cooperation between the bodies, supported by the UNFCCC and CTCN secretariats. Participants in the 2020 NDE survey were asked about the contribution of TEC policy recommendations and publications to the preparation of technical assistance requests, which revealed this as an area for enhancing collaboration between the two bodies.

B. Adequacy of support provided to the Technology Mechanism

1. Support provided to the Technology Executive Committee and the Climate Technology Centre and Network, including the national designated entities

51. The extent to which stakeholders of the CTCN (CTCN staff, Network members, Advisory Board members, NDEs) and the TEC (TEC members and observers) have benefited from support tended to be perceived positively by the stakeholders interviewed and surveyed

⁶⁰ See TEC document TEC/2022/24/13.

⁶¹ See https://www.ctc-n.org/sites/www.ctc-n.org/files/DAY1_3.2_Update%20on%20the%20work%20of%20the%20CTCN_Moa%20Fostorp.pdf.

for this assessment. The TEC has benefited from the support of the UNFCCC secretariat in implementing its mandate and functions, while the CTC has benefited from being hosted by both UNEP and UNIDO. In response to a recommendation resulting from the second independent review of the CTCN, the CTC committed to streamlining its communication with host agencies at the management and operational level, while host agencies agreed to direct as many financial resources as possible to the CTCN multi-donor trust fund so as to reduce administrative and reporting barriers.⁶² In 2017–2021, the TEC had annual average funding of approximately USD 806,000 and the CTCN USD 8.89 million (fluctuating between a minimum of USD 3.82 million in 2019 and a maximum of USD 13.37 million in 2020).

52. The CTCN supported the NDEs in their roles by building capacity through events (e.g. annual regional forums facilitating exchange of best practices), webinars and other modes of training (e.g. in 2021, 74 NDEs and nominees participated in a five-week interactive online course on blockchain solutions and emerging digital technologies for global climate action)⁶³ and publications. As assessed in the second independent review of the CTCN, only half of non-Annex I Party NDEs surveyed stated that they had been supported in fulfilling their roles by the CTCN. Stakeholders agreed that NDEs lack resources in this regard (in order of importance: financial, material and human resources) from both the Technology Mechanism and their national host institutions. In addition, NDEs often felt that they lacked political support and visibility, pointing to an ongoing need to raise their profile within government and the private sector.⁶⁴ In response to a recommendation resulting from the second independent review, UNEP indicated that, with additional resources, it would be able to strengthen capacity-building programmes for non-Annex I Party NDEs, enabling them to prepare technical assistance requests in strategic areas following a programmatic approach, as well as further support the development of technology road maps for NDC implementation.

53. The TEC publication on endogenous capacities drew attention to the importance of building NDE capacity.⁶⁵ While 35 per cent of respondents to the 2020 NDE survey stated that they have used TEC products to prepare technical assistance requests,⁶⁶ stakeholders agreed that TEC publications do not fully address the specific needs of NDEs in carrying out their roles. The TEC and the CTCN have initiated consideration of enabling environments and capacity-building with a view to maximizing the impact of NDE roles at the national level.⁶⁷

2. Sources, types and level of support provided to the Technology Executive Committee and changes over time

54. The main source of funding of the TEC is the Trust Fund for the Core Budget of the UNFCCC, followed by voluntary financial contributions from Parties. Between 2017 and 2021, TEC core funding averaged USD 585,000 per year (fluctuating by ± 15 per cent). Supplementary funding over this time varied between USD 18,000 and 504,000 per year (representing 3–50 per cent of the total annual funding of the TEC in 2017–2021).

55. In 2018 and 2020, the supplementary funding did not fully cover the supplementary expenses, leading to an overall funding deficit of 33 and 14 per cent, respectively (there was a surplus in the other years, varying from 14 to 20 per cent). Some stakeholders indicated that they considered there was a lack of human resources within the UNFCCC secretariat available to fully support all of the TEC task forces established to support implementation of

⁶² FCCC/CP/2021/3, annex VIII.

⁶³ See https://www.ctc-n.org/sites/www.ctc-n.org/files/Day%2012.1_Director%27s%20presentation_Rose%20Mwebaza_0.pdf.

⁶⁴ FCCC/CP/2021/3, para. 43.

⁶⁵ TEC and UNFCCC. 2021. *Building capacities in climate technologies: Understanding gaps, needs, challenges and enabling measures to promote endogenous capacities and technologies*. Bonn: UNFCCC. Available at <https://unfccc.int/ttclear/endogenous/index.html>.

⁶⁶ See TEC document TEC/2020/21/11, para. 16.

⁶⁷ See https://www.ctc-n.org/sites/www.ctc-n.org/files/DAY1_3.1_Update%20on%20the%20work%20of%20the%20TEC%20and%20reflections_Ambrosio%20Yobanolo.pdf.

the TEC rolling workplan. Nevertheless, the large extent to which TEC activities have benefited from support provided by the UNFCCC secretariat was acknowledged by TEC members and observers interviewed and surveyed.

3. Sources, types and level of support provided to the Climate Technology Centre and Network and changes over time

56. The main sources of funding for the operational budget of the CTCN in 2017–2021 were bilateral funding and the host agencies' multi-donor trust fund (accounting for 74 per cent of the total funding), followed by GCF funding (accounting for 19 per cent), pro bono and in-kind support (accounting for 4 per cent) and contributions from the NDC Partnership and the Adaptation Fund (each accounting for 1.5 per cent).

57. COP 26 noted that the CTCN continues to face challenges that need attention, including limited and insufficient financial resources.⁶⁸ Several challenges have beset CTCN funding over the past four years:

(a) The CTCN has faced challenges in diversifying its funding streams (bilateral, multilateral and private sector, and philanthropic sources of support) for multi-year and annual contributions since 2017 and its resource mobilization targets have not been met;⁶⁹

(b) A total of 14 different donor countries have engaged with the CTCN since 2017 (6.75 donors on average per year). Some potential donor countries active in climate finance have opted to support other mechanisms;

(c) The CTCN has benefited from enhanced cooperation on its activities with the operating entities of the Financial Mechanism, as found in the second independent review of the CTCN.⁷⁰ The CTCN has collaborated with the operating entities on mutually beneficial projects, for example with the GCF on readiness support: 5 readiness projects had been completed as at 31 July 2021 and 30 approved for a total funding amount of USD 10.2 million.⁷¹ In addition, the CTCN and the GCF co-developed the Vision to Concept capacity-building module to assist developing country Parties in preparing project concept notes for and accessing GCF financing (32 concept notes were completed as CTCN technical assistance deliverables in 2021).⁷² The CTCN also continued to collaborate with the GEF; in 2022, the CTCN will start implementing the project Piloting Innovative Financing for Climate Adaptation Technologies in Medium-sized Cities as part of the GEF Challenge Program for Adaptation Innovation.⁷³ In terms of operational modalities, dialogues were held between the GEF and the CTCN to encourage collaboration between the regional climate technology transfer and finance centres funded by the GEF and the CTCN, as well as to discuss the involvement of the CTCN in GEF national dialogues and expanded constituency workshops, thus promoting CTCN engagement with GEF operational focal points and exploring ways to cooperate in a country-driven manner;⁷⁴

(d) The CTCN did not obtain any financial support from MDBs, the private sector, or philanthropic or innovative sources. This was reiterated by the stakeholders interviewed, who stated that CTCN activities did not benefit equally from major sources of bilateral, multilateral, private sector and philanthropic support;

(e) In-kind and pro bono support provided to the CTCN has increased thanks to Parties providing staff to the CTCN secretariat or directly implementing technical assistance on behalf of the CTCN. The target of USD 2 million per year set out in the 2018 resource mobilization strategy for in-kind and pro bono support was not reached, though the revised target of USD 0.5–1 million in the 2020 and 2021 annual operating plans was.

58. Besides these challenges, there have also been improvements in CTCN funding. New sources of funding emerged in 2020 with the contributions from the NDC Partnership and

⁶⁸ Decision 11/CP.26, para. 13.

⁶⁹ FCCC/CP/2021/3, para. 34.

⁷⁰ FCCC/CP/2021/3, para. 18.

⁷¹ FCCC/CP/2021/8, para. 47.

⁷² See CTCN Advisory Board document AB/2022/19/11.1.

⁷³ See CTCN Advisory Board document AB/2022/19/11.1.

⁷⁴ FCCC/CP/2021/9, para. 206.

the Adaptation Fund. As a result of the high-level donor round table convened by the CTC and its host institutions at COP 26, the total funding received by the CTCN in 2021 was 26 per cent higher than in 2020⁷⁵ (exceeding the annual target of 10 per cent). Since the CTCN was established, 22 donors (target: 20) of all kinds have provided funds.⁷⁶

4. Use of support provided

59. Opinions, including of stakeholders within the same category, differed on whether financial, human and technical resources provided to the TEC and the CTCN are sufficient to achieve their mandates. However, stakeholders were mostly satisfied with the allocation of resources to different TEC and CTCN activities.

60. Financial autonomy remains a challenge for the CTCN, with 74 per cent of the funding received in 2017–2021 already earmarked and the possibility that donor requests will result in the allocation of unearmarked funds to specific tasks being ever-present. This tends to shift the focus of the CTCN towards specific activities or locations. In addition, CTCN funding tends to be irregular, unpredictable and complicated to manage financially, which resulted in the CTCN underdelivering on its annual operating plan budgets by 17 per cent on average in 2017–2019. However, the CTCN managed to implement 99 per cent of its planned annual budget in 2020⁷⁷ and 109 per cent in 2021.⁷⁸

61. Stakeholders interviewed noted the lack of resources allocated to CTCN technical assistance with an adaptation focus despite the increase in adaptation requests, as evidenced by the high number of applications during the first two calls for the Adaptation Fund Climate Innovation Accelerator programme.⁷⁹ There is a thematic imbalance in the objectives pursued through technical assistance requests submitted to the CTCN: 29 per cent of requests supported adaptation goals, 23 per cent a combination of adaptation and mitigation goals and almost half mitigation goals only.⁸⁰ As to the TEC, no information is available on spending by theme (mitigation, adaptation, cross-cutting), but the majority of the activities set out in its rolling workplan for 2019–2022 support both mitigation goals (18 out of 22 activities) and adaptation goals (15 out of 22 activities), according to their workstream categorization.

62. Stakeholders interviewed also noted a lack of resources allocated to supporting hardware implementation. COP 16 defined the technology cycle as consisting of five stages: research and development, demonstration, deployment, diffusion, and transfer of technology.⁸¹ The CTCN supports the first two stages by carrying out innovative activities specifically for private sector Network members looking for further opportunities to support local SMEs (e.g. technology clinics, Youth Climate Innovation Labs) and by digitalizing its technical assistance.⁸² Regarding the deployment and diffusion stages of the technology cycle, CTCN work tends to focus on software-related skills, such as know-how, methods and practices.

⁷⁵ This value does not take into account GCF funding received in 2020–2021.

⁷⁶ See CTCN Advisory Board document AB/2022/19/11.1.

⁷⁷ See <https://www.ctc-n.org/sites/www.ctc-n.org/files/Agenda%20item%2014.%20CTCN%20AB17%20Report%20of%20the%20CTCN%20Director.pdf>.

⁷⁸ See <https://www.ctc-n.org/sites/www.ctc-n.org/files/Day%2012.1%20Director%27s%20presentation%20Rose%20Mwebaza%200.pdf>.

⁷⁹ See CTCN Advisory Board document AB/2022/19/11.1.

⁸⁰ FCCC/SB/2021/5, para. 75.

⁸¹ Decision 1/CP.16, para. 115.

⁸² FCCC/CP/2021/3, para. 55.

5. Extent to which support has met the budgets and plans of the Technology Mechanism

63. The CTCN provides its services by following a demand-driven approach, which ensures that they respond to developing countries' needs. Since the Paris Agreement entered into force, the CTCN has stepped up its efforts in relation to NDCs to support the implementation of the Agreement and respond adequately to developing countries' needs. This is important as technical assistance requests need to be linked explicitly to national plans and NDCs. The majority of stakeholders surveyed as part of the second independent review of the CTCN, particularly NDEs, considered CTCN activities and interventions to be relevant or very relevant. The CTCN ensures that it can respond well to developing countries' needs through NDEs; most developing countries have an NDE. According to stakeholders interviewed for this assessment, increased resources would allow the CTCN to respond to countries' needs more effectively (for instance it could allocate specific funds to cover project management costs, some of which are covered by NDEs' own funds) and to conduct more follow-up activities and ex post project evaluations. Overall, most stakeholders interviewed and surveyed considered that resources mobilized were insufficient for implementing TEC and CTCN activities. According to the interviewed and surveyed stakeholders, the CTCN and the TEC would have been able to respond to more country needs if increased resources were available.

IV. Next steps

64. This interim report contains the preliminary findings of the first periodic assessment of the Technology Mechanism. These findings will be reviewed to take into account guidance from Parties at SBI 56 as well as additional sources of information, such as the results of the 2022 NDE survey and three in-depth country case studies (see para. 10(b) above), when they become available.

65. The final report on the first periodic assessment will include conclusions, which will set out the main successes and challenges pertaining to the effectiveness and adequacy of the support provided to the Technology Mechanism in supporting the implementation of the Paris Agreement on matters relating to technology development and transfer, and recommendations for addressing the main challenges identified.

Annex I

Evaluation grids developed for the first periodic assessment of the Technology Mechanism

Table I.1

Evaluation of the effectiveness of the Technology Mechanism in supporting the implementation of the Paris Agreement

<i>Question^a</i>	<i>Subquestions</i>	<i>Quantitative indicators/descriptors</i>
(a) How has the Technology Mechanism facilitated the transformational changes envisioned in the Paris Agreement?	<p>To what extent:</p> <ul style="list-style-type: none"> • Have TEC and CTCN activities contributed to reducing GHG emissions? • Have TEC and CTCN activities contributed to improving resilience to climate change? 	<p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Anticipated metric tonnes of carbon dioxide equivalent emissions reduced or avoided as a result of CTCN technical assistance • Anticipated increased economic, health, infrastructure, built environment or ecosystem resilience to climate change impacts reported by CTCN participant countries <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Perceptions of stakeholders (notably NDEs) regarding the contribution of the TEC and the CTCN to reducing GHG emissions or enhancing climate resilience <p>Case studies and documentation review (including GEF project evaluation):</p> <ul style="list-style-type: none"> • Specific examples of GHG emission savings and/or increased climate resilience resulting from TEC and CTCN activities
(b) How has the Technology Mechanism contributed to the achievement of the long-term vision referred to in Article 10, paragraph 1, of the Paris Agreement?	<p>To what extent:</p> <ul style="list-style-type: none"> • Have CTCN technical assistance, capacity-building and knowledge-sharing activities contributed to the adoption and use of new and existing technologies in developing countries? • Have stakeholders used TEC recommendations and publications to enhance technology development and transfer? 	<p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Anticipated number of technologies identified, transferred or deployed as a result of CTCN support • NDE feedback on the uptake of CTCN technical assistance and non-technical assistance recommendations and outcomes for enhancing technology development and transfer <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Perceptions of stakeholders (notably NDEs) regarding the use of TEC recommendations and publications for enhancing technology development and transfer • Perceptions of stakeholders (notably NDEs) regarding the contribution of CTCN technical assistance and non-technical assistance activities to enhancing technology development and transfer <p>Case studies and documentation review (including GEF project evaluation):</p>

Question ^a	Subquestions	Quantitative indicators/descriptors
(c) How has the Technology Mechanism contributed to strengthening cooperative action on technology development and transfer?	<p>To what extent:</p> <ul style="list-style-type: none"> • Have TEC and CTCN events and meetings (e.g. CTCN regional forums) facilitated networking and collaboration among stakeholders? • Have the regional organization of the CTCN and multi-country technical assistance facilitated or enabled collaboration within and between developed and developing country Parties? 	<ul style="list-style-type: none"> • Specific examples of new and existing technologies adopted and used in developing countries as a result of CTCN activities or TEC work (recommendations and publications) <p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Anticipated number of collaborations facilitated or enabled within and between developed and developing country Parties (disaggregated by South–South; research, development and demonstration; and private sector collaboration) <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of the contribution of TEC and CTCN activities to strengthening cooperation among stakeholders on climate technology development and transfer matters <p>Case studies and documentation review:</p> <ul style="list-style-type: none"> • Specific examples of cooperation between stakeholders resulting from TEC and CTCN activities (e.g. participation in events, implementation of multi-country technical assistance)
(d) How has the Technology Mechanism enhanced the implementation of the technology elements of NDCs and TNAs?	<p>To what extent:</p> <ul style="list-style-type: none"> • Has the CTCN supported countries in conducting or updating their TNAs? • Have CTCN technical assistance services supported countries in implementing TAPs and project ideas? • Have CTCN non-technical assistance services helped to build the capacity of countries in relation to TNAs? • Has the TEC facilitated the implementation of the technology elements of TNAs and NDCs through its work, including its recommendations and publications? • Have the TEC and the CTCN promoted linkages between TNAs and NDCs, or the alignment thereof, with a view to increasing coherence between TNAs and NDCs and national strategies for climate-resilient low-emission development? 	<p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Number of countries that received support from the CTCN to develop their TNAs and TAPs <p>TEC monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Number of sets of policy recommendations relating to TNAs and the uptake of existing technologies • Number of publications produced by the TEC on TNAs and existing technologies <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Perceptions of stakeholders (notably NDEs) regarding the use of TEC recommendations and publications in implementing TNAs and NDCs • Perceptions of stakeholders (notably NDEs) regarding the contribution of CTCN technical assistance and TNA activities to supporting the implementation of TNAs and NDCs <p>Case studies and documentation review:</p> <ul style="list-style-type: none"> • Specific examples of the direct use of TEC recommendations or publications and CTCN activities in implementing the technology elements of TNAs and NDCs

<i>Question^a</i>	<i>Subquestions</i>	<i>Quantitative indicators/descriptors</i>
(e) How has the Technology Mechanism resulted in quantitative impacts through technical assistance, including potential emission reductions, number of technology solutions delivered and investment leveraged?	<p>To what extent has CTCN technical assistance:</p> <ul style="list-style-type: none"> Supported key stakeholders in developing, transferring and deploying new and existing climate technologies (innovation)? Helped countries to establish a clear pathway, with support options, towards enhancing technology development and transfer (implementation)? Built stakeholder capacity to develop, transfer and deploy climate technologies and enhanced institutional and legal frameworks in this regard (enabling environment and capacity-building)? Helped in identifying and making available financial and technical resources to support climate technology development and transfer (support)? 	<p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> Anticipated number of direct and indirect beneficiaries as a result of CTCN technical assistance (disaggregated by mitigation, adaptation and both mitigation and adaptation) Number of countries developing, transferring and deploying new and existing climate technologies as a result of CTCN support Anticipated number of policies, strategies, plans, laws, agreements or regulations proposed, adopted or implemented as a result of CTCN technical assistance (disaggregated by mitigation, adaptation and type) Anticipated amount of funding or investment leveraged (in United States dollars) as a result of CTCN technical assistance (disaggregated by public or private source, national or international source, and anticipated or confirmed funding) Number of stakeholders with enhanced technical capacity to develop, transfer and deploy climate technologies Number of countries with a strengthened national system of innovation as a result of CTCN support <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> Perceptions of stakeholders (notably NDEs) regarding the outcomes of CTCN technical assistance <p>Case studies and documentation review (including GEF project evaluation):</p> <ul style="list-style-type: none"> Specific examples of outcomes of CTCN technical assistance <p>Key documentation:</p> <ul style="list-style-type: none"> Rules of procedures, guidelines, modalities and workplans <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> Stakeholder perceptions of the cost-effectiveness and efficiency of TEC and CTCN operations <p>Case studies and documentation review (including GEF project evaluation):</p> <ul style="list-style-type: none"> Specific examples of best practices and inefficiency (in terms of communication, organization, administrative processes, operations, etc.)
(f) How have the Technology Mechanism bodies undertaken their work in a cost-effective and efficient manner?	<p>To what extent:</p> <ul style="list-style-type: none"> Have the management structure, processes, procedures, communication, and monitoring and evaluation system of the CTCN optimized its operation? Have the composition, organization (with task forces), rules of procedure, planning of activities, and monitoring and evaluation system of the TEC made its operations efficient? Could the same results have been achieved with fewer resources without reducing quality and quantity? 	<p>Key documentation:</p> <ul style="list-style-type: none"> Rules of procedures, guidelines, modalities and workplans <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> Stakeholder perceptions of the cost-effectiveness and efficiency of TEC and CTCN operations <p>Case studies and documentation review (including GEF project evaluation):</p> <ul style="list-style-type: none"> Specific examples of best practices and inefficiency (in terms of communication, organization, administrative processes, operations, etc.)

Question ^a	Subquestions	Quantitative indicators/descriptors
(g) How has the Technology Mechanism achieved success in terms of how the bodies of the Technology Mechanism have implemented their workplans?	<p>To what extent:</p> <ul style="list-style-type: none"> • Has the CTCN contributed to knowledge-sharing in relation to research, development and demonstration of new and innovative climate technologies? • Has the CTCN assisted countries in developing national institutional, legal and regulatory frameworks to encourage research, development and demonstration, and uptake of climate technologies? • Has the CTCN enhanced planning tools and processes for technology development and transfer? • Has the CTCN helped to raise public awareness of climate technologies? • Has the CTCN helped to create enabling environments for the development and transfer of socially and environmentally sound technologies? • Have TEC policy recommendations and publications on innovation, implementation, enabling environments and capacity-building, and support been used by stakeholders? • Have TEC recommendations and publications helped to enhance technology development and transfer? 	<p>CTCN monitoring and evaluation indicators:</p> <p>Technical assistance:</p> <ul style="list-style-type: none"> • Number of CTCN technical assistance requests supported (disaggregated by technical assistance and fast technical assistance) • Number of countries receiving CTCN support for national institutional, legal and regulatory frameworks to encourage research, development and demonstration, and uptake of climate technologies • Percentage of CTCN technical assistance supported with a gender analysis <p>Capacity-building:</p> <ul style="list-style-type: none"> • Number of CTCN training sessions and capacity-building activities • Number of participants in CTCN webinars • Number of people trained by the CTCN (disaggregated by gender) • Number of institutions trained by the CTCN (disaggregated by type) • Percentage of participants reporting satisfaction with CTCN training (disaggregated by gender) • Percentage of participants reporting increased knowledge, capacity and/or understanding as a result of CTCN training (disaggregated by gender) • Number of technology feasibility studies conducted and sectoral road maps developed <p>Knowledge-sharing:</p> <ul style="list-style-type: none"> • Number of knowledge resources related to research, development and demonstration and new and innovative technologies made available on the CTCN knowledge platform • Number of technology descriptions, publications, national plans and other information resources made available on the CTCN knowledge platform (disaggregated by type) • Number of site visits to the CTCN knowledge platform • Number of people reached through CTCN social media channels • Number of mentions of the CTCN in media <p>TEC monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Number of sets of policy recommendations on support for technology development and transfer;

Question ^a	Subquestions	Quantitative indicators/descriptors
<p>(h) How have the Technology Mechanism bodies overcome challenges?</p> <p>(i) How have the Technology Mechanism bodies identified opportunities for improvement?</p>	<ul style="list-style-type: none"> • Which challenges have the TEC and the CTCN faced? • To what extent have they overcome them and how? <p>To what extent:</p> <ul style="list-style-type: none"> • Do the TEC and CTCN monitoring systems identify gaps between objectives and effective outputs and outcomes, as well as the causes of those gaps? • Have recommendations from various evaluations, in particular with regard to the CTCN, been taken into account? 	<ul style="list-style-type: none"> • Number of sets of policy recommendations (comprising multiple policy recommendations) on innovative climate technologies and research, development and demonstration; • Number of sets of policy recommendations on technologies for coastal zone adaptation; • Number of sets of policy recommendations on enabling environments and barriers; and development and enhancement of endogenous capacities and technologies • Number of publications on support for technology development and transfer • Number of publications (including policy briefs, executive summaries, papers and compilations of good practices) on innovative climate technologies and research, development and demonstration • Number of publications on enabling environments and barriers, and enhancement of endogenous capacities and technologies <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of the cost-effectiveness and efficiency of TEC and CTCN operations <p>Documentation review:</p> <ul style="list-style-type: none"> • Identification of successes of TEC and CTCN activities implemented and planned (determined by a comparison of joint annual reports with annual and rolling workplans) <p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Lessons learned from technical assistance implementation available on the CTCN knowledge platform <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of challenges encountered by the TEC and the CTCN, actions adopted to overcome those challenges and the results of the actions • Stakeholder perceptions of opportunities, identified or implemented, for improving TEC and CTCN operations (and the results thereof, as applicable) <p>Documentation review:</p> <ul style="list-style-type: none"> • Assessment of the extent to which recommendations from previous evaluations and reviews have been implemented • Identification of changes in TEC and CTCN activities implemented and planned (determined by a comparison of joint annual reports with annual and rolling workplans)

Question ^a	Subquestions	Quantitative indicators/descriptors
(j) How have the Technology Mechanism bodies collaborated with stakeholders in supporting the implementation of the Paris Agreement on matters relating to technology development and transfer?	<p>To what extent:</p> <ul style="list-style-type: none"> • Have the TEC and the CTCN engaged and collaborated with stakeholders (including local communities and authorities, national planners, the private sector and civil society organizations) in the planning and implementation of Technology Mechanism activities? • Have the TEC and the CTCN enhanced engagement between NDEs and stakeholders, including by providing guidance and information? • Have the TEC and the CTCN collaborated and fostered synergies with relevant international organizations, institutions and initiatives (including business, research, academic and youth communities) to leverage their specific expertise, experience, knowledge and information (particularly on new and innovative climate technologies)? • Has the CTCN enhanced platforms and tools for collaboration and learning on climate technology development and transfer? • Have the TEC and the CTCN taken into account and supported a broad range of stakeholders with regard to sustainable development, gender, the special circumstances of the LDCs and small island developing States, and the enhancement of indigenous capacities and endogenous technologies? • Have the GCF, the GEF and the SCF implemented recommendations of the TEC? • Have TEC recommendations and publications identified financial and 	<p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Total number of CTCN events and number of climate technology research, development and demonstration related events • Number of participants in climate technology research, development and demonstration related events (disaggregated by gender) • Number of participants attending CTCN events (disaggregated by gender) • Number of engaged Network members (disaggregated by region, type, approach, enabler and expertise) and knowledge partners • Network member engagement in technical assistance • Overall satisfaction of Network members with CTCN services <p>TEC monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Number of stakeholders engaged in the implementation of the TEC workplan • Number of events organized by the TEC • Number of events organized by the TEC on innovative climate technologies and research, development and demonstration • Number of events organized by the TEC on enabling environments and barriers, and enhancement of endogenous capacities and technologies • Number of participants (disaggregated by gender) in events organized • Number of events during which TEC members (disaggregated by gender) provided inputs to TEC-related topics • Number of publications produced by the TEC in collaboration with stakeholders <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of the robustness and added value of collaboration between the TEC and the CTCN and stakeholders <p>Case studies and documentation review (including GEF project evaluation):</p> <ul style="list-style-type: none"> • Specific examples of collaboration (e.g. partnerships) between stakeholders and the TEC or the CTCN in relation to technology development and transfer

<i>Question^a</i>	<i>Subquestions</i>	<i>Quantitative indicators/descriptors</i>
	<p>technical resources to support climate technology development and transfer?</p> <ul style="list-style-type: none"> • Has the level of collaboration between NDEs, GCF NDAs, GEF operational focal points and other donors (MDBs, bilateral banks, United Nations entities) increased? 	
(k) How has the Technology Mechanism responded to the overarching guidance provided by the technology framework referred to in Article 10 of the Paris Agreement, including alignment of its work with the themes of the technology framework?	<p>To what extent:</p> <ul style="list-style-type: none"> • Have the TEC and the CTCN aligned their rolling workplans and programmes of work, as well as their reporting, with the technology framework (particularly with its five key themes)? • Have the TEC and the CTCN responded to guidance from the CMA in relation to the Technology Mechanism? 	<p>Documentation review:</p> <ul style="list-style-type: none"> • Assessment of the extent to which the rolling workplans or programmes of work and annual operating plans are aligned with CMA decisions related to the Technology Mechanism • Assessment of the outcomes of TEC and CTCN activities in relation to the work of the GCF, the GEF and the SCF (determined by information contained in annual reports to the COP) <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of the level of response of the TEC and the CTCN to the guidance provided under the technology framework and by Parties
(l) How has the Technology Mechanism responded to existing mandates under the Paris Agreement and to guidance from Parties?		
(m) How has collaboration between the TEC and the CTCN, and the linkages between these bodies and institutional arrangements under the Paris Agreement, contributed to the effectiveness of the Technology Mechanism?	<p>To what extent:</p> <ul style="list-style-type: none"> • Has the governance of the TEC (members and task forces) and the CTCN (Advisory Board) facilitated communication and cooperation between the two bodies? • Have the UNFCCC and CTCN secretariats supported cooperation between the TEC and the CTCN? • Have potential synergies between the TEC and the CTCN (whether ongoing or completed) been optimized, and how can synergies be improved in the future? • Have the TEC and the CTCN strengthened the provision of feedback between them with a view to ensuring coherence and synergy and the effective implementation of the mandates of the Technology Mechanism? 	<p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of cooperation between the TEC and the CTCN, and ways to improve it <p>Case studies and documentation review (including GEF project evaluation):</p> <ul style="list-style-type: none"> • Specific examples of cooperation between the TEC and the CTCN (and outputs)

^a Based on decision 16/CMA.1, annex, paras. 2–3.

Table I.2

Evaluation of the adequacy of support provided to the Technology Mechanism

<i>Question^a</i>	<i>Subquestions</i>	<i>Quantitative indicators/descriptors</i>
(a) How have the recipients of support provided, namely the TEC, the CTCN, including the NDEs, benefited?	<p>To what extent:</p> <ul style="list-style-type: none"> • Have TEC stakeholders (TEC members and observers) and CTCN stakeholders (CTCN staff, Network members, Advisory Board members, NDEs) benefited from support? • Have TEC and CTCN activities built the capacity of NDEs to fulfil their role? 	<p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of the adequacy of support provided to NDEs, considering the need for country-driven support for technology transfer and development <p>Documentation review:</p> <ul style="list-style-type: none"> • Specific examples of the benefits of support provided to the TEC and the CTCN (found in reports on meetings of the TEC and the CTCN Advisory Board, annual budgets and operating plans) <p>Case studies:</p> <ul style="list-style-type: none"> • Review of the activities of NDEs, their need for resources, and support from which they have benefited
(b) What are the sources of support provided?	<p>To what extent:</p> <ul style="list-style-type: none"> • Have TEC activities benefited from support provided by the UNFCCC secretariat? • Have CTCN activities benefited from multi-tier collaboration with the operating entities of the Financial Mechanism? • Have CTCN activities benefited from bilateral, multilateral, private sector and philanthropic sources of support? • Have Parties and relevant organizations in a position to do so supported the TEC or the CTCN by providing financial and other resources? 	<p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Number of events and training sessions co-organized with the operating entities of the Financial Mechanism and MDBs • Extent of mutually beneficial engagement (financial, technical or other) between the operating entities of the Financial Mechanism, MDBs and the CTCN • Number of CTCN technical assistance requests supported by the GCF and the GEF • Value of pro bono and in-kind support secured for CTCN activities • Level of donor engagement • Number of technology proposals developed through CTCN technical assistance anticipated to be supported by the GCF or the GEF <p>TEC monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Number of inputs and recommendations provided to the GCF, the GEF and the SCF
(c) What are the types of support provided?	<p>To what extent:</p> <ul style="list-style-type: none"> • Have TEC and CTCN activities benefited from in-kind and pro bono support? • Is funding received by the bodies of the Technology Mechanism earmarked? 	<p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Value of pro bono and in-kind support secured for CTCN activities • Number of CTCN technical assistance requests supported by the GCF and the GEF • Level of donor engagement <p>Case studies and documentation review:</p> <ul style="list-style-type: none"> • Analysis of direct and indirect TEC and CTCN resources • Specific examples of in-kind and pro bono support provided by Parties included in Annex I to the Convention to non-Annex I Parties through the CTCN

<i>Question^a</i>	<i>Subquestions</i>	<i>Quantitative indicators/descriptors</i>
(d) How has support provided been used, taking into account mitigation, adaptation and cross-cutting actions at the different stages of the technology cycle?	<p>To what extent:</p> <ul style="list-style-type: none"> • Are financial resources allocated appropriately and efficiently to TEC and CTCN activities (as planned under the budget scenarios of the TEC and the CTCN)? • Are the financial, human and technical resources of the TEC and the CTCN sufficient to achieve their mandates? • Is there a balance between actions taken at different stages of the technology cycle? 	<p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of the adequacy of sources of support <p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of the allocation of resources by the TEC and the CTCN, considering needs <p>Case studies and documentation review:</p> <ul style="list-style-type: none"> • Analysis of the direct and indirect resources, costs and expenses of the TEC and the CTCN • Specific examples of national support provided across the different stages of the technology cycle for mitigation and/or adaptation
(e) What level of support has been provided and has it changed over time?	To what extent has the level of support provided to the TEC and the CTCN changed over time?	<p>CTCN monitoring and evaluation indicators:</p> <ul style="list-style-type: none"> • Annual percentage increase of funding mobilized for the activities of the CTCN <p>Documentation review:</p> <ul style="list-style-type: none"> • Analysis of direct and indirect TEC and CTCN resources
(f) To what extent has support provided met the budgets and plans of the Technology Mechanism?	<p>To what extent:</p> <ul style="list-style-type: none"> • Has support provided through the Technology Mechanism responded to countries' needs? • Have sufficient resources been mobilized for implementing TEC and CTCN activities? • Would the TEC and the CTCN have responded to more country needs if they had more resources? • Have CTCN services (particularly technical assistance) facilitated the leveraging of additional funding? • Have synergies been optimized in providing funding for climate technology development and transfer? 	<p>Surveys and interviews with stakeholders:</p> <ul style="list-style-type: none"> • Stakeholder perceptions of the adequacy of the level of support provided to the CTCN (including NDEs), considering the need for country-driven support for technology transfer and development • Stakeholder perceptions of the adequacy of the level of support provided to the TEC, considering the need for guidance and information on technology development and transfer <p>Case studies and documentation review (including GEF project evaluation):</p> <ul style="list-style-type: none"> • Specific examples of demands eligible to the Technology Mechanism that have not been fulfilled owing to a lack of support provided to the TEC and the CTCN • Specific examples of funding leveraged by stakeholders thanks to CTCN services or TEC recommendations and publications • Specific examples of collaboration among NDEs, GCF NDAs, GEF operational focal points and other donors that has facilitated the leveraging of funding for climate technology development and transfer

^a Based on decision 16/CMA.1, annex, para. 4.

Annex II

Decisions and documents processed for the first periodic assessment of the Technology Mechanism

The following decisions and documents were processed for the first periodic assessment of the Technology Mechanism:

- (a) Decisions of the CMA and the COP;
- (b) Procedures and guidelines of the TEC and the CTCN;
- (c) Programmes of work and annual operating plans of the CTCN;
- (d) Rolling workplans of the TEC;
- (e) Joint annual reports of the TEC and the CTCN;
- (f) Progress reports of the TEC and the CTCN;
- (g) Reports on meetings of the TEC and the CTCN Advisory Board;
- (h) Monitoring and evaluation documents of the TEC and the CTCN;
- (i) Documents on CTCN operations and services;
- (j) Documents on NDEs;
- (k) Reviews of the CTCN;
- (l) Publications of the TEC and the CTCN;
- (m) TEC policy briefs;
- (n) UNFCCC publications;
- (o) Documents of the Financial Mechanism;
- (p) Other documents.

Annex III

Interviewees consulted for the first periodic assessment of the Technology Mechanism

The following interviewees were consulted for the first periodic assessment of the Technology Mechanism:¹

- (a) CTCN staff members (group interview):
 - (i) Regional Manager for Africa, West Asia and the Commonwealth of Independent States;
 - (ii) Knowledge and Communication Manager;
- (b) Chair of the CTCN Advisory Board and member of the joint TEC–CTCN task force;
- (c) Vice-Chair of the CTCN Advisory Board and member of the joint TEC–CTCN task force;
- (d) Chair of the TEC, member of the CTCN Advisory Board and member of the joint TEC–CTCN task force and the TEC task forces on innovation, enabling environment and capacity-building, and support;
- (e) Vice-Chair of the TEC, member of the CTCN Advisory Board and member of the joint TEC–CTCN task force and the TEC task forces on implementation, and enabling environment and capacity-building;
- (f) Chief of the Energy and Climate Branch of UNEP;
- (g) UNIDO staff members (group interview):
 - (i) Director of the Department of Energy;
 - (ii) Chief of the Climate Technology and Innovation Division;
- (h) GCF representative on the CTCN Advisory Board;
- (i) GEF observer on the TEC;
- (j) LDC representative on the CTCN Advisory Board;
- (k) Business and industry non-governmental organization representative on the TEC support task force;
- (l) Research and independent non-governmental organization representative on the TEC collaboration and stakeholder engagement task force;
- (m) Environmental non-governmental organization representative on the CTCN Advisory Board and member of the joint TEC–CTCN task force;
- (n) Youth non-governmental organization representative on the TEC support task force;
- (o) Director of the Global Environmental Partnership Office of the Ministry of Economy, Trade and Industry of Japan (donor).

¹ A limited number of NDEs, final beneficiaries and other key national stakeholders will be interviewed as part of case studies.

Annex IV

Methodology for the case studies undertaken to inform the first periodic assessment of the Technology Mechanism

1. As part of the first periodic assessment of the Technology Mechanism, case studies will be performed for three countries (Dominican Republic, Thailand and United Republic of Tanzania) to assess the extent to which the outputs of the Technology Mechanism delivered the expected outcomes and impacts. These three countries were selected on the basis of the following criteria:

- (a) Balanced geographical distribution:
 - (i) Dominican Republic (Latin America and the Caribbean).
 - (ii) Thailand (Asia and the Pacific);
 - (iii) United Republic of Tanzania (Africa);
- (b) Diversity in terms of level of development:
 - (i) Dominican Republic (small island developing State).
 - (ii) Thailand (non-Annex I Party);
 - (iii) United Republic of Tanzania (LDC);
- (c) Significant experience of support received under the Technology Mechanism (at least one technical assistance request completed more than two years ago):
 - (i) Dominican Republic:
 - a. Multi-country assistance completed:

“Assessment of the current status of the circular economy for developing a roadmap” (with Cuba, Ecuador, El Salvador and Paraguay; date of submission: May 2019; objective: adaptation and mitigation; sector: cross-sectoral);
 - b. Assistance completed:
 - i. “Developing a NAMA to leapfrog to advanced energy-efficient lighting technologies” (date of submission: March 2015; objective: mitigation; sector: energy efficiency);
 - ii. “A Community based early Warning System in every pocket from Santo Domingo” (date of submission: January 2015; objective: adaptation; sectors: early warning and environmental assessment);
 - iii. “Capacity building to develop a biological mountain corridor in los Haitises” (date of submission: August 2016; objective: adaptation and mitigation; sector: cross-sectoral);
 - c. Assistance under implementation:

“Mapping contribution from private sector to mitigation and adaptation targets” (date of submission: July 2020; objective: adaptation and mitigation; sector: cross-sectoral).
 - (ii) Thailand:
 - a. Assistance completed:
 - i. “Assessment of energy efficient street lighting technologies and financing models for Thai municipalities” (date of submission: November 2015; objective: mitigation; sector: energy efficiency);

- ii. “Technology development for climate resilience and efficient use of resources in the agricultural sector in Thailand” (date of submission: November 2015; objective: adaptation; sectors: agriculture and forestry);
- iii. “Benchmarking Energy & GHG Intensity in Thailand’s Metal Industry” (date of submission: November 2015; objective: mitigation; sector: energy efficiency);
- iv. “Strengthening Bangkok’s Early Warning System to respond to climate induced flooding” (date of submission: January 2016; objective: adaptation; sectors: early warning and environmental assessment);
- v. “Technical assessment to enable up-scaling investments to achieve NDC energy efficiency goals in the building sector” (date of submission: May 2018; objective: mitigation; sector: energy efficiency);
- b. Assistance under implementation:
 - “Fostering Green Building in Thailand for a Low Carbon Society - Enabling Readiness for Up Scaling Investments in Building Energy Efficiency for Achieving NDC Goal” (date of submission: November 2015; objective: mitigation; sectors: infrastructure and urban planning);
- c. Assistance being designed:
 - “High resolution regional climate model projections for Thailand” (date of submission: November 2015; objective: adaptation; sectors: early warning and environmental assessment);
- (iii) United Republic of Tanzania:
 - a. Multi-country assistance completed:
 - i. “Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa” (with Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia and Zimbabwe; date of submission: October 2016; objective: mitigation; sector: energy efficiency);
 - ii. “Identification of the most suitable direct use applications and technologies in low to medium temperature geothermal systems in six African countries” (with Djibouti, Ethiopia, Kenya, Rwanda and Uganda; date of submission: August 2019; objective: mitigation; sectors: renewable energy and energy efficiency);
 - b. Assistance completed:
 - i. “Promoting the sustainable use of solar photovoltaic technology in Tanzania” (date of submission: November 2015; objective: mitigation; sector: renewable energy);
 - ii. “Scaling-up sustainable wood fuel (charcoal and firewood) systems in the Pwani, Lindi and Mtwara regions of Tanzania” (date of submission: November 2015; objective: mitigation; sector: forestry);
 - c. Assistance under implementation:
 - i. “Sustainable domestic water pumping using solar photovoltaic” (date of submission: October 2017; objective: mitigation; sector: renewable energy);
 - ii. “Development of energy efficient appliance and equipment strategy” (date of submission: November 2018; objective: mitigation; sector: energy efficiency);
 - d. Assistance being designed:

“Development of geothermal direct use projects for Kiejo-Mbaka prospect” (date of submission: January 2019; objective: adaptation and mitigation; sector: renewable energy);

- (d) Updated NDC and completed TNA:
 - (i) Dominican Republic:
 - a. NDC:
 - i. INDC published in September 2015;
 - ii. Updated NDC published in December 2020;
 - b. TNA:
 - i. Mitigation TNA report published in December 2012;
 - ii. Adaptation TNA report published in January 2013;
 - (ii) Thailand:
 - a. NDC:
 - i. INDC published in October 2015;
 - ii. Updated NDC published in October 2020;
 - b. TNA:
 - i. Mitigation TNA report published in July 2012;
 - ii. Adaptation TNA report published in July 2012;
 - (iii) United Republic of Tanzania:
 - a. NDC:
 - i. INDC published in September 2015;
 - ii. Updated NDC published in July 2021;
 - b. TNA:
 - i. Mitigation TNA report published in November 2017;
 - ii. Adaptation TNA report published in April 2018;
2. The case studies will be undertaken through the following work:
- (a) A preliminary desk review of, inter alia, the NDC and other climate-related strategies or policies; the TNA report; and reports and communications related to CTCN technical assistance;
 - (b) Five interviews per country, structured as individual or group interviews of up to three participants, such as:
 - (i) The main domestic actors involved in climate change negotiations;
 - (ii) Stakeholders in CTCN technical assistance (e.g. beneficiary, ministry, or research and development centre);
 - (iii) CTCN Network members, CTCN consortium partners and TNA stakeholders;
 - (iv) Stakeholders in national planning processes (including NDCs, TNAs, NAPs and NAMAs);
 - (v) Local representatives of organizations such as the GCF (i.e. NDAs) and the GEF (i.e. operational focal points) and local United Nations staff (e.g. from UNEP or the United Nations Development Programme);
 - (c) A cross-analysis of the data;
 - (d) One case study report per country;
 - (e) Validation of the case study reports with interviewees.

Annex V

Methodology for the surveys conducted to inform the first periodic assessment of the Technology Mechanism

1. As part of the first periodic assessment of the Technology Mechanism, TEC members and observers and CTCN Advisory Board members and staff are being asked to complete two electronic surveys.
 2. The first survey was carried out during the data collection and analysis phase of the assessment. Alongside mandatory questions for all stakeholders, some questions were selected from the subquestions defined in the evaluation grid and tailored to the profile of the respondents. Participants were asked about the extent to which they agreed with a range of statements on a scale from 1 to 10 (to facilitate comparisons between subquestions). They also had the opportunity to provide additional information in open-ended questions.
 3. The second survey will be conducted as part of the conclusion and recommendations phase of the assessment to seek feedback on the preliminary recommendations. This survey will allow participants to submit additional information and prioritize the preliminary recommendations arising from the assessment, as well as reflect on the conditions needed to implement those recommendations.
 4. The surveys are in English and take under 10 minutes to complete. Most of the questions are in a multiple-choice format, with a few open-ended questions.
 5. The surveys are completed in a dedicated tool, in which questions are answered on a user-friendly interface, automatic reminders to complete the surveys are sent out, statistics and results are compiled automatically and all data are downloaded into Microsoft Excel. The findings of the surveys will therefore consist of graphs and statistical analyses as well as anonymized text.
 6. Both surveys will be sent to the same email addresses provided by the UNFCCC secretariat. The first survey was sent at the end of February 2022 for completion by mid-March. The second survey will be sent in June 2022 for completion within two weeks, with one reminder sent out. The results will then be analysed within two weeks.
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