



**Subsidiary Body for Scientific and
Technological Advice**

Fifty-second to fifty-fifth session

Glasgow, 31 October to 6 November 2021

Item 7 of the provisional agenda

**Development and transfer of technologies: joint annual
report of the Technology Executive Committee and the
Climate Technology Centre and Network (for 2020 and
2021)**

Subsidiary Body for Implementation

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Item 13(a) of the provisional agenda

**Development and transfer of technologies and
implementation of the Technology Mechanism
Joint annual report of the Technology Executive
Committee and the Climate Technology Centre and
Network (for 2020 and 2021)**

**Joint annual report of the Technology Executive Committee
and the Climate Technology Centre and Network for 2021***

Summary

This report covers the activities and performance of the Technology Executive Committee and the Climate Technology Centre and Network in 2021, including implementing the technology framework under the Paris Agreement. It contains information on the bodies' meetings, key messages and recommendations for the Conference of the Parties at its twenty-sixth session and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement at its third session; information provided by the United Nations Environment Programme on matters regarding its role as host of the Climate Technology Centre; and information on the bodies' joint activities for 2021 and 2022.

* This document was scheduled for publication after the standard publication date owing to circumstances beyond the submitter's control.



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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
COVID-19	coronavirus disease 2019
CTC	Climate Technology Centre
CTCN	Climate Technology Centre and Network
DTU	Technical University of Denmark
GCF	Green Climate Fund
GEF	Global Environment Facility
IUCN	International Union for Conservation of Nature
LDC	least developed country
NAP	national adaptation plan
NDC	nationally determined contribution
NDE	national designated entity
NGO	non-governmental organization
Q [†]	Quarter
SCF	Standing Committee on Finance
SIDS	small island developing State(s)
SMEs	small and medium-sized enterprises
TEC	Technology Executive Committee
TNA	technology needs assessment
TT:CLEAR	technology information clearing house
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP-DHI	UNEP-DHI Partnership – Centre on Water and Environment
UNIDO	United Nations Industrial Development Organization
WGC	women and gender constituency

[†] Used exclusively in figure 1.

I. Background

A. Mandate

1. COP 16 established the Technology Mechanism, comprising the TEC and the CTCN, to facilitate implementation of enhanced action on technology development and transfer to support action on mitigation and adaptation in order to achieve full implementation of the Convention.¹
2. 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.²
3. In accordance with relevant COP³ and CMA⁴ decisions, the TEC and the CTCN prepare a joint annual report for consideration by the COP and the CMA through the subsidiary bodies.

B. Scope of the report

4. The joint chapter of the TEC and the CTCN (chap. II below) outlines activities undertaken jointly by them in 2021 and lessons learned. Chapter III below presents the activities and performance of the TEC in 2021, including key messages and recommendations for COP 26 and CMA 3. It covers the outcomes of the 22nd and 23rd meetings and intersessional work of the TEC and challenges and lessons learned in implementing its mandates. Chapter IV below presents the activities and performance of the CTCN in 2021, including key messages for COP 26 and CMA 3. It covers the outcomes of the 17th and 18th meetings and intersessional work of the Advisory Board of the CTCN and challenges and lessons learned in implementing CTCN mandates, and includes information provided by UNEP on matters regarding its role as host of the CTC.⁵

C. Possible action by the subsidiary bodies

5. The subsidiary bodies may wish to consider the joint annual report of the TEC and the CTCN for 2021 and recommend draft decision(s) for consideration and adoption at COP 26 and CMA 3.

II. Joint chapter of the Technology Executive Committee and the Climate Technology Centre and Network

6. In 2021, the TEC and the CTCN continued to jointly implement activities that support countries in enhancing action on technology development and transfer under the Convention and in following technology framework guidance under the Paris Agreement.
7. Two joint sessions for taking stock of progress and guiding implementation of joint activities were organized. The first was held on 26 April 2021 in conjunction with the 22nd TEC and 17th CTCN Advisory Board meetings. The Executive Secretary, Patricia Espinosa, opened the session by highlighting the Technology Mechanism's pivotal role in implementing the Paris Agreement. The session featured a panel discussion⁶ to share experience and lessons learned in pursuing the climate technology priorities set out in the

¹ Decision 1/CP.16, para. 117.

² Decision 15/CMA.1, para. 1.

³ Decisions 2/CP.17, paras. 142–143; 1/CP.21, para. 68; 12/CP.21, para. 2; 15/CP.22, para. 6; 15/CP.23, paras. 4–5; and 14/CP.25, para. 8.

⁴ Decisions 15/CMA.1, paras. 4–5, and 8/CMA.2, para. 4.

⁵ As per decision 14/CP.18, para. 10.

⁶ See https://unfccc.int/ttclear/events/2021/2021_event02.

NDCs and to showcase ambitious technology-related actions, in both mitigation and adaptation, included in the updated NDCs. The second joint session was held on 13 September 2021 in conjunction with the 23rd TEC and 18th CTCN Advisory Board meetings.

8. The TEC and the CTCN started implementing two activities to be undertaken jointly in 2021–2022,⁷ as reported in their joint annual report for 2020: one on technology and NDCs and one on gender and technology.⁸

9. The joint work on technology and NDCs comprises a comprehensive analysis and synthesis of information on technology needs and challenges, linkages between policy and implementation, and linkages between NDCs and NAPs.⁹ The work is guided by a joint task force composed of TEC members, CTCN Advisory Board members and representatives of observer organizations. The key findings from this work were presented at the second joint session referred to in paragraph 7 above.

10. Building on this joint work, the TEC and the CTCN developed recommendations for Parties on how to stimulate the uptake of climate technology solutions to support NDC implementation (see annex I).

11. In their joint work on gender and technology, the TEC and the CTCN liaised with the gender team of the secretariat to support the integration of gender considerations into the UNFCCC process, including by disseminating briefs prepared by the gender team about gender integration under the UNFCCC process, raising awareness of gender equality issues on International Women's Day and organizing a meeting with other UNFCCC constituted bodies to share experience on mainstreaming gender in their respective activities. The TEC and the CTCN also initiated a discussion with the gender team on operationalizing an online gender expert roster in 2022.

12. Throughout 2021, enhanced coherence and synergy under the Technology Mechanism was ensured by the TEC and the CTCN collaborating on joint events and participating in each other's events, for example:

(a) TEC members moderated and presented the findings of their work at the regional forums for NDEs from the African, Asia-Pacific, and Latin America and the Caribbean regions, organized by the CTCN as part of the 2021 regional climate weeks;

(b) The CTCN facilitated the participation of NDEs in TEC events on emerging technologies held during Asia-Pacific Climate Week.¹⁰

13. Following the second year of implementation of the Paris Agreement technology framework and in view of the upcoming first periodic assessment of the effectiveness of the Technology Mechanism and the adequacy of support provided to it,¹¹ the TEC and the CTCN identified the following lessons learned from their joint work:

(a) Joint sessions and joint events provide important spaces for the TEC and the CTCN to enhance collaboration and foster deep engagement on issues of mutual relevance to the two bodies. They also provide space for discussing challenges and lessons learned regarding technology transfer and development as one voice – as the Technology Mechanism. Other joint arrangements such as the joint task force proved helpful in guiding the implementation of joint activities;

(b) Joint work to address common issues strengthens the coherence and enhances the synergy of the two bodies' work. The TEC and the CTCN will continue to identify common issues and opportunities for joint work, for example on areas highlighted in the findings from existing joint work (e.g. on technology and NDCs). Another example was on endogenous capacities and technologies, where needs, gaps and challenges, identified from feedback from NDEs, could inform the implementation support provided by the CTCN;

⁷ Pursuant to decision 8/CMA.2, para. 3.

⁸ FCCC/SB/2020/4, annex I.

⁹ See <https://unfccc.int/tclear/tec/techandndc.html>.

¹⁰ See https://unfccc.int/tclear/events/2021/2021_event03.

¹¹ Pursuant to decision 16/CMA.1, para. 3.

(c) The TEC and CTCN consider it important to continue improving the feedback mechanism between the two bodies: TEC policy work could, among other sources of information, be more systematically grounded in case studies and lessons learned from the operational activities of the CTCN and vice versa;

(d) The monitoring and evaluation system jointly developed by the TEC and the CTCN,¹² which includes a biennial NDE survey, is useful for tracking the impacts of activities under the Technology Mechanism. The results from the NDE survey¹³ help the two bodies provide more coherent outputs, and the data on outcomes strengthen their reporting on the impacts of their work. They intend to conduct joint analysis of NDE survey implementation in 2022, taking into account NDE feedback, so as to improve its design and allow for easier, systematic collection of verifiable data.

14. As the climate crisis deepens, the TEC and the CTCN, through their work on technology development and transfer, stand ready to support Parties in implementing their NDCs and enhancing climate ambition in order to achieve the goals of the Paris Agreement.

III. Report on the activities and performance of the Technology Executive Committee in 2021

A. Meetings and membership

15. The TEC convened its 22nd meeting from 20 to 26 April 2021 and its 23rd meeting from 7 to 13 September 2021.

16. At its 22nd meeting, the TEC elected Stephen Minas (Greece) as its Chair and Mareer Mohamed Husny (Maldives) as its Vice-Chair for 2021.

17. A list of TEC members indicating their terms of office is available on the UNFCCC website.¹⁴

18. The meetings of the TEC were webcast live and attended by observers, including representatives of Parties and observer organizations. All meeting documents, webcasts, and reports are available on TT:CLEAR.¹⁵

B. Rolling workplan for 2019–2022: implementation in 2021

19. Despite the COVID-19 pandemic, the TEC continued its intersessional work through task forces, supported by the secretariat, making progress in implementing its rolling workplan for 2019–2022¹⁶ in five thematic areas.

20. The TEC wishes to express its appreciation for the financial contributions from Parties and for the active participation and support of organizations and other stakeholders engaged in the work of the TEC task forces in 2021.¹⁷

1. Innovation

(a) International collaborative research, development and demonstration

21. The TEC organized a virtual event¹⁸ to present its compilation of good practices and lessons learned from international collaborative research, development and demonstration of

¹² Pursuant to decision 15/CMA.1, para. 3(a).

¹³ See results of the survey at https://www.ctc-n.org/sites/www.ctc-n.org/files/AB_2021_17_18.1_CTCN%202020%20NDE%20Survey%20Findings.pdf.

¹⁴ See https://unfccc.int/sites/default/files/resource/Membership_chart_5.pdf.

¹⁵ <http://unfccc.int/ttclear/tec/meetings.html>.

¹⁶ See <https://bit.ly/33ASbc1>.

¹⁷ See <http://unfccc.int/ttclear/tec/members.html#Task>.

¹⁸ See https://unfccc.int/ttclear/events/2021/2021_event01.

climate technologies.¹⁹ Experts from national governments, research institutions and private sector organizations shared their experience and views on the roles key stakeholders can play in supporting and promoting international research, development and demonstration of climate technologies.

22. The TEC prepared executive summaries of the above-mentioned compilation for four targeted groups: domestic policymakers, academic and research institutions, international organizations and private sector actors.²⁰

23. On the basis of the compilation and the summaries, the TEC also prepared relevant key messages and recommendations for COP 26 and CMA 3 (see chap. III.D below).

(b) Emerging climate technologies

24. The TEC prepared a technical paper on emerging climate technologies in the energy supply sector that analyses social, institutional, economic and business elements that may affect their successful deployment, commercialization and long-term sustainability. It also identifies options for policymakers to effectively support the deployment of such technologies.²¹

25. The TEC, in collaboration with the high-level champions, the International Renewable Energy Agency, the Marrakech Partnership for Global Climate Action, Regional Collaboration Centre Bangkok and UNEP, organized three events at the 2021 Asia-Pacific Climate Week to discuss the role of emerging decarbonization technologies in enabling a sustainable transition of the energy supply sector in the region and the contribution of these technologies to reaching net zero emissions by 2050.²²

(c) Innovative approaches to adaptation technologies

26. As part of Technology Day and in conjunction with the IUCN World Conservation Congress, the TEC, in collaboration with the expert group on oceans of the Nairobi work programme on impacts, vulnerability and adaptation to climate change, Friends of EbA and IUCN, organized a deep-dive session on innovative approaches to strengthening coastal and ocean adaptation.²³ The TEC is organizing a second event on ocean and coastal adaptation in October 2021 under the Nairobi work programme.²⁴

2. Implementation

(a) Innovative approaches to stimulating the uptake of existing clean technology solutions

27. The TEC prepared a policy brief on innovative approaches to accelerating and scaling up implementation of mature climate technologies²⁵ based on the 2020 TEC publication on the topic.²⁶ The brief was presented at various meetings and events in 2021.

28. On the basis of this brief, the TEC prepared relevant key messages and recommendations for COP 26 and CMA 3 (see chap. III.D below).

(b) Linkages between the technology needs assessment process and the nationally determined contribution process

29. The TEC continued its work on identifying linkages between conducting TNAs and preparing NDCs and produced a paper on this matter in collaboration with the NDC Partnership and other relevant actors.²⁷

¹⁹ Available at <https://unfccc.int/ttclear/tec/rdandr/#Compilation>.

²⁰ Available at <https://unfccc.int/ttclear/tec/rdandr/#Summaries>.

²¹ See <https://unfccc.int/ttclear/tec/energysupplysector.html>.

²² See https://unfccc.int/ttclear/events/2021/2021_event03.

²³ See https://unfccc.int/ttclear/events/2020/2020_event07.

²⁴ See <https://bit.ly/3k8fLFn>.

²⁵ See <https://unfccc.int/ttclear/tec/brief14.html>.

²⁶ Available at <https://unfccc.int/ttclear/tec/innovativeapproaches>.

²⁷ See <https://bit.ly/3EjEoqC>.

3. Enabling environment and capacity-building

(a) Enabling environments that incentivize private and public sector technology development and transfer

30. The TEC continued its work on examining enabling environments that incentivize private and public sector technology development and transfer and prepared a paper on enabling environments and challenges, including barriers, related to technology development and transfer.²⁸ The paper was prepared in collaboration with the CTCN, the NDC Partnership, NDEs and relevant organizations.

(b) Endogenous capacities and technologies

31. The TEC completed its analysis of needs, gaps, challenges and enabling environments in building countries' capacities in climate technologies²⁹ based on a 2020 survey of three stakeholder groups.³⁰ The TEC shared the key findings of this work, which cover capacity-building, local communities and indigenous peoples, gender, finance and national reporting, with relevant stakeholders. It noted that while the work has improved the understanding of many aspects of endogenous capacities and technologies, issues remain. The TEC looks forward to collaborating with the CTCN and other constituted bodies, Parties and stakeholders to conduct further work on this topic.

32. On the basis of the above-mentioned publication, the TEC prepared relevant key messages and recommendations for COP 26 and CMA 3 (see chap. III.D below).

4. Collaboration and stakeholder engagement

33. Through the implementation of its activities, the TEC engaged with over 50 organizations in 2021, including governments, observer organizations, NDEs, the private sector, academic institutions, financial institutions and international organizations.

34. The TEC reflected on its engagement with and contribution to the technical examination processes on mitigation and adaptation in 2016–2020. It noted that these processes have been useful in bringing Parties and non-Party stakeholders together to identify ways to scale up the adoption of climate technologies to support countries' mitigation and adaptation actions. The TEC plans to strengthen its collaboration and engagement with stakeholders through partnerships and enhanced use of social media to maximize visibility and impact of its work.

5. Support

35. The TEC conducted a number of activities for strengthening linkages between the Technology Mechanism and the Financial Mechanism,³¹ notably by enhancing collaboration with the GCF, the GEF and the SCF.

(a) Experience, lessons learned and good practices related to support for climate technologies

36. The TEC analysed experience, lessons learned and good practices related to the support provided by the GCF and the GEF for climate technologies and initiated the preparation of a technical paper on this matter so as to enhance its collaboration with the Financial Mechanism.

37. The TEC Chair and Vice-Chair participated in the 5th annual meeting of the GCF with UNFCCC constituted bodies in November 2020. The meeting focused on enhancing cooperation and coherence of engagement between the GCF and the constituted bodies so as to better support developing countries in meeting their commitments under the Convention and the Paris Agreement.

²⁸ See <https://bit.ly/3hVxoqp>

²⁹ The publication is available at <https://unfccc.int/ttclear/endogenous/index.html>.

³⁰ See <https://bit.ly/3lq4yzA>.

³¹ In response to decision 14/CP.22, para. 9.

(b) Standing Committee on Finance

38. In response to an invitation from the SCF, the TEC provided its input to the draft guidance for Financial Mechanism operating entities prepared by the SCF, to be considered at COP 26 and CMA 3.

6. Inputs to the technical phase of the global stocktake

39. In response to a CMA invitation to UNFCCC constituted bodies to provide inputs to the technical phase of the global stocktake,³² the TEC prepared a concept note on the scope and sources of its input on climate technology development and transfer.³³ Building on this concept note, the TEC will prepare a synthesis report as input to the technical phase of the global stocktake in 2022.

7. Monitoring and evaluation of impacts

40. The TEC continued to monitor and evaluate the impacts of its work and implemented a revised version of its monitoring and evaluation system that included indicators for gender mainstreaming and communication and outreach activities.³⁴

8. Communications and outreach

41. The TEC continued to implement communication and outreach activities, as outlined in the communication and outreach strategy adopted at its 20th meeting.³⁵

9. Gender mainstreaming

42. The TEC made significant progress in mainstreaming gender consideration into its work. It added gender-related indicators to its monitoring and evaluation system, and the number of its publications that contain a section on gender and recommendations on gender issues increased.

43. In 2021, the TEC achieved for the first time the goal of gender balance for the panels of its events.

44. The TEC also agreed to co-organize with the CTCN and the gender team of the secretariat, an event on gender and technology at the Glasgow Climate Change Conference.

C. Challenges and lessons learned

45. In the second year of the COVID-19 pandemic, the TEC reflected on lessons learned and challenges in implementing its mandates and the technology framework and provided information on its efforts to address the challenges:³⁶

(a) Owing to the postponement of COP 26 and CMA 3 to 2021, the TEC did not receive guidance from Parties on new activities to be undertaken in 2021. Despite the lack of guidance, the TEC decided to implement new activities in 2021, such as joint activities with the CTCN and preparation of inputs to the global stocktake. This demonstrated the utility of keeping the workplan under regular review and making updates as necessary. The decision to adopt a four-year workplan for 2019–2022, which is one year longer than previous workplans, also added stability to the work of the TEC during this unprecedented period;

(b) The meetings of the TEC continued to be held in a virtual setting. This had an impact on the availability of some members to fully participate and engage in the meetings, which could prevent the constitution of a quorum. Despite these impacts and the virtual setting of meetings, the TEC remained operational and functional.

³² Decision 19/CMA.1, para. 24.

³³ See <https://bit.ly/3Ci4hVV>.

³⁴ See <https://bit.ly/3z0FzaD>.

³⁵ See <https://bit.ly/3nyr00X>.

³⁶ As per decisions 15/CP.22, para. 6, 13/CP.24, para. 4, 15/CMA.1, para. 5, and 8/CMA.2, para. 4.

(c) The TEC recognizes that virtual meetings cannot guarantee the same level of interaction among members and observers as in-person meetings. This circumstance has highlighted the value for TEC members, observers and other participants of being able to communicate informally on the margins of formal sessions in order to further the work of the TEC. Should the pandemic continue into 2022, hybrid settings that combine in-person and virtual participation should be considered, where feasible;

(d) The TEC continues to be unable to make its publications and events available in official United Nations languages other than English owing to limited resources. This has posed a challenge to enhancing its outreach to Parties and a broader audience. The TEC will continue exploring possible ways of addressing this matter;

(e) To increase its visibility and enhance collaboration with a wider range of stakeholders, the TEC recognized the value of holding publication launch events, Technology Day and enhanced use of UNFCCC media platforms, and will continue to improve on these efforts. A comparison of the audience numbers at TEC events in 2020 and 2021 indicates that combining TEC events with UNFCCC-wide or other high-profile events can contribute to larger audiences;

(f) The TEC recognizes that adopting a structured approach to gender mainstreaming and appointing gender focal points were a breakthrough in strengthening the gender aspect in the work of the TEC. This experience has demonstrated that, with commitment and dedicated attention, progress on gender mainstreaming can be achieved;

(g) The successful work of the gender focal points indicates that nominating individual members to lead on specific priority issues may be a modality with broader potential application both for the TEC and for other constituted bodies.

D. Key messages and recommendations for the Conference of the Parties and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement

46. Building on work carried out in 2021, the TEC wishes to deliver the following key messages and recommendations to COP 26 and CMA 3.

1. International collaborative research, development and demonstration

47. The TEC compiled good practices and lessons learned from international collaborative research, development and demonstration initiatives related to climate technology, and executive summaries targeting different audiences. Drawing on this work, the TEC highlights the following:

(a) Policymakers play a key role in defining patterns of international collaborative research, development and demonstration and designing effective policy instruments for creating a supportive environment to encourage climate technology innovation. Policymakers are fundamental in bridging gaps that hinder the long-term sustainability of international research, development and demonstration initiatives related to climate change and their successful delivery;

(b) International organizations are active partners in various international research, development and demonstration initiatives; though not always directly engaged in actual research, development and demonstration on hardware technologies, they participate via dedicated networks that make a significant contribution to the worldwide exchange of knowledge and best practices, thereby facilitating the access of countries, particularly developing countries, to new climate technologies;

(c) Academic and research institutions provide the skilled workforce required for innovation and are the source of new knowledge and technologies that underpin innovation. Actors such as universities and research laboratories play a central role in climate technology research, development and demonstration and in widely disseminating the results by translating highly technical information into formats that are regionally relevant and understandable by a non-technical audience;

(d) The participation of the private sector is crucial to translating research, development and demonstration results into market-deployable technologies. Although concerted efforts have been made to engage with the private sector under various research, development and demonstration initiatives, the extent of its involvement in the early stages of the technology cycle remains limited, especially in developing countries, with its main focus being on the demonstration, incubation, commercialization and diffusion phases.

48. The TEC recommends that the COP and the CMA invite Parties and non-Party stakeholders to consider the findings of the work of the TEC when engaging in international collaborative research, development and demonstration and facilitate:

(a) The design of, and the effective participation in, research, development and demonstration initiatives that recognize the different circumstances and needs of participating countries and align objectives to national climate strategies and priorities;

(b) Regular independent evaluation of research, development and demonstration initiatives for improving understanding of factors that contribute to their success or failure and supporting the development of follow-on activities or new initiatives by other entities;

(c) Knowledge-sharing and local capacity-building, particularly in developing countries, to enable more effective and equal participation of countries in research, development and demonstration programmes;

(d) Cross-sectoral collaboration and multidisciplinary approaches incorporating economic, social and policy expertise into the research, development and demonstration process in order to address rapidly changing market and social conditions and ensure that new technologies are sustainable in the long term;

(e) The engagement of the private sector in the early stages of technology development, for example by providing appropriate incentives, establishing public-private partnerships and ensuring close connections between collaborative research, development and demonstration initiatives and incubators and accelerators.

2. Innovative approaches to stimulating the uptake of existing clean technology solutions

49. The TEC undertook work on identifying innovative approaches to stimulating the uptake of existing climate technologies. Drawing on this work, the TEC highlights the following:

(a) Successful entry of technologies for climate change mitigation and adaptation into developing country markets is supported by a range of innovations. Innovation takes place not only in relation to the technicalities of climate solutions, but also in how actions are planned, market actors collaborate and funding is attracted. These innovations enable markets to ‘pull’ technologies alongside government actions for ‘pushing’ them, especially in LDCs;

(b) For scaling up technology implementation, the identification and prioritization of technologies should be co-designed. Through participatory co-design processes, stakeholders have a key role in ensuring that technologies not only deliver climate benefits but also help to meet countries’ sustainable development objectives. Technology implementation is further supported by technology ‘champions’, including youth, who drive the development of technologies and support policies already in place for diffusion. They also support technology-neutral and demand-driven decision-making, both in the LDCs and in higher-income developing countries;

(c) Innovations in attracting private sector funding for mature climate technologies in developing country markets have taken place in terms of both increasing revenue and reducing investment risk. Green and climate bonds, as well as climate-related investment criteria, have increased opportunities for climate-friendly investment. One innovative approach to risk sharing is the blending of private and public funds; the latter include capital provided by national or international funds, which unlocks access to private funding under more commercially attractive conditions;

(d) Public-private partnerships make technology diffusion more effective as governments can focus on their key roles, such as enforcing policies and measures, enhancing access to international climate funding programmes and providing financial instruments,

while private entities are leveraging public funding and making technologies ready for market;

(e) International institutions, including multilateral development organizations, support this process through incubation and acceleration of mature climate technologies by:

(i) Establishing efficient links between complementary institutions and stakeholders in different countries;

(ii) Enhancing access to international funding programmes by providing technical assistance or resources;

(iii) Facilitating alliances and partnerships to leverage resources for scaled-up projects and foster the development of start-ups and new market entrants.

50. In order to enhance stakeholder ownership of climate technology planning and implementation, the TEC recommends that the COP and the CMA encourage:

(a) Parties and international cooperation programmes to encourage local social and economic actors to actively engage in identifying and prioritizing climate technologies so that climate planning results from co-design in addition to assessment of technical and economic potential;

(b) Technology proponents, including youth, to be ‘champions’ in inspiring and informing other stakeholders in support of wider-scale climate technology implementation;

(c) National research groups, NGOs and other private entities to participate in international research programmes for enhancing skills, and knowledge-gathering and case study research within developing countries on the technical and economic potential of climate technologies and their acceptability and therefore viability from a social perspective.

51. The TEC further recommends that the COP and the CMA encourage Parties and non-State actors to enhance developing countries’ access to private sector funding through:

(a) Risk sharing, such as by blending private with public capital, including multilateral funds, so that private investors can negotiate commercially attractive conditions;

(b) Classification schemes and benchmarks, or similar systems for financial products incorporating climate change technology, that can provide a framework for investors for identifying climate-beneficial investment opportunities;

(c) Training of market actors in developing countries to formulate funding proposals according to investors’ requirements for risk management and in line with criteria for ‘green’ or ‘climate’ recognition.

52. The TEC also recommends that the COP and the CMA encourage Parties and non-State actors to enhance private sector engagement by:

(a) Mobilizing local resources as a key component of supporting climate-friendly economic activities. In this respect, support for SMEs to build small- and medium-scale businesses remains important, including vocational training for SMEs and the young workforce in working with climate-friendly technologies and developing sustainable business models. This support can be solicited from multi-stakeholder partnerships and initiatives in developing countries, which help to leverage resources for climate technology programmes, with local private sector engagement;

(b) Enhancing support for climate innovation centres, in their role as national or regional knowledge hubs, to support entrepreneurs in exploring the market potential of climate technologies in their countries as well as identifying solutions for accessing markets. Incubation and acceleration programmes foster the development of start-ups, young entrepreneurs and new market entrants to use local resources for climate technology implementation.

3. Endogenous capacities and technologies

53. The work of the TEC on endogenous capacities and technologies to date has underlined the complexity of the issues involved, including with regard to understanding

endogenous concepts, dealing with differences in countries' capacities to develop and use climate technologies for mitigation, adaptation and cross-cutting purposes and addressing the needs for context-specific skills and knowledge. The work highlighted a wide range of strategies that can be used to create enabling environments for enhancing countries' capacities to develop endogenous technologies, with strategies relating to collaboration, financing and building technical skills perceived as some of the most significant factors. Further, the work has revealed that engagement by multiple stakeholders is crucial to building endogenous capacities.

54. The TEC recommends that the COP and the CMA invite Parties to consider the recommendations drawn from this work to help them to create and enhance enabling environments to promote endogenous capacities and technologies. The following recommendations need to be adapted to country-specific capacity-building needs and opportunities:

(a) With regard to stakeholder engagement: develop strategies to communicate with and encourage the participation of stakeholders at all stages of technology planning and implementation projects; assess and address gaps and needs relating to stakeholder capacity to participate in planning activities involving climate technologies; take gender issues, in particular participation of women, into account in work involving endogenous technologies; and incorporate best practices relating to the consideration of local and indigenous knowledge in developing new technologies and adapting existing technologies to local needs and conditions;

(b) With regard to governance: create and promote good governance at different levels, including legal, regulatory and policy frameworks that support endogenous innovation; encourage close engagement from communities, local and national authorities; and enhance communication and coordination within and between government levels;

(c) With regard to capacity-building: ensure that NDEs and TNA focal points have the necessary capacities to assess technology needs, identify appropriate technologies, understand the demands and implications of existing processes and engage stakeholders; customize capacity-building projects on the basis of local needs and levels of skills and knowledge; promote educational opportunities to enhance technical and other capacities, skills and knowledge; and consider targeting groups such as young people and workers for local capacity-building projects, training and educational programmes;

(d) With regard to financing: identify innovative, effective and flexible ways of acquiring and managing public and private funding to support the development and modification of technologies within a country; and enhance engagement of financial institutions in the early stages of planning for endogenous technologies to improve access to funding;

(e) With regard to research, development, innovation systems and collaboration: develop and implement strategies to enhance the effectiveness of research, development and innovation systems relating to climate technologies; facilitate training on issues related to research, development and the innovation process; and promote domestic and international collaboration to develop and enhance endogenous capacities and technologies.

IV. Report on the activities and performance of the Climate Technology Centre and Network in 2021

A. Advisory Board meetings and membership

55. The CTCN convened its 17th Advisory Board meeting from 26 to 28 April 2021 and its 18th meeting from 13 to 15 September 2021, both virtually. At its 17th meeting, the Board elected Moa Forstorp (Sweden) as its Chair and Omedi Moses Jura (Kenya) as its Vice-Chair. Lorena Prado Orcoyen (Spain) was welcomed to the Board as a new member.

56. During the intersessional period, the Board welcomed Anne Barre (WGC), Chang-Yune Lee (Republic of Korea), Erwin Rose (United States of America) and Halima Bawa-Bwari (Nigeria). As of 31 August, women hold 40 per cent of the seats on the Board.

57. At its 17th meeting, the Advisory Board discussed key results from the implementation of CTCN activities in 2020 and endorsed the 2020 financial statement of the CTCN. At its 18th meeting the Board approved the CTCN report to the COP and the annual operating plan and budget of the CTC for 2022. Representatives of WGC, youth NGOs and indigenous peoples organizations raised their request to be included in the Advisory Board as members with the same status as environmental, research and independent, and business and industry NGOs, and asked for their request to be discussed at COP 26. All Board meeting documents and presentations are available on the CTCN website.³⁷

58. Three intersessional task force meetings were held to discuss the work of the CTCN in (1) supporting countries in building back better, (2) mobilizing resources and (3) analysing the transformative impact potential of its activities.

B. Activities of the Climate Technology Centre and Network

59. The CTCN programme of work for 2019–2022³⁸ and its operating plans align with the five themes of the Paris Agreement technology framework.

60. Following the submissions of new or updated NDCs by Parties in 2020 and 2021, the CTCN focus for 2021 has been supporting developing country Parties in identifying national actions and integrated approaches for addressing climate change and implementing or scaling up climate change plans and policies to transition to ambitious low-emission, climate-resilient pathways.

61. Owing to the impact of the COVID-19 pandemic on in-person capacity-building and stakeholder engagement activities, the CTCN shifted its focus to implementing technical assistance projects. As a consequence, 81 per cent of its projected expenses for 2021 are for technical assistance.

62. In 2021, the CTCN implemented the following activities in the five thematic areas of the technology framework.

1. Innovation

63. Selected participants from the 2020 Africa and Asia Youth Climate Innovation Labs went on to take part in the Youth Climate Innovation Academy, a two-month intensive incubator programme designed to help early-stage start-ups transform their ideas into viable projects. A total of 11 promising start-ups pitched technology solutions for enhanced climate action to investors, partners and industry experts.³⁹ A third Lab, for Latin America, was conducted in July 2021; its corresponding academy programme is scheduled for early 2022. In total, the CTCN received over 1,300 applications from young innovators from 74 countries.

64. The CTCN received over 200 responses from more than 60 countries during the first two calls for proposals for the Adaptation Fund Climate Innovation Accelerator.

65. The CTCN organized three regional webinars to share early lessons learned following the first call for proposals for Accelerator funding. These lessons highlight the capacity challenges faced particularly by the LDCs and SIDS.

66. In support of COVID-19 recovery efforts, the CTCN produced a guidebook⁴⁰ containing practical information on developing national road maps and highlighting best

³⁷ <https://www.ctc-n.org/advisory-board/meetings>.

³⁸ See https://www.ctc-n.org/sites/www.ctc-n.org/files/ctcn_programme_of_work_2019-2022.pdf.

³⁹ See <https://www.seedstars.com/community/entrepreneurs/programs/climate-innovation-labs-demo-day-2021/>.

⁴⁰ Available at <https://www.ctc-n.org/news/new-guidebook-ensuring-climate-resilient-recovery-after-covid-19>.

practice case studies to help developing countries quickly recover and shift to sustainable patterns of development.

67. Up to 100 representatives of developing country Parties will participate in late 2021 in a five-week online course on blockchain technology.

68. Several technical assistance projects have helped countries implement innovative low-carbon technology solutions and increase ambition. The CTCN has supported the development of a multidisciplinary research and technological development agenda in Jamaica, unmanned aerial vehicle remote sensing technology in Eswatini, ocean thermal energy conversion in Nauru and solar milling technology for agrifood SMEs led by women in Senegal.

69. With support from the Republic of Korea, the CTCN will operationalize a partnership and liaison office in Songdo focusing on enhancing collaboration between the CTC and the GCF (headquartered in Songdo); strengthening the efforts of the CTC in innovation and collaborative research, development and demonstration, and promoting South–South cooperation and CTCN engagement in the region.

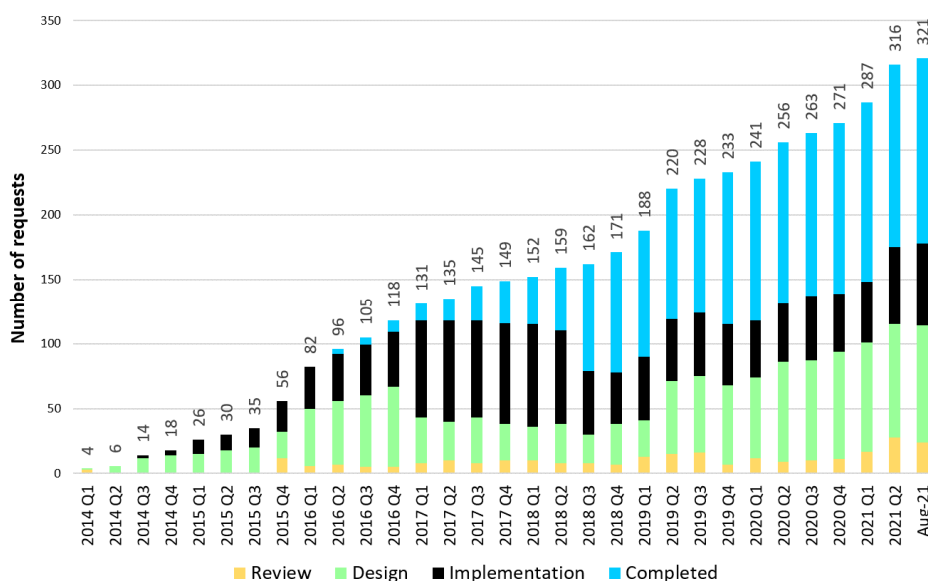
2. Implementation

70. As at 30 August 2021, the CTCN had received 321 requests for technical assistance from 106 developing country Parties, including 14 multi-country requests and 30 requests for fast technical assistance. Close to half of these requests have been completed (143), while 64 are under implementation (see figure 1). Between September 2020 and August 2021, the CTCN received 53 requests for technical assistance, including 4 requests for fast technical assistance.

71. The CTCN Dashboard provides data visualizations of its technical assistance portfolio.⁴¹

Figure 1

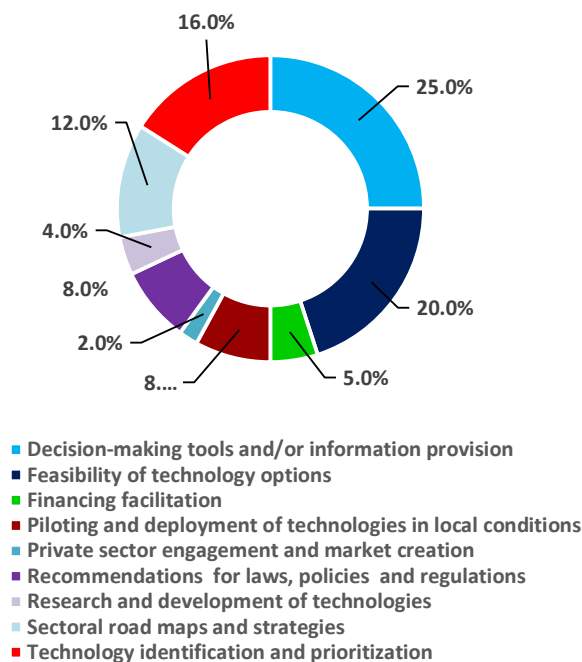
Status of requests for technical assistance from the Climate Technology Centre and Network (2014–2021)



72. Figure 2 shows the distribution of the type of technical assistance requested. Requests for decision-making or information tools were most numerous (25 per cent), followed by requests for technology feasibility studies (20 per cent) and technology identification and prioritization (16 per cent).

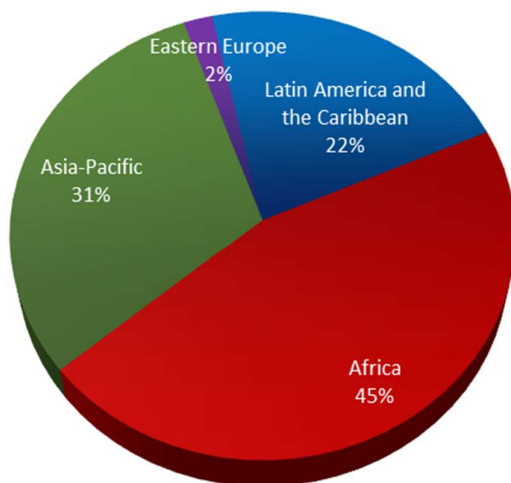
⁴¹ <https://www.ctc-n.org/technical-assistance/request-visualizations>.

Figure 2
Requests for technical assistance from the Climate Technology Centre and Network, by type (2014–2021)



73. Figure 3 indicates the regional distribution of demand for technical assistance: 45 per cent of requests originated from Africa, 31 per cent from Asia-Pacific, 22 per cent from Latin America and the Caribbean and 2 per cent from Eastern Europe. Requests from the LDCs comprised 33 per cent, and those from SIDS 13 per cent.

Figure 3
Requests for technical assistance from the Climate Technology Centre and Network, by region and subregion (2014–2021)



74. Several regional trends have emerged in recent requests for assistance, including:

- (a) Africa: natural resource management, circular economy and sustainable urban energy;

(b) Asia-Pacific: water-related adaptation, local climate information systems and early warning systems, energy efficiency, and new and emerging technologies;

(c) Latin America and the Caribbean: water resources management, coastal zone protection, energy provision, domestic circular economy and sectoral approaches.

(a) Mitigation and adaptation action

75. A total of 48 per cent of requests supported mitigation goals, 29 per cent supported adaptation goals, and 23 per cent supported a combination of adaptation and mitigation goals. The three largest categories for mitigation requests were energy efficiency, renewable energy and agriculture, while for adaptation they were water, agriculture and forestry, and early warning and environmental assessment.

(b) Regional implementation

76. CTCN multi-country projects promote capacity-building, analysis and research at the regional level that provides direct support at country level, including efficiency gains (e.g. lower transactional costs) and regional harmonization of policies. The CTCN programmatic approach uses a standard methodology or thematic focus across several countries, which may facilitate the replication of a project type that has demonstrated success in achieving transformative change.

77. Multi-country requests include those submitted by Brazil, Chile and Mexico on the commercialization of green hydrogen. This regional collaboration stimulates cooperation and promotes regional dialogue to ensure harmonization of regulations. In Africa, 15 member countries of the Commission of Central African Forests submitted a joint request for CTCN assistance to identify options for the economical industrial conversion of forest waste.

(c) Technology needs assessments and nationally determined contributions

78. Eight countries received technical assistance in the reporting period to conduct TNAs and develop technology action plans. The CTCN shared its experience in helping countries access this support in several workshops, including one organized by Malaysia's NDE and two organized by the UNEP DTU Partnership as part of its global TNA project.

79. Most CTCN technical assistance requests are directly related to implementing NDCs. Furthermore, the CTCN supports countries in updating and reviewing NDCs to fast-track their implementation and enhance ambition by strengthening in-country technical expertise through capacity-building.

80. In addition to its joint work with the TEC on stimulating the uptake of technologies to support NDC implementation, the CTCN collaborated with one of its Network members, the University of Michigan, on an in-depth analysis of the climate technology needs that developing countries have deemed necessary to meet their goals under the Paris Agreement.

(d) Gender mainstreaming

81. Guided by its gender policy and action plan (2019–2022),⁴² the CTCN built on its efforts to implement gender mainstreaming in its activities and operations. Particular focus was given to integrating gender considerations throughout the technical assistance process.

82. Updated closure report forms require reporting on several indicators for gender responsiveness, including gender-sensitive stakeholder mapping and engagement; gender mainstreaming in project consultation, validation and decision-making processes; gender-sensitive and sex-disaggregated data collection; and the development of gender-responsive recommendations for action.

3. Enabling environment and capacity-building

⁴² Available at <https://ctc-n.org/resources/ctcn-gender-policy-and-action-plan-2019-2022>.

(a) Endogenous and gender-responsive technologies

83. Since 2018, the CTCN has collaborated with the WGC to provide capacity-building and mentoring support to the winners of the Gender Just Climate Solutions awards hosted by the WGC. Four ‘training of trainers’ events were organized in April 2021 on gender-responsive climate finance. The 2021 winners will receive a small grant, travel to attend the awards ceremony at COP 26, and access to a mentoring programme.

84. A 2020 impact review of the Gender Just Climate Solutions Awards⁴³ found that 70 per cent of participants were able to access new funding after the programme, and all were able to replicate or scale up their projects. The review suggests that including gender as a vital aspect of climate action lays the foundation for multiple transformative benefits.

(b) Policies for enabling environments that incentivize the private and public sector

85. The CTCN provides policy, legal and regulatory guidance to create enabling environments that foster favourable conditions for the development and transfer of climate technologies. The CTCN supported the Governments of Belize and Kenya in developing an integrated, comprehensive agroforestry policy. Nine countries in Southern Africa received CTCN support for implementing minimum energy performance standards and labelling for refrigerators and transformers, which enabled domestic policies to stimulate the market and increase the uptake of energy-efficient appliances.

(c) Private sector involvement in climate technologies

86. The CTCN contracts SMEs to deliver technical assistance and capacity development projects. The SMEs benefit from this opportunity and from connecting with national decision makers, thought leaders and other Network members to expand partnerships and gain greater visibility through the CTCN.

87. In 2021, the CTCN held a technology clinic for agrifood SMEs in Thailand to raise awareness among businesses about available technologies.

88. The CTCN shared its experience engaging with the private sector on climate change adaptation in two workshops organized by the Japanese Ministry of Economy, Trade and Industry, held in Bangladesh and Viet Nam.

89. The CTCN launched a paper discussing the role of public–private partnerships⁴⁴ in climate technology transfer and innovation. The paper provides recommendations on enhancing private sector participation in CTCN technical assistance to facilitate technology transfer.

(d) Information-sharing on technology development and transfer

90. The CTCN web portal⁴⁵ contains close to 17,000 information resources. Visitors can access climate technology descriptions, case studies, national planning documents, publications, tools and webinars. The number of portal visitors increased by 58 per cent between September 2020 and August 2021 compared with September 2019 to August 2020. The most visited web pages included the Adaptation Fund Climate Innovation Accelerator, technical assistance activities and technology descriptions.

91. Of the top 50 countries whose users have spent the most time on the portal, over 40 per cent are LDCs and about 33 per cent are SIDS. Half of the users that spent the most time on the site are from Africa, followed by Latin America and the Caribbean and Asia-Pacific.

⁴³ https://www.ctc-n.org/sites/www.ctc-n.org/files/GJCS_English_Final_0.pdf.

⁴⁴ <https://www.ctc-n.org/news/new-ctcn-publication-public-private-partnerships-climate-technology-transfer-and-innovation>.

⁴⁵ www.ctc-n.org.

(e) Public awareness of climate technology development and transfer

92. Between September 2020 and August 2021, the CTCN earned more than 35 million media and social media impressions and appeared 826 times in the national and global press. In total, 42 newsletters were shared with over 20,000 subscribers.

93. The CTCN collaborated with its knowledge partner UNEP-DHI on a technology brief addressing nature-based solutions in water resources management in the Asia-Pacific region. The CTCN also contributed to a publication by the World Economic Forum proposing an integrated approach for cities to increase their progress towards net zero goals. Finally, the CTCN collaborated with UNEP DTU Partnership on the 2021 edition of the *Technology Perspectives* series, presenting perspectives on closing the gap between technology needs and implementation in support of the Paris Agreement. The series will be launched at COP 26.

94. The CTCN was invited to share its experience in the development and transfer of climate technologies at several global events throughout the year, including the Internet Governance Forum,⁴⁶ the Asia-Pacific Climate Change Adaptation Forum,⁴⁷ the Vienna Energy Forum⁴⁸ and Green Days Africa 2021.⁴⁹

(f) Enhancing the capacities of climate technology stakeholders

95. Between September 2020 and August 2021, CTCN webinars attracted over 1,700 participants.

96. Since 2018, the Vision to Concept capacity-building module of the CTCN has sought to fast-track countries' NDC implementation by enhancing the skills of project proponents in preparing GCF concept notes and transforming priorities outlined in national climate change strategies into concrete project ideas. In 2021, the module was rolled out in the Sudan in collaboration with the NDC Partnership and the UNEP DTU Partnership.

4. Collaboration and stakeholder engagement**(a) Engagement with national designated entities**

97. To support the work of the NDEs, the CTCN organizes regional forums bringing together diverse stakeholders from across the region as part of the UNFCCC Regional Climate Weeks. The NDE forum for the Latin America and the Caribbean region was held in May, followed by the forum for the Asia-Pacific region in July. Owing to COVID-19-related restrictions, both were held virtually, with 455 participants (203 male, 195 female).

98. Webinars were held in collaboration with UNFCCC Regional Collaboration Centres in St. George and Panama to raise awareness about CTCN services across the Latin America and Caribbean region in February 2021.

(b) Enhanced engagement with Network members, including the private sector

99. Between September 2020 and August 2021, the CTCN welcomed 72 new members, 50 of them from developing countries, bringing the total number of members to 664.

100. Private sector organizations comprise 50 per cent of members, while research and academic institutions make up 20 per cent and NGOs 7 per cent.

101. Network members co-developed eight webinars or training events that attracted over 850 participants.

(c) Gender-responsive engagement

102. The CTCN strives to generate greater awareness of the important relationship between gender, climate change and technology in the broader climate change community. The CTCN

⁴⁶ See www.ctc-n.org/news/ctcn-igf-high-level-panel-governing-environmental-data-age-uncertainty-video.

⁴⁷ www.ctc-n.org/news/ctcn-7th-asia-pacific-adaptation-forum-apan-summary-event.

⁴⁸ See www.ctc-n.org/news/ctcn-vienna-energy-forum-2021.

⁴⁹ www.ctc-n.org/news/green-days-africa-2021-join-us.

gender and technology library⁵⁰ contains information relevant to gender and climate change solutions.

103. The CTCN, led by its gender focal point, regularly engages with the WGC to ensure women's voices are heard and their experiences, needs and capacities are taken into account in CTCN work.

(d) Collaboration with youth

104. The CTCN has enhanced engagement and collaboration with youth NGOs through joint learning workshops and webinars with a focus on youth, climate and innovation. Further, it developed a youth knowledge exchange programme: two young people have joined the CTCN to conduct research and assist in the implementation of initiatives.

(e) Collaboration with other partners

105. The CTCN and the West African Development Bank are collaborating on the development of a GCF concept note on enhancing climate information, knowledge services and climate-resilient infrastructure to build resilient agricultural communities in Sahelian countries.

106. The CTCN met with several UNDP Africa resident representatives to discuss opportunities for collaboration. One result has been the agreement to jointly develop the second edition of the *Africa Innovates* magazine, showcasing 50 stories about the use of technology for climate solutions.

107. The National Circular Economy Road Map developed by the CTCN was adopted by the Government of Chile, which ultimately contributed to the 2021 launch of the Regional Coalition on Circular Economy for Latin America and the Caribbean, composed of several Latin American countries and eight strategic partners. It is the first regional programme in the Americas to coordinate government-level intervention in the field of circular economy.

5. Support

(a) Collaboration of the Technology Mechanism with the Financial Mechanism

108. The CTCN is now the largest provider of readiness support for technology, implementing 75 per cent of GCF technology-related readiness grants. To date, 29 GCF readiness projects implemented by the CTCN have been approved, totalling almost USD 10 million.

109. In 2021, the CTCN and the GCF discussed expanding their collaboration to include developing a programmatic approach emphasizing adaptation and climate technology and strengthening engagement with direct access entities to develop funding proposals with robust adaptation technology elements.

110. The CTCN continued to collaborate with the Adaptation Fund through the Adaptation Fund Climate Innovation Accelerator. Coordination meetings took place regularly between the Adaptation Fund and project implementers (the CTCN, UNDP and UNEP) to discuss implementation of the Accelerator and other adaptation matters.

111. Since 2019, the CTCN has collaborated with the NDC Partnership to respond to country requests. To date, five countries have received support under this arrangement, with co-funding provided by the NDC Partnership totalling just over USD 500,000.

(b) Mobilization of pro bono and in-kind support

112. The CTCN secured USD 378,000 in pro bono support in 2021 from the Republic of Korea and Japan's Ministry of the Environment. Furthermore, with co-funding from UNDP in Togo, the CTCN is supporting the Togolese Government in developing a conceptual framework for climate-smart municipalities.

⁵⁰ <https://www.ctc-n.org/technology-sectors/gender>.

(c) Facilitation of access to financing through technical assistance

113. To enhance sustainability, the CTCN often includes specific deliverables in workplans to equip project proponents with the resources to mobilize finance to implement project recommendations. In Sri Lanka, a project concept note was developed for the city of Kurunegala. The note was approved with secured funding from the Korean Environmental Industry and Technology Institute of USD 570,000 to pilot a priority waste sector technology. In the Lao People's Democratic Republic, CTCN technical assistance successfully leveraged USD 10 million from the GCF to build the resilience of the urban population through ecosystem-based solutions.

(d) System for monitoring and evaluating actions

114. In 2021, the CTCN marks the second year of implementation of its updated monitoring and evaluation system. Impact data were recorded for all completed activities through aggregated output, outcome and impact indicators. The data will provide an evidence base upon which to make improvements in the future.

115. The CTCN continues to make data on its service delivery publicly available and publishes all core documents related to requests, response plans and project deliverables.

116. The CTCN conducted a review of the monitoring and evaluation system in 2021 to assess progress and changes needed to simplify the system. Emphasis was on fostering a monitoring and evaluation culture among CTCN staff and stakeholders to promote the quality and uptake of results. Internal training was provided on how to collect and manage this information.

(e) Transformational impact of actions on national and global goals

117. The CTCN partnered with the UNEP DTU Partnership to secure additional funding from the United Nations Office for Project Services to advance the assessment of the transformational characteristics and impacts of CTCN technical assistance and capacity-building projects. Using the Transformational Change Methodology of the Initiative for Climate Action Transparency,⁵¹ the partners will develop a series of specialized, multipurpose transformational impact assessment and reporting tools.

C. Organizational structure of the Climate Technology Centre and Network**1. Climate Technology Centre**

118. The CTCN Director provides direction and strategy in the implementation of the CTCN programme of work, supported by a small team of professional and administrative staff, together with three professional staff (technical managers) based at regional hubs in Bangkok (hosted by UNEP), Mexico City (hosted by UNIDO) and Nairobi.

2. Climate Technology Network

119. To deliver timely technology solutions, the CTCN leverages the expertise of UNEP and UNIDO along with a global network of 654 civil society, finance, private sector and research institutions from 96 countries.

3. National designated entities

120. The work of the CTCN would not be possible without NDEs, focal points nominated by their country to manage CTCN services at the national level. To date, 161 countries have nominated NDEs. Developing country NDEs coordinate and submit requests to the CTCN, whereas developed country NDEs coordinate the provision of technical knowledge and in-country (including pro bono) support.

⁵¹ See <https://climateactiontransparency.org/icat-toolbox/policy-assessment-guides/transformational-change/>.

4. United Nations Environment Programme

121. COP 25 recalled the memorandum of understanding between the COP and UNEP regarding the hosting of the CTC⁵² and invited UNEP, as host, to develop and implement plans to financially support the operation of the CTCN to facilitate its effective functioning, in accordance with the memorandum of understanding.⁵³

122. UNEP as the host agency has supported the CTCN in accessing funding from the Financial Mechanism. UNEP supported negotiations with the Government of the Republic of Korea to establish a partnership and liaison office in Songdo for five years. It also initiated discussions with the Government of the United Kingdom of Great Britain and Northern Ireland, resulting in a new voluntary contribution to the multi-donor trust fund of the CTCN. Additionally, UNEP initiated discussions with the Government of Denmark and the United Kingdom incoming COP Presidency regarding their support for the CTCN donor round table at COP 26 to renew and strengthen sustained funding for the CTCN.

123. Following the completion of the second independent review of the CTCN, UNEP provided a management response. A report on the review including recommendations to advance progress of the CTCN has been prepared.⁵⁴ For action taken in the reporting period in response to the first independent review, see annex II.

5. Funding

124. Since its inception the CTCN has received USD 84,342,830 in financial contributions. As at 20 August 2021, the CTCN had received USD 6,915,799 for 2021. The breakdown of contributions is presented in the table below.

Financial support secured in 2021 for the Climate Technology Centre and Network (as at 20 August 2021)

(United States dollars)

<i>Donor</i>	<i>Contribution</i>
European Commission	1 887 133
GCF	1 590 988
United Kingdom	1 396 648
Japan (Ministry of Economy, Trade and Industry)	708 682
Japan (Ministry of the Environment)	463 636
NDC Partnership	328 113
UNDP in Togo	250 000
Sweden	229 249
Spain	61 350
Total	6 915 799

125. The CTCN carried over approximately USD 11 million into 2021. Its approved annual operating budget is just over USD 10 million and its projected expenditure for 2021 is USD 12.9 million. The projected fund balance of the CTCN at the end of 2021 is approximately USD 13.4 million, including a carry-over of USD 6.5 million and pending cash receipts of USD 6.9 million against previous years' commitments.

D. Challenges and lessons learned

126. The CTCN reflected on lessons learned and challenges in implementing its mandates between September 2020 and August 2021. The following are its findings.

⁵² Decision 14/CP.18, annex I.

⁵³ Decision 14/CP.25, para. 25.

⁵⁴ FCCC/CP/2021/3.

1. Pandemic impacts and response

127. The impact of the COVID-19 pandemic on mobility delayed the implementation of some activities. Field visits were replaced with virtual information collection, and online modalities were adopted for surveys and focus groups.

128. Technical assistance implementation was greatly facilitated by in-country partners who conducted workshops, stakeholder meetings and on-site surveys.

2. Challenges to access follow-up funding

129. Closure reports highlight challenges in accessing financial resources to implement recommendations arising from the technical assistance. Barriers cited include a shift in focus of human and financial resources to address the health impacts of the COVID-19 crisis. To supporting developing country efforts to secure finance for climate actions, the CTCN has introduced, as part of its technical assistance delivery, capacity-building to develop strong funding proposals.

3. Multi-country, regional and programmatic approaches to catalyse resources

130. The use of programmatic approaches to service delivery, using a standard methodology or thematic focus across several countries, promotes efficiency gains (e.g. lower transactional costs), effective capacity-building, learning and knowledge-sharing at regional level, and the harmonization of policies and regulations across a region. The approach may be used to achieve larger-scale impacts and facilitate sector-wide transformations.

131. The experience of the CTCN with single country submissions under the GCF Readiness Programme revealed several inefficiencies. The CTCN has estimated that, for each GCF readiness proposal submitted, the CTCN spends on average between USD 25,000 and 30,000 to develop it, including the CTCN technical staff time needed to address each round of review. Approved CTCN readiness projects, implemented on average over 18 months, are also subject to reporting requirements every six months, and each reporting cycle is subject to several rounds of review before clearance by the GCF. The current operation modalities, including the rigorous review of proposals and demanding reporting requirements, create challenges for the long-term sustainability of the current modality for supporting developing countries in accessing GCF readiness funding.

4. Facilitating technology needs assessments and technology action plans

132. There is continued demand for support in identifying technologies to enable countries to implement their NDCs. The CTCN is well positioned to provide assistance to a group of developing countries to facilitate the undertaking of TNAs, technology action plans and technology road maps that are aligned to NAPs and the NDC process. The Vision to Concept capacity-building programme of the CTCN has proved useful in supporting countries to secure potential funding for project ideas related to the implementation of TNA and technology action plan results.

5. Collaborative activities between the Technology Executive Committee and the Climate Technology Centre and Network

133. The feedback mechanism between the TEC and the CTCN is important for enhancing synergy in the Technology Mechanism. This collaboration enables the two bodies to complement each other's role as implementation and policy arms and maximize the impact of the Technology Mechanism, for example in strengthening its linkages with the Financial Mechanism.

E. Key messages for the Conference of the Parties

134. Despite continued challenges due to the COVID-19 pandemic, the CTCN implemented its full workplan for 2021 by focusing on the implementation of technical

assistance requests and moving in-person stakeholder engagement and capacity-building activities online.

135. The use of multi-country, regional and programmatic approaches in CTCN services proved successful in streamlining operational, financial and administrative matters and brought focus to transformational results, and should be facilitated whenever possible.

136. Surveys and evaluations conducted by the CTCN and external institutions have highlighted the added value of the CTCN in creating enabling environments and laying the groundwork, through early-stage support, for the adoption and scaling up of climate technologies.

137. The CTCN will face a critical challenge in 2022, as it will not be able to allocate funds in a country-driven manner, given that 75 per cent of its available 2022 funding has already been earmarked. Furthermore, other than a projected USD 2 million from the Adaptation Fund for 2023–2024, there is currently no other secured income for the CTCN beyond 2022.

138. To ensure that the CTCN can meet the growing demand from developing countries for climate-related technology assistance, new contributions to the multi-donor trust fund and multi-year commitments, paired with new sources of funding from private and multilateral sources, are necessary.

139. Resource mobilization efforts will be based upon a diversification of income streams for both multi-year and annual contributions. Several funding scenarios for its third programme of work (2023–2026) have been presented to the Advisory Board and will be discussed at the donor round table to be held at COP 26.

140. At its 18th meeting, the Advisory Board highlighted the urgent need for increased and sustainable financial resources for the CTCN and recommended enhanced linkages between the Technology Mechanism and the Financial Mechanism.

141. The CTCN, in collaboration with its hosts UNEP and UNIDO and with the guidance of the Advisory Board, will prepare its third programme of work (for 2023–2026) in early 2022. The CTCN will focus on identifying and implementing transformational technologies that contribute to the implementation of enhanced NDCs. The CTCN will also highlight opportunities for supporting national efforts to build back better. Digital technology has been identified as critical to addressing the links between climate change, nature and sustainable development.

F. Key messages for the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement

142. The CTCN is actively engaging with the Financial Mechanism to enhance collaboration. The CTCN is now the largest provider of GCF readiness support for technology. The CTCN and the GCF are also exploring new engagement modalities beyond readiness, including developing a programmatic approach for technical assistance and capacity-building. The CTCN is also closely following the development of the eighth replenishment of the GEF and will seek to enhance its engagement, especially through the Net Zero Accelerator Integrated Program of the GEF.

143. The CTCN will enhance its efforts to support developing countries prepare TNAs and technology action plans, including the development of concrete concept notes for scaled-up funding, and will propose an approach to the GCF for a CTCN project aimed at capacity-building in developing countries to develop TNAs and technology action plans.

144. The CTCN will strengthen the linkages between the TEC and CTCN through the exchange of technical data and information to ensure synergies, in addition to exploring opportunities for additional joint activities.

145. The CTCN makes technology development and transfer more inclusive by implementing its gender policy and action plan and engaging with women, youth and indigenous peoples to assist countries in fully transitioning to low-carbon economies, building climate-resilient societies, and achieving the Sustainable Development Goals.

Annex I

Recommendations of the Technology Executive Committee and the Climate Technology Centre and Network on how to stimulate the uptake of climate technology solutions to support the implementation of nationally determined contributions

[English only]

1. From an analysis conducted jointly by the TEC and the CTCN in 2021 of technology and NDCs,¹ which covered technology issues in revised NDCs, technology needs and challenges and lessons learned, success stories, linkages between policy and implementation, and linkages with NAPs, the TEC and the CTCN highlight the following:

(a) The vast majority of Parties mentioned technology in their revised NDCs; however, the structure and depth of information on technology aspects varies significantly. Most Parties included qualitative aspects. Some also included quantitative aspects, with a few providing detailed information on the scope of technologies required and estimated costs;

(b) An analysis of linkages between policy and implementation in the context of technology issues and NDCs shows that strong linkages are needed for the effective uptake of climate technologies. In addition, fostering linkages between the NDC and NAP policy processes regarding technology can be of great mutual benefit to both processes, avoiding duplication of work and accelerating implementation;

(c) There are a variety of examples from different regions and countries which show that the uptake of climate technologies directly supports the implementation of NDCs. These examples include technology solutions driven by governments, the private sector or communities, and various approaches for overcoming the technical, financial, institutional and social challenges to the uptake of the technologies, including innovative policies and business models, gender-responsive approaches and effective stakeholder engagement;

(d) Lessons learned regarding the uptake of climate technologies include the importance of recognizing the crucial role that stakeholders play in technology planning and implementation to ensure that technology solutions are technically, economically, institutionally and socially viable;

(e) Creating local champions who will showcase the successful uptake of technology solutions can play an important role in securing the support needed for scaling up a technology domestically or in another country, if experience is documented and made publicly available.

2. The TEC and the CTCN recommend that the COP and the CMA encourage Parties to stimulate the uptake of technologies in support of NDC implementation by:

(a) Fostering inclusive, participatory and equitable processes and approaches for the uptake of climate technologies that take into account the needs, priorities, knowledge and capacities of all technology stakeholders; generate awareness of technology benefits; and foster stakeholder engagement and buy-in. In particular, technology uptake needs to lead to a just transition that protects workers and communities, including indigenous peoples and women, and ensures a socially equitable distribution of benefits and risks;

(b) Supporting market creation and expansion for prioritized technologies through putting in place enabling legal and regulatory environments and enhancing the capacities of all technology stakeholders to benefit from those environments;

(c) Creating success stories that demonstrate local economic and social benefits achieved through the uptake of environmentally sound technologies and their contribution to

¹ Available at <https://unfccc.int/tclear/tec/techandndc.html>.

NDC implementation with a view to leveraging broader financial, institutional and social support for replicating and scaling up those technologies;

(d) Systematically documenting and disseminating information on pursued policies, schemes and programmes that foster the uptake of a technology, including information on challenges and lessons learned, to inform future policies and prioritization of technologies, including for revised NDCs and NAPs;

(e) Making better use of the Technology Mechanism to carry out recommendations in paragraph 2(a–d) above, including by:

(i) Using technical documents and recommendations on climate technology policies prepared by the TEC;²

(ii) Actively engaging with the CTCN³ to benefit from its provision of technology solutions, capacity-building and advice on policy, legal and regulatory frameworks, and support for the development of technology road maps, tailored to the needs of individual country contexts;

(iii) Sharing further information on technology needs and support to foster a clearer understanding of policy targets by domestic technology stakeholders, facilitate international cooperation and enable a more targeted provision of support by the TEC and the CTCN, according to their respective functions, and other support providers, as appropriate.

² <https://unfccc.int/tclear/policies>.

³ www.ctc-n.org/technical-assistance.

Annex II

Action taken in response to the independent review of the Climate Technology Centre and Network

[English only]

1. Since the first independent review of the CTCN was conducted in 2017, the Centre has consistently endeavoured to incorporate the recommendations. Action has been taken in the following areas in the reporting period.

I. Resource mobilization

2. The CTCN (via its host organizations) and the GCF have continued to partner under the GCF Readiness and Preparatory Support Programme and have discussed expanding their collaboration. Additional funding for innovative adaptation support has been secured through the Adaptation Fund and the GEF Challenge Program for Adaptation Innovation.

3. Under the guidance of the Advisory Board, the CTCN held a technical meeting on 8 September 2021 on the margins of the Climate Investment Summit to solicit inputs on priority areas of work as the CTCN starts developing its new four-year programme of work (2023–2026).

II. Technical assistance efficiency and impact

4. Applying a more regional focus has enabled the CTCN to identify regional trends in technology demand more effectively. NDEs now have dedicated teams with whom to work and discuss needs. As a result, the quality of technical assistance requests and the efficiency of implementation have been improved.

5. With the technical assistance process firmly in place, the CTCN will build on initial efforts to demonstrate more fully the long-term impacts of its services.

III. Network member involvement

6. Efforts have been made to improve the onboarding process for new Network members. Introductory calls are organized to enable a better understanding of CTCN services and to explore potential areas of collaboration. A digital form was launched to streamline the application process.
