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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

Joint annual report of the Technology Executive Committee and the Climate Technology Centre and Network for 2022*

Summary

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

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

Abbreviations and acronyms

AFCIA	Adaptation Fund Climate Innovation Accelerator
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
GCF	Green Climate Fund
GEF	Global Environment Facility
IPCC	Intergovernmental Panel on Climate Change
LDC	least developed country
NDC	nationally determined contribution
NDE	national designated entity
SB	sessions of the subsidiary bodies
SDG	Sustainable Development Goal
SIDS	small island developing State(s)
TAP	technology action plan
TEC	Technology Executive Committee
TNA	technology needs assessment
TT:CLEAR	technology information clearing house
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
YOUNGO constituency	children and youth constituency

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 implementation of the Paris Agreement.[2]

3. In accordance with relevant COP[3] and CMA[4] 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 (see chap. II below) outlines their activities undertaken jointly in 2022. Chapter III below presents the activities and performance of the TEC in 2022, including key messages and recommendations for COP 27 and CMA 4. It covers the outcomes of the 24th and 25th 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 2022, including key messages for COP 27 and CMA 4. It covers the outcomes of the 19th and 20th meetings and intersessional work of the CTCN Advisory Board 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] The annex describes action taken in the response to the 2021 independent review of the CTCN.

C. Possible action by the subsidiary bodies

5. The subsidiary bodies may wish to consider this report and to recommend draft decisions for consideration and adoption at COP 27 and CMA 4.

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

6. The TEC and the CTCN continued to enhance collaboration and foster deeper engagement to support countries in enhancing the ambition and implementation of their NDCs. This required increased coordination of the bodies' joint intersessional work, including through more frequent virtual meetings of the joint TEC–CTCN task force and the CTCN and UNFCCC secretariats.

7. Responding to the invitation from COP 26 and CMA 3 to strengthen their collaboration and provision of feedback,[6] the TEC and the CTCN agreed to undertake joint

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[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] Decisions 9/CP.26, para. 2, and 15/CMA.3, para. 2.

work in 2022–2023 in areas including enhancing systematic feedback; technology and NDCs; technology and gender; monitoring and evaluation; and communications and outreach.

8. The TEC and the CTCN developed the first joint work programme under the Technology Mechanism,[7] which addresses themes of common interest and will help to further enhance coherence, synergies and collaboration between the bodies while allowing them flexibility to perform their respective functions in line with their mandates. To ensure full and effective implementation of the technology framework, the joint work programme covers the five key themes of the framework and the majority of the actions therein.

9. The joint sessions of the TEC and the CTCN Advisory Board became a regular occasion for taking stock of the implementation of joint activities and enabling systematic feedback between the bodies. Two joint sessions were held: on 28 March in conjunction with the 24th TEC and 19th Advisory Board meetings and on 9 September in conjunction with the 25th TEC and 20th Advisory Board meetings.

10. The TEC and the CTCN held a number of events to raise awareness of the role of technology in NDC implementation, as highlighted in a joint publication (TEC and CTCN, 2021), including the Technology Mechanism side events at COP 26 and SB 56,[8] and the regional forums for NDEs for the Latin America and the Caribbean and Africa regions, organized by the CTCN as part of the 2022 regional climate weeks. The TEC and the CTCN agreed to regularly update the joint publication, including by incorporating additional case studies and lessons learned related to gender-responsive technologies and local and indigenous knowledge.

11. Regarding technology and gender, the TEC and the CTCN continued to develop a global roster of female experts on climate technology, and female and male experts on gender and climate change, including further defining aspects such as criteria for inclusion and categories of expertise.

12. On monitoring and evaluation, the TEC and the CTCN conducted their second biannual NDE survey, which indicated the need to explore approaches to better engaging NDEs in responding to the survey.[9]

III. Activities and performance of the Technology Executive Committee in 2022

A. Meetings and membership

13. The TEC convened its 24th meeting from 22 to 25 March and on 28 March, and its 25th meeting from 6 to 9 September.

14. At its 24th meeting, the TEC elected Ambrosio Yobánolo del Real (Chile) as its Chair and Stig Svenningsen (Norway) as its Vice-Chair for 2022.[10]

15. Following the findings of an assessment conducted by the Office of Internal Oversight Services,[11] the TEC agreed to amend its rules of procedure[12] to include a provision on conflict of interest.

16. The meetings of the TEC were webcast live and attended by observers. All meeting documents, webcasts and reports are available on TT:CLEAR.[13]

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[7] Available at https://unfccc.int/ttclear/tec/documents.html.
[8] See https://unfccc.int/ttclear/events/2021/2021_event05 and https://unfccc.int/ttclear/events/2022/2022_event02.
[9] See TEC document TEC/2022/25/20 and Advisory Board document AB.2022.20.5.3.
[10] A list of the TEC members indicating their terms of office is available at https://unfccc.int/process-and-meetings/bodies/election-and-membership.
[11] See Office of Internal Oversight Services report 2019/122.
[12] Available at https://unfccc.int/ttclear/tec.
[13] http://unfccc.int/ttclear.

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

17. The TEC continued its intersessional work through task forces, supported by the secretariat, making progress in implementing its rolling workplan.[14]

18. The TEC wishes to express its appreciation for the financial contributions from the European Commission and the Government of Japan and the participation and support of organizations and other stakeholders engaged in the work of the TEC in 2022.[15]

1. Innovation

(a) National systems of innovation

19. The TEC initiated the preparation of a compilation of good practices and lessons learned in setting up and implementing national systems of innovation. The compilation, expected to be finalized in 2023, identifies successful regulatory frameworks and institutional arrangements that were effective in accelerating technology innovation.

(b) Innovative approaches to adaptation technologies

20. The TEC continued its collaboration with the International Union for Conservation of Nature, Friends of Ecosystem-based Adaptation and the expert group on oceans of the Nairobi work programme on impacts, vulnerability and adaptation to climate change, hosting the last of the Technology Day events, focusing on innovative approaches to strengthening ocean and coastal adaptation, at COP 26.[16] A joint policy brief on the topic (UNFCCC and IUCN, 2022) was developed and launched at the ocean and climate change dialogue on 15 June.

2. Implementation

(a) Linkages between the technology needs assessment and nationally determined contribution processes

21. The TEC produced a policy brief on linkages between the TNA and NDC processes in collaboration with the NDC Partnership and other actors (TEC, 2022) and prepared key messages and recommendations for COP 27 and CMA 4 (see chap. III.E below).

(b) Technology needs assessment

22. The TEC continued its work on TNAs and agreed to assess the gaps in the existing TNA guidelines.

3. Enabling environments and capacity-building

(a) Incentivizing private and public sector technology development and transfer

23. The TEC is preparing a policy brief on enabling environments and challenges related to technology development and transfer[17] and hosted a thematic dialogue on the matter in collaboration with UNEP, the NDC Partnership, NDEs and relevant organizations.[18]

(b) Enhancing replicability and scalability of technologies for sustainable transport

24. The TEC sought to identify challenges and opportunities in strengthening enabling environments for enhancing replicability and scalability of technologies for sustainable

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[14] Available at https://unfccc.int/ttclear/tec/.
[15] See http://unfccc.int/ttclear/tec/members.html#Task.
[16] See https://unfccc.int/ttclear/events/2020/2020_event07.
[17] To be made available at https://unfccc.int/ttclear/tec/documents.html.
[18] See https://unfccc.int/ttclear/events/2022/2022_event01.

transport and is preparing a technical paper on decarbonization technologies for sustainable road mobility.[19]

25. On the basis of the technical paper referred to in paragraph 24 above, the TEC prepared key messages and recommendations for COP 27 and CMA 4 (see chap. III.D below).

4. Collaboration and stakeholder engagement

26. The TEC, in collaboration with the YOUNGO constituency, hosted an event entitled "Climate technology and adaptation: youth-led innovative approaches" at the Global Sustainable Technology and Innovation Community Conference.[20]

27. The TEC launched a call for inputs from Parties, observers and other stakeholders for development of its new rolling workplan.[21]

5. Support

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

28. The TEC prepared a technical paper (UNFCCC, 2022b) and is preparing a policy brief on experience, lessons learned and good practices related to the support provided by the GCF and the GEF for climate technologies,[22] and prepared key messages and recommendations for COP 27 and CMA 4 (see chap. III.D below).

29. The TEC Chair and Vice-Chair participated in the 6th annual meeting of the GCF with UNFCCC constituted bodies in October 2021.

(b) Standing Committee on Finance

30. As invited, the TEC provided input to the draft guidance for the operating entities of the Financial Mechanism prepared by the Standing Committee on Finance for consideration at COP 27 and CMA 4.

6. Input to the global stocktake

31. The TEC prepared a synthesis report on matters related to technology development and transfer for the technical assessment component of the first global stocktake, covering the information referred to in Article 10 of the Paris Agreement; barriers and challenges faced by developing countries; and good practices, experience and potential opportunities in enhancing international cooperation on mitigation and adaptation.[23]

7. Monitoring and evaluating impacts

32. The TEC continued to monitor and evaluate the impacts of its work and, in collaboration with the CTCN, conducted the NDE survey referred to in paragraph 12 above.

8. Communications and outreach

33. The TEC continued to implement communication and outreach activities in line with its communications and outreach strategy.[24]

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[19] To be made available at https://unfccc.int/ttclear/tec/transport.html.

[20] See https://unfccc.int/ttclear/events/2020/2020_event10.

[21] The submissions are available at https://unfccc.int/ttclear/tec/documents.html under "Stakeholder documents".

[22] To be made available at https://unfccc.int/ttclear/tec/support.html.

[23] Available at https://unfccc.int/topics/global-stocktake/information-portal.

[24] Available at https://unfccc.int/ttclear/tec.

9. **Gender mainstreaming**

34. The TEC continued mainstreaming gender in its work. It regularly includes a section on gender in its key publications and strives to achieve gender balance among panellists at its events.

35. The TEC agreed on a two-year term of office for its gender focal point and appointed Stephen Minas (Greece) as gender focal point for 2023–2024, with Ambrosio Yobánolo del Real appointed as interim gender focal point until its 26th meeting.

36. The TEC also agreed to prepare a policy brief on sustainable road mobility and gender.

C. Rolling workplan for 2023–2027

37. At its 25th meeting, taking into account, inter alia, findings in the contribution of Working Group III to the IPCC Sixth Assessment Report (Shukla et al., 2022) and inputs from observer organizations in response to a call launched in April, the TEC agreed on its rolling workplan for 2023–2027.[25]

D. Challenges and lessons learned

38. Despite challenges due to the coronavirus disease 2019 pandemic, the TEC has been successful in delivering most of the envisaged outputs under its rolling workplan for 2019–2022, including 9 of 11 planned publications and seven of eight planned policy briefs, with its meetings and the intersessional work of its task forces successfully conducted in virtual and hybrid format, notwithstanding the difficulty of scheduling meetings to accommodate all TEC members participating in different time zones.

39. Following guidance from the COP and the CMA, the TEC has taken steps towards enhancing coherence and synergy under the Technology Mechanism for effective implementation of the technology framework, such as preparing a joint work programme with the CTCN.

40. Effective dissemination of TEC products to stakeholders, particularly to NDEs and Parties, remains a challenge. The dissemination and visibility of the work of the TEC to various stakeholder groups, including Parties and non-Party stakeholders, must be enhanced in order to maximize use of TEC products and uptake of its recommendations as well as their influence on policies and practices on the ground.

41. It is crucial to improve TEC engagement with NDEs as the UNFCCC focal points for technology development and transfer. After adopting its next rolling workplan, the TEC will update its communications and outreach strategy to foster more systematic engagement with NDEs to ensure that they are aware of TEC work and it is useful and relevant to them.

42. Owing to resource constraints, the TEC has not been able to fully implement all activities under its current rolling workplan. The secretariat has supported the TEC in addressing this challenge, including by mobilizing additional resources and supporting the co-production of TEC products with partners.

43. TEC consideration of the outcomes and impacts of its work throughout 2019–2022 may provide valuable insights for improving implementation of its next rolling workplan, including on further linkages between TEC and CTCN activities and their monitoring and evaluation systems.

44. Establishing partnerships and strategic engagement in relation to bodies, processes and initiatives under and outside the UNFCCC is key to boosting the reach and impact of TEC work. Regarding the UNFCCC Global Innovation Hub, for example, which is relevant to the mandate of the TEC, coordination and consultation with the bodies of the Technology Mechanism will help to avoid fragmentation of efforts in the area of innovation and climate technology.

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[25] Available at https://unfccc.int/ttclear/tec/documents.html.

45. Gender-balanced membership of the TEC has not yet been achieved despite relevant COP guidance and the TEC drawing attention to the issue in the past; hence, Parties are encouraged to consider nominating female candidates for TEC membership.

E. 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 2022, the TEC wishes to deliver the following key messages and recommendations to COP 27 and CMA 4.

1. Linkages between the technical needs assessment and nationally determined contribution processes

47. Drawing on its paper[26] and policy brief on linkages between the TNA and NDC processes (TEC, 2022), the TEC highlights the following:

(a) There are many linkages between the TNA and NDC processes. For example, comparison of possible steps in designing and implementing NDCs with those in the TNA guidance demonstrates that outputs from one process could serve as inputs to the other. In addition, recent synthesis reports on NDCs[27] and TNAs[28] highlight linkages at several stages of the processes. Moreover, for most of the recent TNAs the NDC has been used as a starting point for the analysis;

(b) TNAs could play a vital role in filling gaps in NDCs, specifically those relating to prioritizing climate technologies and their required enabling framework conditions, and preparing implementation plans for technology transfer and diffusion;

(c) TNAs and TAPs help countries to build capacity for gathering information on climate technologies, assessing what is feasible within their national context and determining how to implement prioritized technology solutions. Making use of this capacity within the NDC process could result in more robust NDCs, which could be particularly beneficial for the LDCs and SIDS, where many recent TNAs have been conducted;

(d) TNAs may be used to add bottom-up technology realism to a country's NDC planning, such as through TAPs that help NDC planners to consider detailed implementation actions that have been checked and brokered with country stakeholders in terms of feasibility and affordability. This could lead to a holistic approach in countries that combines formulation of NDC targets with bottom-up assessment of technology options, including detailed implementation actions. TNAs could thus be updated in support of NDC planning by using the TNA process for organizing stakeholder consultations, barrier analysis and TAP preparation;

(e) The 2022 TEC policy brief on linkages between the TNA and NDC processes identifies tools from the TNA process that developing countries can use in designing and planning NDCs, such as for identifying and overcoming barriers, enabling actions, implementing TAP guidance, and enhancing stakeholder engagement;

(f) With regard to updating the results of previously conducted TNAs in support of NDC planning, countries sought further guidance on how to make better use of the vast knowledge base from TNAs and to keep it up to date for NDC development;

(g) TNAs play a fundamental role in identifying technology needs, including financial and capacity-building needs for technology implementation. The implementation of TNA results, including TAPs, should be supported to facilitate NDC implementation.

48. The TEC recommends that the COP and the CMA encourage Parties to promote linkages between the TNA and NDC processes by:

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[26] TEC document TEC/2021/23/7.
[27] FCCC/PA/CMA/2021/8/Rev.1.
[28] FCCC/SBI/2020/INF.1.

(a)   Using solutions identified in TNAs for climate policies in developing countries, including identified and prioritized soft and hard technology solutions for mitigation and adaptation, which are also relevant for NDCs and national adaptation plans;

(b)   Enhancing the contribution of TNAs to NDC preparation through the creation of joint working groups or other information-sharing and coordination arrangements between TNA and NDC country teams and through tools from the TNA process that countries can use in designing and planning NDCs, such as for engaging stakeholders, identifying barriers, enabling actions and preparing TAPs;

(c)   Building capacity for gathering knowledge on climate technologies in order to help stakeholders in assessing whether technologies are feasible for their countries and advise them on how to implement prioritized technology solutions. Such capacity within the NDC process could help to enhance the robustness of NDCs, especially those of the LDCs and SIDS;

(d)   Incorporating into the NDC process the experience of implementing the adaptation and mitigation technologies identified in TNAs that require overcoming barriers, as well as employing sectoral and multisectoral expert teams for planning, budgeting, financing, and technology operation and maintenance;

(e)   Assisting NDEs, as the contact points for TNAs, in enhancing their efforts to coordinate the TNA and NDC teams with a view to exchanging information and enhancing implementation of the results of both processes;

(f)   Using TAPs to strengthen national enabling environments for promoting market-based mechanisms, trade and investment, and fostering innovation, so as to reduce costs and accelerate deployment of climate technology solutions, in order to support enhanced NDC ambition and implementation;

(g)   Reporting TNA results in national communications and biennial transparency reports as part of the information necessary to track progress in implementing and achieving NDCs, and the information on climate change impacts and adaptation, as appropriate.

2.   Technologies for sustainable road mobility

49.   Key insights from TEC work on the development, diffusion and impacts of advanced decarbonization technologies for road transport, which includes plug-in electric vehicles, hydrogen-powered fuel-cell electric vehicles, advanced liquid biofuels, shared mobility modes and full vehicle automation, are as follows:

(a)   Deployment of zero-emission electric vehicles should be aligned with support for low-carbon fuels, namely zero-emission electricity, green or blue hydrogen and/or advanced biofuels that do not threaten food security;

(b)   Plug-in electric vehicles offer the highest technology readiness and low-carbon potential for light-duty vehicles, as well as some medium- and heavy-duty applications, and they may also offer a strong opportunity for two- and three-wheeler applications in some developing countries;

(c)   Hydrogen and advanced biofuels have lower technology readiness and higher adoption barriers than electrification and are not expected to play as large a role in deep decarbonization of road transportation;

(d)   More research and policy efforts are needed to improve the sustainability impacts of zero-emission electric vehicle manufacturing, operation and disposal, including extracting metals for advanced batteries and battery end-of-life reuse or recycling, using oxidation catalysts in fuel cells and green hydrogen production, dramatically increasing carbon capture from blue hydrogen production, and ensuring that biofuels are not a source of deforestation;

(e)   Shared mobility is likely to play a minor role in deep decarbonization and may be more effective through increased use of pooling and coordination to improve public transit services and uptake;

(f)   Full vehicle automation involves a highly uncertain set of technologies that could increase or decrease greenhouse gas emissions owing to efficiency gains being offset by deadheading, more driving and other rebound effects.

50.   The TEC recommends that the COP and the CMA invite Parties and stakeholders seeking to achieve deep decarbonization by accelerating the uptake of technologies for sustainable road mobility to consider, at the regional, national or subnational level, as appropriate:

(a)   Planning a mix of policies that can offer different and complementary benefits to induce further emission reductions while improving or achieving policy cost-effectiveness or efficiency, equity, political acceptability or transformative signal, and addressing technical and social barriers;

(b)   Establishing zero-emission electric vehicle sales standards or requirements that can help to channel research and development and innovation activities towards zero-emission electric vehicle technologies;

(c)   Complementary policies, namely a low-carbon fuel standard, carbon or road pricing, support for charging and fuelling stations, building standards that require charging infrastructure, financial incentives for infrastructure installation and phasing down subsidies and exemptions that benefit fossil fuel powered technologies with their associated emissions;

(d)   Complementary policies that help to reduce demand for transportation or private driving, such as public transportation, urban planning and teleworking;

(e)   Guiding low-carbon innovation with direct research and development support to stimulate domestic innovation activities, including use of public–private partnerships;

(f)   Ensuring institutional capacity, including for understanding potential uptake of technologies for sustainable road mobility and developing research-oriented institutions that track the development of low-carbon technologies, progress in overcoming social and technical barriers, and lessons learned for designing a climate policy mix.

3.   Support for climate technologies

51.   Drawing on its work on experience and lessons learned from the support for climate technologies provided by the operating entities of the Financial Mechanism,[29] the TEC highlights the following:

(a)   There is shared consensus across stakeholders regarding the value of technology as a key enabler for addressing climate change;

(b)   The support for climate technologies provided by the operating entities of the Financial Mechanism demonstrates a shared commitment to address the climate emergency, help vulnerable societies to adapt to the adverse impacts of climate change and support developing country Parties in raising and realizing their climate-related ambition;

(c)   Support available from the GEF and the GCF for TNAs and the development of associated TAPs has helped to lay the foundation for effective technology development and transfer;

(d)   The CTCN has provided crucial early-stage technology support and is actively responding to growing demand from countries for its services owing to its strong sectoral expertise, agility, responsiveness and strength in filling a gap by funding projects that support countries with their technology planning processes, development of national policies and standards, and technology road maps, particularly through specialized teams (the Network) and facilitation processes that ensure national ownership of the planning process;

(e)   Irrespective of whether technology is transferred or endogenously developed, having the right people in place with the right set of skills to operate and maintain technology represents an ongoing challenge;

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[29] See https://unfccc.int/ttclear/tec/support.html.

(f)   Consensus is growing regarding the need to promote critical transformational climate technologies to support the development of more ambitious NDCs, and the implementation of current NDCs and to track their level of adoption and progression at a sectoral level towards achieving emission reduction targets and the purpose and long-term goals of the Paris Agreement;

(g)   GEF and GCF implementing agencies have placed more attention on gender mainstreaming; its treatment came through more convincingly in adaptation projects than in those aimed at mitigation. Increased traction in this regard relates to further enhancing understanding on the part of project designers and implementers of how gendered technology development and transfer projects could drive transformative impact;

(h)   The potential of private sector actors to support innovation and technology development and transfer has not yet been fully tapped;

(i)   Successful implementation and scaling up of technology initiatives depends on absorptive capacity and market size;

(j)   There is a need to understand the role of national policy in enabling and hindering technology development and transfer and prioritizing the creation of enabling environments. Prospects for technology adoption and replication can be heightened through influence in the policy space leading to a correction of market conditions (e.g. alignment incentives).

52.   In order to enhance the relevance and impact of the support for technology provided by the GCF and the GEF, it is recommended that:

(a)   Developing country Parties use the CTCN and UNFCCC mechanisms to leverage technical assistance and to support their TNAs, as such mechanisms ensure that there is strong alignment with NDC commitments;

(b)   A balanced focus on equipment and soft aspects of climate technologies (i.e. techniques, practical knowledge and skills, workforce training and development) be pursued under the Technology Mechanism, irrespective of whether technology is transferred or endogenously developed;

(c)   The secretariats of the CTCN and operating entities of the Financial Mechanism collaborate in identifying ways to further streamline the process for facilitating linkages and readiness support for sectoral transformation through climate technologies (e.g. through adopting a more programmatic approach), thereby strengthening proposals and support for building developing country Parties' capacity for undertaking technology-oriented projects;

(d)   NDEs take the lead in coordinating national technology efforts and in engaging with the focal points of the operating entities of the Financial Mechanism in order to overcome gaps in national-level coordination;

(e)   The secretariats of the CTCN and the operating entities of the Financial Mechanism encourage coordination among relevant focal points for implementing climate technology related projects.

53.   In order to accelerate technology-driven progress in limiting global warming and enhancing resilience, it is recommended that:

(a)   Countries include considerations related to transformative technologies in priority sectors in their NDCs in pursuing mitigation objectives, improve systematic and harmonized reporting on the level of technology adoption towards achieving the purpose and long-term goals of the Paris Agreement, and strengthen their work on climate-resilient development pathways in pursuing adaptation objectives;

(b)   International development entities involved in promoting technology development and transfer strengthen their promotion of transformative technologies;

(c)   The operating entities of the Financial Mechanism and the CTCN, as well as other national and international climate funds, in line with their respective mandates, consider

how transformative technologies in priority sectors and measurement of their adoption support the long-term goals of the Paris Agreement.

54.   In order to deepen understanding of the specific ways in which gender mainstreaming and engaging stakeholders – including youth and indigenous peoples – can add value in supporting technology development and transfer, it is recommended that:

(a)   The operating entities of the Financial Mechanism and the CTCN encourage their project implementers to pursue approaches that involve engagement of stakeholders in key steps of project design and implementation and help to strengthen national and local ownership of technology interventions;

(b)   Stakeholders enhance reporting on experience, good practices, and specific measures and strategies that have meaningfully increased both women's and men's power to participate in climate technology action;

(c)   The operating entities of the Financial Mechanism and the CTCN, through their project design and reporting protocols (e.g. disaggregated data collection on gender in governance structures, stakeholder participation, and documentation of relevant good practices and lessons learned), continue sharing best practices and building awareness among delivery partners of the positive contributions of gender mainstreaming and stakeholder engagement to accelerating technology development and transfer;

(d)   The CTCN and the operating entities of the Financial Mechanism promote gender balance in the technical teams that implement technology projects, in line with fostering women's and girls' full participation and leadership in science, technology, research and development, and share experience of gender budgeting;

(e)   The TEC and the CTCN and the operational entities of the Financial Mechanism raise awareness of the financial and technical support available for gender integration in climate technology policies, plans, strategies and action, as appropriate, including good practices for facilitating access to climate finance for grass-roots women's organizations and indigenous peoples and local communities for technology projects.

55.   In order to enhance the likelihood of successful implementation, replication and scaling up of initiatives with technology components, it is recommended that:

(a)   A programmatic approach be proposed under the Technology Mechanism for scaling up technology initiatives that focuses on the adoption of policies and standards, on the basis of an analysis of the experience and good practices of the CTCN;

(b)   The CTCN pursue partnerships through the GCF Project Preparation Facility and explore opportunities to support GEF projects;

(c)   National designated authorities for the GCF and NDEs for the CTCN enhance collaboration on developing programmatic approaches to scaling up technology actions;

(d)   Stakeholders consider programmatic approaches whereby technologies that require little adaptation for implementation in additional settings can be deployed, replicated and used more systematically to spread transformative climate technologies in key sectors.

IV.   Activities and performance of the Climate Technology Centre and Network in 2022

A.   Advisory Board meetings and membership

56.   At its 19th meeting,[30] held from 28 to 30 March, the Advisory Board elected Omedi Moses Jura (Kenya) as its Chair and Erwin Rose (United States of America) as its Vice-Chair for 2022. The Board thanked the outgoing Chair, Moa Forstorp (Sweden), for her service.

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[30] See http://www.ctc-n.org/calendar/events/19th-ctcn-advisory-board-meeting-presentations-and-recordings.

57. The Board welcomed one additional representative of Parties included in Annex I to the Convention, Stephen Minas; one additional representative of Parties not included in Annex I to the Convention, Fred Onduri (Uganda); and three additional UNFCCC observer organization constituency representatives, namely Anne Barre (women and gender), Mohamed Handaine (indigenous peoples organizations) and Tambe Honourine Enow (YOUNGO constituency).[31]

58. The following members were elected or selected to replace existing representatives: Pedro Borges (Bolivarian Republic of Venezuela), Nicolas Galudec (European Union), Christian Lohberger (Papua New Guinea), Ichiro Sato (Japan) and Jacek Trzosowski (Poland). Ambrosio Yobánolo del Real and Stig Svenningsen joined the Advisory Board as the TEC Chair and Vice-Chair respectively.

59. The Advisory Board discussed key results of the implementation of CTCN activities in 2021 and endorsed the 2021 financial statement of the CTCN. The CTCN secretariat shared updates on the proposed timeline and methodology for the development of the third CTCN programme of work, for 2023–2027.

60. Six intersessional task force meetings were held to discuss outcomes of COP 26, resource mobilization efforts, the 19th Advisory Board meeting and development of the third programme of work.

61. The 20th Advisory Board meeting[32] took place from 9 to 14 September, where it endorsed the third programme of work, the CTCN report to COP 27 and the annual operating plan for 2023.

B. Activities of the Climate Technology Centre and Network

62. The CTCN prepared its third programme of work. The approach to its development was the most inclusive to date, incorporating consultations with key stakeholders, including Advisory Board members, NDEs, Network members, and UNFCCC constituencies and constituted bodies.

63. The new programme of work maintains a country demand driven approach and alignment with the technology framework, while introducing a focus on five areas of system transformation (water-energy-food nexus; buildings and resilient infrastructure; electromobility; energy systems; and business and industry) as well as key enablers of technology transfer (digitalization and national systems of innovation).

64. To support implementation of the programme of work, the CTCN is developing a resource mobilization and partnership strategy.

65. With support from the Republic of Korea, the CTCN successfully launched a partnership and liaison office in Songdo on 21 July to support the work of the CTCN by enhancing linkages between the Technology Mechanism and the Financial Mechanism and strengthening existing efforts in innovation and collaborative research, development and demonstration through North–South, South–South and triangular collaboration.

1. Innovation

66. The Youth Climate Innovation Labs and Academy took place in Latin America, concluding with a Demo Day in November 2021. Over 500 applications were received to attend the Labs, with 86 participants being selected from 16 Latin American countries and 24 mentors helping 19 teams to incubate their solutions.

67. The Middle East and North Africa Youth Climate Innovation Labs and eight-week Academy took place in September 2022, providing 80 young people from 14 countries with innovation skills and mentoring to develop climate solutions for the region.

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[31] Following decision 10/CP.26.

[32] See http://www.ctc-n.org/calendar/events/20th-ctcn-advisory-board-meeting-be-held-9-14-september-2022.

68.   The CTCN and UNDP jointly produced the second edition of the *Africa Innovates* magazine, entitled "Climate Champions: 50 Homegrown African Innovations Tackling Climate Change" (UNDP and CTCN, 2022). The publication was presented at a meeting of the African Group at SB 56.

69.   In 2020, the CTCN was selected to manage the AFCIA programme, with access to USD 5 million. Over 200 requests were received from more than 60 countries in response to the first two calls for proposals. Eleven projects were selected for implementation starting in 2022 and the third and final call for applications was closed on 30 September 2022.

70.   A webinar was held in June 2022 to share lessons learned from the first two AFCIA calls for proposals. Key lessons learned highlighted the continued need to support developing countries in articulating their adaptation technology demands.

71.   The CTCN conducted capacity-building on blockchain technology for 74 NDEs in collaboration with Network member the Blockchain and Climate Institute. Of the participants, 57 per cent were from Africa, 29 per cent from Latin America and 14 per cent from Asia and the Pacific. Subsequently, six webinars were delivered to the public.

72.   The CTCN hosted in May an event at the seventh annual multi-stakeholder forum on science, technology and innovation for the SDGs, providing an overview of the benefits of digitalization for the SDGs and climate action, and showcasing experience with digitalization in developing countries. The CTCN presentation reflected the growing role of digital systems in sectors such as agriculture.

73.   In Mali, the CTCN supported the creation of an application with the national meteorological service to address gaps in weather data for specific crops and the lack of information in local languages. In Eswatini, the CTCN supported strengthening capacity for applying technologies for using unmanned aerial vehicles and remote sensing for increasing climate resilience.

74.   CTCN secretariat staff published two articles in the journal *Sustainability*: "Digitalization to achieve technology innovation in climate technology transfer" (Lee and Mwebaza, 2021) and "New strategy for innovative RD&D in view of stakeholder interaction during climate technology transfer" (Lee and Mwebaza, 2022), which review technology, market-related and regulation elements of innovation in CTCN research, development and demonstration activities.

75.   In August the CTCN participated in the United States–Korea Conference 2022: Science and Technology in the Wake of the Pandemic, providing an overview of its achievements and lessons learned on innovation.

76.   The CTCN served as a challenge leader in the Climate: Ecosystems and Housing challenge[33] hosted by the Massachusetts Institute of Technology Solve, at which eight innovative technology-based solutions were selected that support communities with either natural ecosystems or low-carbon homes at scale.

77.   Among CTCN technical assistance projects providing innovative solutions, the CTCN has supported Indonesia in its e-mobility transition in Jakarta since 2020. In March 2022 at a high-level ceremonial event Jakarta's commitment to electrify public transportation fleets was announced and the CTCN presented the city's electrification road map for 2030, developed by the CTCN with the Jakarta Transportation Agency.

2.   Implementation

78.   As at 31 August 2022, the CTCN had received 365 technical assistance requests from 109 developing country Parties, including 15 multi-country requests and 35 fast technical assistance requests: approximately 155 of the requests had been delivered upon, with 75 under implementation, 98 in the response plan design phase and 37 under review. The Comoros, Morocco and Seychelles submitted requests to the CTCN for the first time.

79.   Figure 1 shows the distribution of the types of technical assistance requested.

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[33]   See https://solve.mit.edu/challenges/climate-ecosystems-housing#challenge-subnav-offset.

Figure 1
Requests for technical assistance submitted to the Climate Technology Centre and Network, by type of assistance (2014–2022)
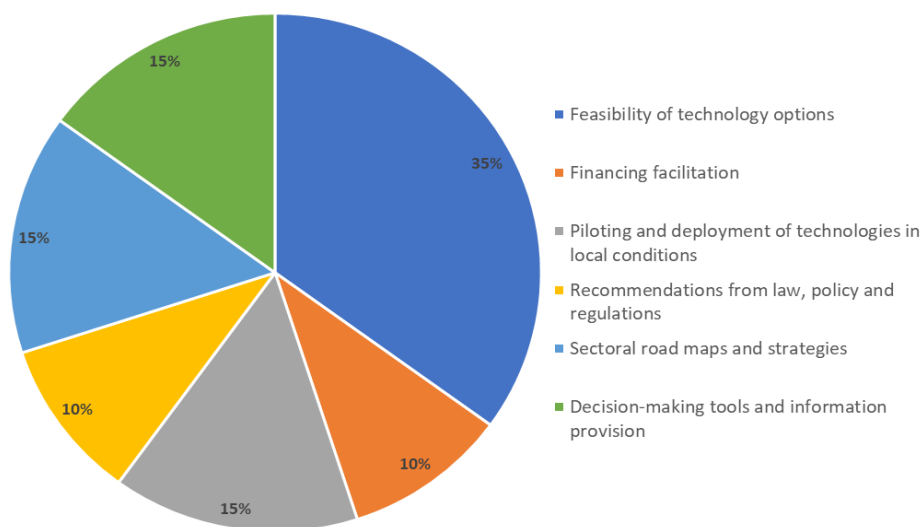
80.   Figure 2 indicates the regional distribution of technical assistance demand.

Figure 2
Share of requests for technical assistance from the Climate Technology Centre and Network by region (September 2021 to August 2022)

81.   The key trends emerging from recent requests for assistance are as follows:

(a)   In the Asia-Pacific, demand has increased for renewable energy, energy efficiency and low-carbon transport. In Asia, there has been an increase in adaptation and cross-sectoral requests. Support has been requested for decision-support systems; cross-cutting technologies addressing energy, water and food security; improved early warning systems; sustainable urban planning; feasibility studies; e-mobility and green hydrogen road maps; and policy and regulatory support for energy efficiency in buildings and for appliances;

(b)   In Africa, requests for support for circular economy and solar photovoltaics in the context of energy, water and food have increased. Continued support is needed for cross-cutting technologies addressing the energy-water-food security nexus, e-mobility regulations, incentive creation, and TNAs;

(c)   In Latin America and the Caribbean, requests have focused on adaptation and cross-cutting technologies (circular economy, TNAs and TAPs) and mitigation technologies for e-mobility and renewable energy. Adaptation requests cover a broad range of tools addressing risk management for food security, water management, coastal zone management, nature-based solutions and adaptation monitoring.

    (a)   **Mitigation and adaptation action**

82.   Figure 3 provides a breakdown of CTCN technical assistance requests by climate change objective.[34]

83.   The focus of technical assistance requests has shifted in recent years, from mitigation to adaptation and cross-sectoral, demand for the latter having increased in part as a result of AFCIA (see figure 4).

Figure 3
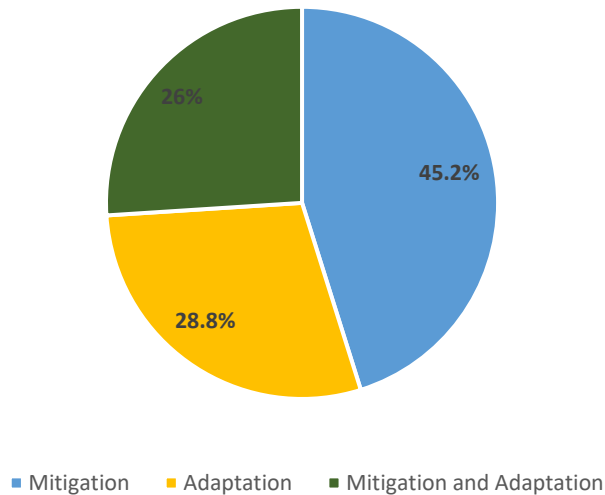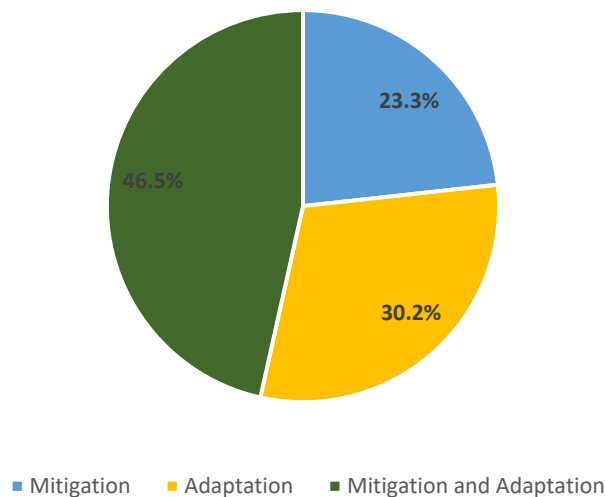**Requests for technical assistance from the Climate Technology Centre and Network, by objective (2014–2022)**

■ Mitigation   ■ Adaptation   ■ Mitigation and Adaptation

Figure 4
Requests for technical assistance from the Climate Technology Centre and Network, by objective (2021–2022)

■ Mitigation   ■ Adaptation   ■ Mitigation and Adaptation

    (b)   **Multi-country and programmatic implementation**

84.   The CTCN continued to offer multi-country and programmatic technical assistance.

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[34] The percentages in the figure reflect implemented requests; the number of requests submitted is much higher, with AFCIA stimulating demand.

85. Multi-country projects promote capacity-building, analysis and research at the regional level that lead to direct support at the country level but also present benefits such as lower transactional costs and harmonization of policies and regulations across a region.

86. The CTCN provided multi-country technical assistance across 15 countries in Africa for assessing the potential for bioenergy from sustainable sources. This included identifying market opportunities specifically for the private sector.

87. The CTCN programmatic approach makes use of a common framework of activities based on a theme or focus area that can be adapted depending on national circumstances and used across a subregion, region or continent. Larger-scale funding and multiple implementing partners and twinning or partnership arrangements are employed. There is significant potential for policy harmonization and market consolidation, enhanced stakeholder engagement, scalable impacts, and North–South and South–South collaboration.

88. The programmatic approach has been piloted for four themes: minimum energy performance standards for transformers and refrigerators (9 countries), TNAs (13 countries), circular economy road maps (20 countries) and e-mobility (7 countries).

(c) Technology needs assessments and nationally determined contributions

89. The CTCN supported implementation of 11 TNAs or TAPs using countries' GCF readiness funding allocations. In Gabon, for example, technical assistance was provided for developing the country's first TNA and TAP, including a climate finance pipeline. In addition, means of enhancing enabling environments and investments for achieving the NDC were identified.

90. All recently approved GCF TNA readiness proposals include the formulation of at least one GCF concept note based on the project ideas identified in the TAP and aligned with the revised NDC. For example, Côte d'Ivoire will benefit from a climate technology innovation system aligned with the cross-cutting measures in its revised NDC.

91. At COP 26, the CTCN and its Network member the University of Michigan School for Environment and Sustainability presented their collaboration on developing an online tool depicting technology priorities cited in NDCs and TNAs using data visualization and analytics.

92. The CTCN shared its experience supporting countries in accessing technical assistance for the TNA process at a side event at SB 56 that was aimed at enhancing understanding of the synergies between TNAs and NDCs, highlighting countries' experience and discussing TNA funding opportunities.

(d) Gender mainstreaming

93. CTCN technical assistance implementers were guided by the CTCN gender policy and action plan (2019–2022),[35] which specifies the incorporation of gender considerations into the development and implementation of technical assistance.

3. Enabling environments and capacity-building

(a) Facilitating endogenous and gender-responsive technologies for mitigation and adaptation

94. The CTCN has collaborated with the women and gender constituency since 2018 to provide capacity development and mentoring support to winners of the Gender Just Climate Solutions Award.

95. A total of 157 applications were received following the 2021 global call. The three winners participated in an awards ceremony at COP 26 and a two-day capacity-building workshop as well as receiving a small grant and access to a year-long mentoring programme led by the CTCN.

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[35] Available at https://www.ctc-n.org/resources/ctcn-gender-policy-and-action-plan-2019-2022.

96. A Gender Just Climate Solutions publication (Women Engage for a Common Future, 2021) was developed and disseminated in English, French and Spanish, providing information on the solutions of the winners and of several finalists.

97. Four regional Gender Just Climate Technology workshops were conducted by the CTCN and its Network member Women Engage for a Common Future to provide 'training of trainers' on gender-responsive renewable energy technologies.

98. The seventh edition of the Gender Just Climate Solutions Award was launched in June 2022. The CTCN gender focal point participated on the jury to select new recipients for the award at COP 27.

99. With CTCN technical assistance Mozambique will introduce solar power systems into rural communities for agricultural activities and involve women in the value chain of a business model called "pay as you irrigate". Its objective is to ensure that rural farmers can afford crop field irrigation systems and to support women in particular.

(b) Assisting countries in policymaking for creating enabling environments for private and public sector climate technology development and transfer

100. Several requests for technical assistance related to CTCN support in providing policy, legal and regulatory guidance to create enabling environments for private and public sector engagement in the development and transfer of climate technologies.

101. In Africa, several circular economy initiatives have benefited from CTCN technical assistance targeting enabling environment, including in Côte d'Ivoire, Zimbabwe and Kenya, where the CTCN supported the development of an action plan for extended producer responsibility policies, inclusion of the informal sector in future measures, and digital platforms to connect households, collectors and recycling facilities.

(c) Fostering private sector involvement in climate technologies

102. Approximately 52 per cent of Network members represent private sector organizations and, in the first half of 2022, 67 per cent of new members came from the private sector.

103. The CTCN attended workshops on private sector contributions to climate change adaptation in January in Indonesia and Thailand, organized by Japan, Indonesia and Thailand. The workshops highlighted the need for adaptation technologies and associated funding, and the importance of collaboration between national focal points.

104. The CTCN, in partnership with The Energy and Resources Institute and the Green Technology Centre, organized a four-day South–South knowledge exchange programme on low-emission transportation in Delhi for NDEs and their representatives in Africa and in Asia and the Pacific, in which 10 NDEs participated.

(d) Facilitating information-sharing on climate technology development and transfer

105. The CTCN website[36] is one of the largest online sources of climate technology information in the world. Visitors can access climate technology case studies, descriptions, national planning documents, publications, tools and webinars. The most visited web pages include the AFCIA page and technology and technical assistance descriptions.

106. Among the top 50 countries whose users spend the most time on the CTCN website, 98 per cent are developing countries and 46 per cent are among the LDCs. Africa represents 54 per cent of the users spending the most time on the site, followed by Asia and the Pacific and Latin America and the Caribbean, at 22 per cent each.

(e) Enhancing public awareness on climate technology development and transfer

107. The CTCN achieved 345 million media impressions and appeared 974 times in the national and global press (double the number in the previous reporting period). Twenty e-newsletters provided updates on technical assistance, learning opportunities and events to

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[36] http://www.ctc-n.org.

over 22,500 subscribers, together with daily posts on Facebook (3,535 followers) and Twitter (4,437 followers).

108.   The CTCN was invited to share knowledge on climate technologies at several global events, including at the Ellen MacArthur Foundation summit on circular economy; the World Maritime University international seminar; the forum on science, technology and innovation for the SDGs; and the seventy-eighth session of the Economic and Social Commission for Asia and the Pacific.

(f)   Enhancing capacity of climate technology stakeholders

109.   The CTCN provides information, training and support to build and strengthen the capacity of developing countries for technology development and deployment. As part of this effort, the CTCN supports the development of analytical tools, policies and best practices through NDE training, webinars and in-person workshops.

110.   The CTCN hosted webinars covering a variety of technology sectors, often in partnership with Network members, which attracted over 1,200 participants across 135 countries.

4.   Collaboration and stakeholder engagement

(a)   Engagement with national designated entities

111.   To support NDEs, the CTCN organizes regional forums that bring together diverse stakeholders as part of regional climate weeks. The open forums are followed by closed sessions with NDEs from the region.

112.   Six regional workshops were held to gather insight from NDEs on developing the third CTCN programme of work and were attended by 72 NDEs. Views were gathered on the most important topics and challenges related to technology development and transfer to address under the programme of work, which were cited by participants as including innovation, NDCs and TNAs, private sector mobilization, incubators, food and agriculture, water, risk, vulnerability and digitalization.

113.   Approximately 30 NDEs attended a meeting hosted by the CTCN and the TEC on the margins of SB 56 to share progress in implementing their respective workplan and programme of work, seek inputs, address questions and share country priorities.

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

114.   The CTCN welcomed 88 new Network members (12 from developing countries), bringing the total to 742.

115.   Private sector organizations represent more than half of the members (53 per cent), followed by research and academic institutions (18 per cent) and non-governmental organizations (11 per cent). A total of 53 per cent of Network members represent Parties not included in Annex I to the Convention.

116.   Following the official launch of the office in Songdo, a networking event for Network members from the Republic of Korea was hosted by the CTCN and the Green Technology Center Korea to encourage them to showcase, adapt and improve their technology solutions.

(c)   Gender-responsive engagement

117.   A dedicated gender and technology library[37] of gender-related publications, partners, CTCN technical assistance and technologies can be accessed on the CTCN website.

118.   The CTCN engages with the women and gender constituency via its Advisory Board member, in collaboration on the Gender Just Climate Solutions programme and in jointly seeking to increase awareness of the need for gender-responsive climate technologies.

119.   The Director of the CTCN contributed to the UNDP *Gendered Voices* newsletter on women in technology in Seychelles, which provided insights into the experience of five Seychellois women working in different spheres of technology (UNDP, 2022).

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[37]   Available at http://www.ctc-n.org/technology-sectors/gender.

120. In partnership with the TEC and the women and gender constituency, the CTCN worked to develop a global roster of experts to enhance recognition of women in climate change technologies and to ensure gender consideration in technology development and deployment.

(d) Collaboration with youth

121. The CTCN Advisory Board welcomed a representative of the YOUNGO constituency as a member following the relevant COP decision.[38]

122. The CTCN co-hosted two side events with the YOUNGO constituency at COP 26, entitled "The role of youth in climate technology" and "Being part of the solution – youth engagement in climate technology".

123. As part of the collaboration between the CTCN and the YOUNGO constituency, the CTCN hosted two youth knowledge specialists for four months to support work on youth, gender and indigenous peoples' engagement with climate technologies.

124. The Mexican delegation to COP 26 and the CTCN Youth Knowledge Exchange Programme jointly hosted a webinar series on climate technology and the potential of youth with the objective of making climate technology more tangible for them.

(e) Engagement of indigenous peoples and local communities

125. The Board welcomed a new member representing indigenous peoples organizations.

126. The CTCN held an in-person meeting with a Co-Chair of the Local Communities and Indigenous Peoples Platform, while the Chair of the Advisory Board participated in an event hosted by indigenous peoples at COP 26. A virtual meeting was held to explore possible collaboration on enhancing indigenous technologies for climate action. The CTCN also participated in an informal briefing in connection with the Platform to share its work and mandates.

(f) Collaboration with other stakeholders

127. In addition to ongoing work in Togo, the CTCN is in the advanced stages of finalizing joint CTCN–UNDP implementation of technical assistance in Seychelles and the United Republic of Tanzania. The CTCN collaborated with the UNDP country office in Gabon to host a regional NDE forum for Africa.

128. The CTCN is supporting the five Central Asian countries of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan in establishing a regional climate technology centre to enable the countries to take a common approach to addressing their climate change challenges.

129. The CTCN has been requested by the Office of the Under-Secretary-General of the Department of Operational Support to provide support to the United Nations Mission in South Sudan and the United Nations Organization Stabilization Mission in the Democratic Republic of the Congo to identify feasible, scalable energy technologies that can be implemented through public–private partnerships for longer-term sustainability beyond the life of the Missions.

130. The CTCN participated in Middle East and North Africa Climate Week[39] by co-hosting a side event with the Islamic Development Bank on promoting South–South cooperation on climate action to advance NDC implementation.

131. The CTCN participates regularly as an observer at Adaptation Committee meetings. Following discussions at the 20th and 21st meetings of the Committee, the CTCN collaborated on one technical paper[40] and a publication (UNFCCC, 2022a).

132. The CTCN participated in an event to promote the Paris Committee on Capacity-building toolkit, providing perspectives on tools and methodologies used to assess capacity-

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[38] Decision 10/CP.26.
[39] See https://unfccc.int/MENA-CW2022.
[40] See Adaptation Committee document AC21/TP/7E.

building under the CTCN as well as challenges linked to effectively assessing capacity needs and gaps.

133.   The CTCN participated in a networking workshop co-hosted by the Organisation for Economic Co-operation and Development and the Paris Committee on Capacity-building and shared its experience as an implementing partner of the GCF of accessing climate finance in countries such as Eswatini, Mozambique, Seychelles, the Sudan and Tunisia.

134.   The CTCN participated in a side event at the resumed fifth session of the United Nations Environment Assembly hosted by the Coalition for Digital Environmental Sustainability initiative, which was established in response to the United Nations Secretary-General's Road Map on Digital Cooperation.

5.   Support

(a)   Enhancing collaboration under the Technology Mechanism and the Financial Mechanism to increase support for technology development and transfer

135.   Two GCF Readiness and Preparatory Support Programme proposals for TNAs and associated action plans, from Côte d'Ivoire and Paraguay, were approved by the GCF along with a TNA and a TAP for Chile under CTCN regular technical assistance. A total of 30 GCF readiness proposals implemented by the CTCN have been approved to date, amounting to almost USD 10 million. Much technical assistance has included the development of a concept note for further financing as a deliverable, with many intended for GCF full-scale implementation.

136.   As part of its project selected for support by the GEF Challenge Program for Adaptation Innovation, the CTCN gathered representatives of three collaborating countries, Antigua and Barbuda, the Lao People's Democratic Republic and Mozambique, to discuss the project and define their roles as well as those of the project partners.

137.   The CTCN Director gave a keynote interview on marrying climate finance with climate technology at the second annual Sustainability Week US event hosted by *The Economist*.

138.   The CTCN Director liaised with the UNFCCC secretariat to discuss collaboration on enhancing resource mobilization for CTCN service delivery.

(b)   Enhancing mobilization of pro bono and in-kind support

139.   A total of USD 300,000 was secured in pro bono support, including support received from the Republic of Korea and the Ministry of the Environment of Japan. Furthermore, with co-funding of USD 250,000 from UNDP, the CTCN is supporting the Government of Togo in developing a conceptual framework for climate-smart communes.

(c)   Facilitating access to financing through technical assistance

140.   The CTCN includes specific deliverables in technical assistance workplans that are aimed at equipping stakeholders with the skills and resources needed to mobilize finance from the GCF and other financing entities. Since 2018, the vision-to-concept capacity-building module of the CTCN has supported enhancing skill-building efforts in preparing GCF concept notes.

141.   In Mozambique, the CTCN is helping to identify the most appropriate rainwater harvesting system and develop a funding concept paper. Similarly, in Eswatini the CTCN is undertaking a feasibility study and preparing a funding proposal for promoting solar energy irrigation systems for emerging commercial small-scale cane growers.

(d)   Developing and enhancing a system for monitoring and evaluation and tracking actions

142.   The CTCN publishes all core documents related to its technical assistance projects on its website as well as publishing reports of the Advisory Board.

143.   The CTCN and the TEC conducted their second biannual NDE survey.

C. Organizational structure of the Climate Technology Centre and Network

1. Climate Technology Centre

144.   The CTCN secretariat is based in Copenhagen with regional managers based in Bangkok, Mexico City and Nairobi. It has now been augmented with the establishment of the Partnership and Liaison Office in Songdo.

2. Climate Technology Network

145.   The CTCN leverages the expertise of its global Network of 744 members, covering civil society, finance, private sector, universities and research institutions, from 101 countries to provide customized technology solutions.

3. National designated entities

146.   The work of the CTCN would not be possible without the NDEs, which serve as Technology Mechanism focal points nominated by their country and manage CTCN services at the national level. A total of 161 countries have nominated NDEs to date.

4. United Nations Environment Programme

147.   The memorandum of understanding between the COP and UNEP regarding the hosting of the CTC was renewed for a further five-year period.[41]

148.   Following completion of the second independent review of the CTCN by the UNFCCC in August 2021, UNEP provided a management response, which was submitted for consideration at COP 26, and the CTCN has taken action in response (see the annex).

5. Funding

149.   Since its inception, the CTCN has secured USD 100,094,955 in financial contributions. As at 15 August 2022, the CTCN had received USD 8,219,533 in contributions or project finance in 2022. The breakdown is presented in the table below.

Cash receipts for the Climate Technology Centre and Network in 2022
(United States dollars)

Donor	Amount
Republic of Korea	2 054 858
Adaptation Fund	1 859 382
Denmark	1 500 715
GEF	677 000
Japan	650 100
GCF	419 272
UNDP – Togo	250 000
Sweden	198 185
European Commission	151 021

  Note: Includes pending cash receipt of USD 1.5 million from Denmark and USD 931,000 from the Adaptation Fund.

150.   The CTCN carried over approximately USD 25 million into 2022. Its approved annual operating budget for 2022 is just over USD 10 million and its projected expenditure for the year is USD 11.4 million. The projected fund balance of the CTCN at the end of 2022 is approximately USD 15.5 million. The projected fund balance in 2023 includes carry-over of USD 7.2 million and pending cash receipts of USD 3.2 million in 2023, USD 3 million in 2024 and USD 2.1 million in 2025 against previous year commitments.

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[41] Decision 11/CP.26, para. 9.

151.   A fund balance of USD 10.4 million is projected for 2023. However, flexibility in the allocation of funds remains a challenge, as only 31 per cent of the funds remain unearmarked for 2023. Therefore, apart from the projected income of approximately USD 6.3 million from the Republic of Korea for 2023–2025 and USD 2 million from the Adaptation Fund in 2023–2024, the CTCN does not have additional income secured.

D.   Challenges and lessons learned

152.   COP 22 invited the CTCN to report on challenges and lessons learned in implementing its mandate[42] and COP 24 encouraged the strengthening of that reporting.[43] CMA 2 invited the CTCN to continue to report on progress, challenges and lessons learned in implementing the technology framework under the Paris Agreement.[44]

153.   Insufficient funding continues to be a key challenge in relation to responding to increasing requests for technical assistance. In order to meet rising demand, and enhance delivery of CTCN services, an updated resource mobilization strategy is being developed to support the new CTCN programme of work.

154.   Closure reports submitted by implementers of technical assistance projects indicate challenges in accessing financial resources for climate technology, including a shift in focus to using human and financial resources to address the health impacts of the pandemic and the war in Ukraine, and difficulties experienced by smaller municipalities in accessing financing.

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

155.   The CTCN executed its full operating plan for 2022 and maintained organizational continuity by focusing on responding to technical assistance requests and shifting stakeholder engagement and capacity-building activities to virtual conferencing and training events.

156.   The CTCN continues to enhance its collaboration with the operating entities of the Financial Mechanism. As reported by the GCF, the CTCN remains the largest provider of GCF readiness support for technology, even with the reduction in proposals submitted in 2022 in order to focus on the development of the third CTCN programme of work and the increased scope of work following decisions taken at COP 26. Fruitful discussions were held between the CTCN and the Adaptation Fund on enhancing collaboration. The CTCN is seeking to enhance its engagement with the GEF Trust Fund in the context of its new programme of work.

157.   The CTCN has endeavoured to make technology development and transfer more inclusive through its gender action plan and engagement with the women and gender, YOUNGO and indigenous peoples organizations constituencies.

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

159.   The CTCN third programme of work will follow a demand-driven approach while aiming to enhance transformational impact and build scale across its core service areas through five system transformations and two enablers of technology deployment and transfer. This approach will support the CTCN in delivering on the goals for the technology framework under the Paris Agreement and will be incorporated into the first joint TEC and CTCN work programme under the Technology Mechanism.

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[42] Decision 15/CP.22, para. 6.
[43] Decision 13/CP.24, para. 4.
[44] Decisions 8/CMA.2, para. 4.

Annex

Action taken in response to the 2021 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 CTCN has consistently endeavoured to follow the recommendations resulting from the reviews. A second review was concluded in 2021 and, in the light of that, the CTCN has taken the actions detailed below.

I.   Mobilizing resources

2.   The CTCN, through UNEP as its host organization, has continued to partner with the GCF under the GCF Readiness and Preparatory Support Programme by providing services and expertise in response to requests using GCF country resources. At its 33rd meeting, the GCF Board approved the reaccreditation and upgrade of UNEP to the medium-sized projects category with project budget allocations of up to USD 250 million. This will enable the CTCN via UNEP to work within the guidance of the COP to use public–private funding to implement larger-scale projects.

3.   A donor round table was convened by the CTCN and its host institutions at COP 26, under the auspices of the Governments of Denmark and the United Kingdom of Great Britain and Northern Ireland, to renew and strengthen sustained funding for the CTCN. Several countries, including Canada, Germany, Japan, the Republic of Korea, Spain and the United States, announced funding commitments to support the CTCN. The European Union, historically the largest donor to the CTCN, also announced its intention to continue its support.

II.   Efficiency and impact of technical assistance

4.   The alignment of CTC services with a more regional focus has enabled the CTCN to identify regional technology demand trends more effectively and ensured that NDEs have gained a dedicated team for discussing needs and accessing services. As a result, the quality and efficiency of technical assistance requests and the response to them have seen significant improvement.

III. Reinforcing involvement of Network members

5.   The CTCN has continued to strengthen its engagement with Network members, including through an update to its Network engagement strategy. The CTCN website has been enhanced to better communicate opportunities for procurement, events and workshops for Network members.[1]

6.   The CTCN has partnered with regional and thematic initiatives such as the Global Cement and Concrete Association, the Agriculture Innovation Mission for Climate and South–South Galaxy to fully garner synergies with the Network. Furthermore, a digital Network application form was launched to streamline and guide prospective applicants through the process.

7.   Four regional consultations were conducted to solicit feedback from Network members for developing the third CTCN programme of work.

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[1]   See http://www.ctc-n.org/engage-with-network.

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