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Development and transfer of technologies
Joint annual report of the Technology Executive Committee and the Climate Technology Centre and Network

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Item 14(b) of the provisional agenda
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Joint annual report of the Technology Executive Committee and the Climate Technology Centre and Network for 2018

Summary

This report covers the activities and performance of the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN) in 2018, including activities to support the implementation of the Paris Agreement. It includes one joint chapter and two separate chapters, one for each of the two bodies. The chapter of the TEC outlines its work undertaken in 2018, covers its 16th and 17th meetings and includes its key messages for the Conference of the Parties (COP) at its twenty-fourth session. The chapter of the CTCN describes its work in 2018, covers the 11th and 12th meetings of the Advisory Board of the CTCN and contains key messages for COP 24. It also includes information provided by the United Nations Environment Programme on matters regarding its role as co-host of the CTCN. Annex I contains recommendations of the TEC on ways forward and actions to be taken based on the outcomes of the technical expert meetings on mitigation. Annex II contains inputs of the TEC to the COP 24 stocktake on pre-2020 implementation and ambition. Annex III contains inputs of the TEC to the Talanoa Dialogue.

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Contents

I. Background

A. Mandate

1. The Conference of the Parties (COP), at its sixteenth session, established the Technology Mechanism, comprising a Technology Executive Committee (TEC) and a Climate Technology Centre and Network (CTCN), to facilitate the implementation of enhanced action on technology development and transfer so as to support action on mitigation and adaptation in order to achieve full implementation of the Convention.[1]

2. COP 17 requested the TEC and the CTCN to establish procedures for preparing a joint annual report and requested the secretariat to make that joint annual report available for consideration by the COP through its subsidiary bodies.[2] Accordingly, the TEC and the CTCN agreed on procedures for preparing joint annual reports.[3]

3. COP 20 decided that the TEC and the CTCN shall continue to submit a joint annual report to the COP through its subsidiary bodies on their respective activities and the performance of their respective functions.[4]

4. COP 21 invited the TEC and the Advisory Board of the CTCN to update the procedures for preparing the joint chapter of the joint annual report of the TEC and the CTCN.[5] The procedures were duly updated and COP 23 took note of them.[6]

5. COP 23 requested the TEC and the CTCN to include in their joint annual report, having consulted with the high-level champions of global climate action, recommendations for Parties and other organizations on ways forward and necessary action to be taken based on the outcomes of the technical expert meetings (TEMs).[7]

B. Scope of the report

6. This joint annual report of the TEC and the CTCN for 2018 contains:

(a) A joint chapter of the TEC and the CTCN (chapter II);

(b) A chapter on the activities and performance of the TEC in 2018, including key messages for COP 24. It covers the outcomes of the 16th and 17th meetings of the TEC as well as of its intersessional work. It also includes information on challenges and lessons learned in implementing the TEC mandates, and on monitoring and evaluation of the impacts of their implementation (chapter III);

(c) A chapter on the activities and performance of the CTCN in 2018, including key messages for COP 24. It covers the outcomes of the 11th and 12th meetings of the CTCN Advisory Board and its intersessional work. It also includes information on challenges and lessons learned in implementing the CTCN mandates, and information provided by the United Nations Environment Programme (UNEP) on matters related to its role as co-host of the CTCN (chapter IV).[8]

C. Possible action by the subsidiary bodies

7. The Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) may wish to consider this joint annual report of

[1] Decision 1/CP.16, paragraph 117.
[2] Decision 2/CP.17, paragraphs 142 and 143.
[3] FCCC/SB/2013/1, paragraph 3.
[4] Decision 17/CP.20, paragraph 4.
[5] Decision 12/CP.21, paragraph 2.
[6] Decision 15/CP.23, paragraph 4.
[7] Decision 13/CP.23, paragraph 4.
[8] Decision 14/CP.18, paragraph 10.

the TEC and the CTCN for 2018 and recommend a draft decision on the matter for consideration and adoption at COP 24.

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

8. The TEC and the CTCN further intensified their collaboration in 2018 in order to enhance the work of the Technology Mechanism and catalyse action by the international community to achieve the objectives of the Convention and the Paris Agreement. This collaboration will continue to help Parties to scale up their actions on technology development and transfer, in particular by promoting technology cooperation and partnerships.

9. The TEC and the CTCN helped to advance research, development and demonstration (RD&D) work on climate technologies, thereby supporting the implementation of the Paris Agreement. Together with the Green Climate Fund (GCF), they organized a thematic dialogue on the promotion of climate technology incubators and accelerators in developing countries and prepared a policy brief on that topic. These initiatives assisted the GCF in identifying ways of financing such incubators and accelerators with the ultimate aim of improving those countries' ability to innovate climate technologies. The Technology Mechanism bodies and the GCF also participated in a CTCN expert meeting on national systems of innovation and a TEC task force on innovation and RD&D.

10. The TEC and the CTCN continued to strengthen the linkages between the Technology Mechanism and the Financial Mechanism also in other ways: the Chairs of the TEC and of the CTCN Advisory Board participated in the GCF annual meeting with constituted bodies at COP 23 to enhance cooperation and coherence of engagement between the GCF and the Technology Mechanism.

11. In response to decision 13/CP.23, the TEC and the CTCN stepped up their engagement in the technical examination process (TEP) on mitigation. They provided inputs on topics for the TEP on mitigation for the period until 2020 and co-hosted and participated in various regional TEMs in 2018, which were organized in conjunction with the Africa Climate Week, Latin America and Caribbean Climate Week and the CTCN Regional Forum for national designated entities (NDEs) in Asia-Pacific. The TEC and the CTCN also met, on the margins of SBSTA and SBI 48.1, with the Chairs of the SBSTA and the SBI, the high-level champions and the Co-Chairs of the Adaptation Committee (AC) to exchange views on the TEP. The outcomes of this work will be incorporated into the respective workplans and activities of the TEC and the CTCN.

12. The TEC and the CTCN continued to support activities related to technology needs assessments (TNAs), including by working together with the AC and the Least Developed Countries Expert Group (LEG) to consider how countries can align TNAs with national adaptation plans (NAPs). The TEC also cooperated with the CTCN and UNEP DTU Partnership[9] to organize a workshop on TNAs in conjunction with the CTCN Regional Forum for NDEs in Africa.

13. During SBSTA 48.1 and SBI 48.1, the TEC and the CTCN participated in the gender dialogue to discuss how to integrate gender considerations into their work. Both were also represented at the 2nd meeting of the Paris Committee on Capacity-building (PCCB), which considered ways of enhancing collaboration between all the constituted bodies.

14. The TEC and the CTCN will continue to work together in 2019 under the guidance of the COP to support countries in implementing the Paris Agreement. They will also continue to support Parties in implementing the technology elements of their nationally determined contributions (NDCs) and NAPs.

[9] The Partnership, formerly known as the UNEP Risoe Centre, operates under a tripartite agreement between Denmark's Ministry of Foreign Affairs, the Technical University of Denmark (DTU) and UNEP.

III. Report on the activities and performance of the Technology Executive Committee in 2018

A. Organizational matters

1. Membership of the Technology Executive Committee

15. The TEC, at its 16th meeting, elected Ms. Claudia Octaviano Villasana (Mexico) as the Chair of the TEC for 2018. The TEC also elected, between TEC 16 and 17, Ms. Dinara Gershinkova (Russian Federation) as the Vice-Chair of the TEC for 2018. The TEC expressed its appreciation to Mr. Michael Rantil (Sweden) and Ms. Duduzile Nhlengethwa-Masina (Eswatini), respectively the Chair and Vice-Chair for 2017, for their leadership, which had enabled the TEC to carry out its work effectively in the preceding 12 months. A list of the members of the TEC, including the length of their respective terms of office, is available on the UNFCCC website.[10]

2. Arrangements for the meetings of the Technology Executive Committee and related events

16. The TEC convened two meetings in 2018: its 16th meeting, from 13 to 16 March, and its 17th meeting, from 25 to 28 September, both in Bonn. During its 16th meeting, the TEC held a thematic dialogue on the promotion of climate technology incubators and accelerators in developing countries[11] as well as a joint session with the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts.

17. The plenary discussions of the TEC meetings were webcast live and on demand. At the invitation of the TEC, Party observers and observer organizations expressed their views on the issues under consideration. Representatives of the CTCN and its Advisory Board, the GCF secretariat and the Global Environment Facility (GEF) secretariat also participated in the meetings. Meeting documents, presentations, webcasts and reports are available on TT:CLEAR, the UNFCCC technology information clearing house.[12]

B. Update and implementation of the rolling workplan of the Technology Executive Committee for 2016–2018

1. Update of the Technology Executive Committee's rolling workplan for 2016–2018

18. The rolling workplan of the TEC for 2016–2018, previously agreed upon at TEC 12 and updated at TEC 14, was further updated at TEC 16 with new activities[13] corresponding to mandates from the COP and the subsidiary bodies from the previous year as well as activities that had emerged in connection with the implementation of the workplan up to that point.

19. The updated rolling workplan addresses the new mandates and guidance from the COP and the subsidiary bodies and aims to maintain the relevance and effectiveness of the work of the TEC in accordance with its mandates and functions. The activities are still divided into three workstreams[14] and the six thematic areas identified by the TEC have been

[10] http://unfccc.int/bodies/election_and_membership/items/6558.php.

[11] See http://unfccc.int/ttclear/events/2018_event2.

[12] http://unfccc.int/ttclear/tec/meetings.html.

[13] See http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_documents/844c23809412457d9486aa29c3045e5e/a96f1853d3f04cc6bc28f96d82ce620d.pdf.

[14] (1) Analyse technology issues and provide policy recommendations; (2) catalyse support and facilitate and promote technology cooperation and partnership to scale up the implementation of actions; (3) work in collaboration with the CTCN to promote coherence and synergy within the Technology Mechanism.

maintained: adaptation; climate technology financing; emerging and cross-cutting issues; innovation and RD&D; mitigation; and TNAs.

2. Implementation of the Technology Executive Committee's rolling workplan in 2018

20. In accordance with its rolling workplan, in 2018 the TEC undertook substantive work in the six thematic areas mentioned above.

21. The TEC continued its intersessional work through thematic task forces established to support the implementation of the rolling workplan. The task forces' composition and mandates for 2018 are available on TT:CLEAR.[15] The task forces benefited from the participation of experts nominated by international and observer organizations.

22. The TEC wishes to express its appreciation for the financial contributions provided by Parties to support the implementation of its activities as well as for the active participation and support of relevant organizations and other stakeholders, which enabled the TEC to successfully implement its rolling workplan in 2018.

(a) Adaptation

(i) South–South and triangular cooperation on adaptation and mitigation technologies

23. The TEC conducted an analysis of the potential application of South–South and triangular cooperation on adaptation and mitigation technologies to assist countries in implementing their NDCs and NAPs. This work was undertaken in collaboration with the United Nations Office for South–South Cooperation (UNOSSC). The TEC and UNOSSC jointly organized two workshops on South–South and technological cooperation for climate action and sustainable development in conjunction with the Asia-Pacific Climate Week[16] and Latin America and Caribbean Climate Week.[17] They also prepared a joint publication providing insight into good practices and lessons learned that may be useful to countries seeking to benefit from South–South and triangular cooperation when implementing their NDCs and NAPs.[18] The publication will be launched at COP 24.

24. The TEC welcomed the collaboration with UNOSSC undertaken in 2018. On the basis of their joint publication, the TEC prepared key messages and recommendations for COP 24 on South-South and triangular cooperation (see chapter III.E below).

(ii) Technical expert meetings on adaptation

25. The TEC continued to engage with and contribute to the work of the AC on the preparation of the TEMs on adaptation in 2018 by providing input on the further involvement of the TEC in the TEP on adaptation.

(b) Climate technology financing: linkages between the Technology Mechanism and the Financial Mechanism

26. COP 22 invited the TEC, the CTCN and the operating entities of the Financial Mechanism to provide information on their actions in strengthening the linkages between the Technology Mechanism and the Financial Mechanism in their annual reports to the COP.[19] Pursuant to that decision, the TEC agreed on follow-up activities on climate technology financing that would strengthen these linkages, notably by enhancing collaboration with the GCF, the GEF and the Standing Committee on Finance (SCF).

(i) Collaboration with the Green Climate Fund

27. The Chair of the TEC participated in the 18th meeting of the GCF Board, which considered options for GCF support for collaborative research and development in

[15] http://unfccc.int/ttclear/tec/members.html#Task.
[16] See http://unfccc.int/ttclear/events/2018_event4.
[17] See http://unfccc.int/ttclear/events/2018_event6.
[18] Available at http://unfccc.int/ttclear/tec/documents.html.
[19] Decision 14/CP.22, paragraph 9.

developing countries in response to decision 13/CP.21. The Board requested the GCF secretariat to continue its collaboration with the TEC and the CTCN, notably on implementing the decision taken at that meeting to enable support for technology development and transfer in order to make it easier for developing countries to access environmentally sound technologies and to benefit from opportunities for collaborative research and development. In response to that decision of the GCF Board, the TEC, in collaboration with the GCF and the CTCN, worked on the issue of climate technology incubators and accelerators (see chapter III.B.2(d) below).

28. The Chair of the TEC participated in the 2nd annual meeting of the GCF with the constituted bodies of the Convention, which was held in conjunction with COP 23.

(ii) Collaboration with the Global Environment Facility

29. In response to an invitation from SBI 43,[20] the TEC continued to update its report on the evaluation of the GEF Poznan strategic programme on technology transfer, drawing on experience and lessons learned from the climate technology transfer and finance centres and pilot projects launched in connection with the fourth replenishment of the GEF.

30. The TEC noted that the midterm evaluation reports of the projects are the source of information for updating the evaluation report of the Poznan strategic programme. Given the increased number of midterm evaluation reports, available as part of the GEF reports to the COP, the TEC decided to continue its work with a view to completing its updated evaluation report at its 18th meeting for consideration at SBI 50.

(iii) Collaboration with the Standing Committee on Finance

31. In response to an invitation from the SCF, the TEC provided input to the draft guidance for the operating entities of the Financial Mechanism prepared by the SCF, to be considered at COP 24.

(c) Emerging and cross-cutting issues

(i) Collaboration with the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts

32. The TEC and the Executive Committee of the Warsaw International Mechanism held, in conjunction with TEC 16 and the 7th meeting of the Executive Committee, a joint session to discuss specific areas of collaboration between them. They agreed to work together on developing a policy brief on technologies for coastal zones and developed a relevant concept note with a view to launching the brief at COP 25.

(ii) Development and enhancement of endogenous capacities and technologies

33. In response to decision 1/CP.21, paragraph 66(b), the TEC continued to consider ways of developing and enhancing endogenous capacities and technologies. In particular, it reached out to other constituted bodies to seek relevant information on their work and conducted a survey among NDEs and other stakeholders.

34. The TEC agreed to publish a summary report to communicate the findings from that work, including technology stakeholders' perspectives, to Parties and relevant bodies, institutions and stakeholders.[21] The TEC will continue its work on this issue in 2019, building on its work so far and taking into account possible future mandates given by the COP and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA), with a view to delivering key messages and recommendations to COP 25.

[20] FCCC/SBI/2015/22, paragraph 79.

[21] Available at http://unfccc.int/ttclear/tec/documents.html.

(d) Innovation and research, development and demonstration

(i) Climate technology incubators and accelerators

35. In response to a decision of the GCF Board, the TEC held, in conjunction with TEC 16, a thematic dialogue on the promotion of climate technology incubators and accelerators in developing countries. The purpose of the dialogue was, inter alia, to assist the GCF secretariat in developing a request for proposals on this topic for consideration by the GCF Board. The dialogue was jointly organized by the TEC, the GCF and the CTCN and brought together 16 expert speakers from around the world. On the basis of the findings of the dialogue, the TEC, in collaboration with the CTCN and the GCF, prepared two documents:

(a) *Catalysing Finance for Incubators and Accelerators: Addressing Climate Change through Innovation*. This summary document provides a high-level overview of climate technology incubators and accelerators and describes how to catalyse financing for these. The document is available in English, French and Spanish;[22]

(b) *Climate Technology Incubators and Accelerators*. This report provides a detailed overview of climate technology incubators and accelerators and identifies ways of enhancing their effectiveness and facilitating relevant support.[23]

36. Drawing on the thematic dialogue and the aforementioned documents, the TEC prepared a TEC Brief, *Energizing Entrepreneurs to Tackle Climate Change*, intended to inform policymakers about ways of enhancing the effectiveness of the support provided to climate technology entrepreneurs in developing countries.[24]

37. Also on the basis of the thematic dialogue and the above-mentioned documents, the TEC prepared several key messages and recommendations for COP 24 (see chapter III.E below).

(ii) Innovation of emerging climate technologies

38. The TEC prepared a background paper on possible work on the innovation of emerging climate technologies, including zero-emission and negative-emission technologies. It agreed to consider, at its 18th meeting, undertaking further work on this issue as part of its future workplan drawing on the background paper prepared for TEC 17.[25]

(e) Mitigation

(i) Technical examination process

39. In response to decision 13/CP.23, the TEC stepped up its engagement in the TEP on mitigation by:

(a) Providing the high-level champions with inputs on topics for the TEP on mitigation for the period until 2020;

(b) Organizing, in collaboration with the CTCN, a regional TEM on industrial energy efficiency, held during the Africa Climate Week in April 2018 in Nairobi;[26]

(c) Participating in a TEM on mitigation in Bonn in May 2018 and contributing to the round-table discussion on the replication and upscaling of innovations and best practices related to waste-to-energy and circular economy;

[22] Available at http://unfccc.int/ttclear/incubators/#summary.
[23] Available at http://unfccc.int/ttclear/incubators/#fullreport.
[24] Available at http://unfccc.int/ttclear/tec/documents.html.
[25] Available at http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/tn_meetings/13299e4f057e4b73a0398653c1dc17c6/0ee60aae9ad44fc6b4c91199468ca98b.pdf.
[26] See http://unfccc.int/ttclear/events/2018_event3.

(d) Participating in a regional TEM on waste-to-energy, held during the Asia-Pacific Climate Week in July 2018 in Singapore;[27]

(e) Organizing, in collaboration with the CTCN and the United Nations Industrial Development Organization (UNIDO), a regional TEM on waste-to-energy conversion and the transition to a circular economy, held during the Latin America and Caribbean Climate Week in August 2018 in Montevideo;[28]

(f) Preparing recommendations to Parties on ways forward and actions to be taken based on the outcomes of the TEMs on mitigation (see annex I).

(ii) Pre-2020 implementation and ambition

40. In response to an invitation from the COP 23 and 24 Presidencies to submit concise written inputs on its work of relevance to pre-2020 implementation and ambition, the TEC discussed and agreed on those inputs (see annex II).[29]

(f) Technology needs assessments

41. The TEC examined the overview of new TNA and technology action plan reports produced during phase II of the TNA global project, focusing on the results of regional analyses and on comparing the findings with those in previous TNA synthesis reports.

42. In response to decision 3/CP.21, paragraph 5, the TEC, in collaboration with the CTCN, the AC and the LEG, continued and concluded its work on helping Parties to align their TNAs with the process to formulate and implement NAPs.

43. The TEC agreed to continue its work on mapping barriers and enabling environments identified in NDCs, in technical assistance requests submitted to the CTCN and in TNAs, and to consider including such work its next rolling workplan.

3. Inputs to the Talanoa Dialogue

44. In accordance with the approach to the Talanoa Dialogue outlined by the COP 22 and 23 Presidencies,[30] the TEC discussed and agreed on its inputs to the Dialogue (see annex III).[31]

4. Activities to support the implementation of the Paris Agreement

45. As agreed by the TEC regarding reporting its activities to the CMA,[32] the activities undertaken by the TEC in 2018 to support the implementation of the Paris Agreement are as follows:

(a) In response to decision 1/CP.21, paragraph 66(a), the TEC continued to work on technology RD&D (see chapter III.B.2(d) above);

(b) In response to decision 1/CP.21, paragraph 66(b), the TEC continued to work on developing and enhancing endogenous capacities and technologies (see chapter III.B.2(c) above).

5. Other activities

46. To maintain effective communication and collaboration between the TEC and the CTCN, the Chair and Vice-Chair of the TEC continued to attend and actively participate in the meetings of the CTCN Advisory Board and vice versa.

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[27] See http://unfccc.int/ttclear/events/2018_event5.

[28] See http://unfccc.int/ttclear/events/2018_event7.

[29] Available at https://unfccc.int/topics/pre-2020.

[30] Decision 1/CP.23, annex II.

[31] See also https://unfccc.int/sites/default/files/resource/294_TEC%20input%20to%20TD_Final_Clean.pdf.

[32] TEC/2017/14/15, paragraph 53.

6. Collaboration with institutions and other stakeholders[33]

47. The TEC continued interacting and collaborating with institutions and other stakeholders by inviting Party observers and observer organizations to participate in TEC meetings; inviting experts to participate in thematic dialogues and side events; inviting stakeholders to participate in various TEC task forces; and collaborating and regularly communicating with institutions and other bodies and entities, such as the AC, CTCN, Executive Committee of the Warsaw International Mechanism, GCF, GEF, LEG, PCCB, SCF and UNOSSC.

48. At the 2nd meeting of the PCCB, organized in conjunction with SBSTA and SBI 48.1, the TEC presented its work related to capacity-building. Moreover, the TEC task force on emerging and cross-cutting issues discussed possible collaboration between the TEC and the PCCB in the area of endogenous capacities and technologies in a meeting with the PCCB working group on strengthening linkages with existing bodies under the Convention held on the margins of SBSTA and SBI 48.1.

49. On behalf of the TEC, the Chair, the Vice-Chair and other members of the TEC participated in other meetings and events, such as the Asia-Pacific Climate Week 2017,[34] the Technology Mechanism side event at COP 23,[35] the first Capacity-building Day at COP 23,[36] the CTCN expert meeting on national systems of innovation,[37] the Africa Climate Week 2018,[38] a side event on facilitating the implementation of NDCs through South–South cooperation,[39] several TEMs on mitigation during 2018,[40] the gender dialogue between the chairs of UNFCCC constituted bodies,[41] the Asia-Pacific Climate Week 2018,[42] the CTCN Regional Forum for NDEs in Asia-Pacific[43] and the Latin America and Caribbean Climate Week 2018.[44]

7. Communication and outreach

50. In 2016 the TEC agreed on a communication and outreach strategy with the aim of enhancing visibility of the outputs of its rolling workplan for 2016–2018. In 2018 the TEC continued communicating its work and reached out to key stakeholders via written, oral and electronic means, including via social media, such as promoting its activities on Facebook and Twitter using #climatetech.[45] The TEC also conducted joint communication and outreach activities with the CTCN, the GCF and UNOSSC.

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[33] See also paragraphs 8–14 above for collaboration with the CTCN; paragraphs 23 and 24 above for collaboration with UNOSSC; paragraphs 26–28 and 35 above for collaboration with the GCF; paragraphs 29 and 30 above for collaboration with the GEF; paragraph 32 above for collaboration with the Executive Committee of the Warsaw International Mechanism; and paragraph 42 above for collaboration with the LEG and the AC.

[34] See https://www.unescap.org/events/2017-asia-pacific-climate-week.

[35] See http://unfccc.int/ttclear/events/2017_event7.

[36] See http://www.icccad.net/publications/event-proceedings/capacity-building-day-2017-report/.

[37] See https://www.ctc-n.org/news/ctcn-experts-meeting-national-systems-innovation-presentations-and-summary.

[38] See http://africacarbonforum.com/.

[39] See https://www.unsouthsouth.org/2018/05/14/stakeholders-engage-to-facilitate-the-implementation-of-nationally-determined-contributions-ndcs-through-south-south-cooperation/.

[40] See https://unfccc.int/topics/mitigation/workstreams/technical-examination-process-on-mitigation#eq-2.

[41] See https://unfccc.int/process-and-meetings/conferences/bonn-climate-change-conference-april-2018/events-and-schedules/mandated-events/mandated-events-during-sb-48/gender-dialogue-constituted-bodies-and-the-integration-of-gender-considerations.

[42] See https://unfccc.int/sites/default/files/resource/Concept%20Note.pdf.

[43] See https://www.ctc-n.org/calendar/fora/ctcn-regional-forum-national-designated-entities-ndes-asia-and-pacific.

[44] See https://nfpartnership.org/latin-american-caribbean-climate-week/.

[45] See https://twitter.com/search?q=%23climatetech&src=typd and https://www.facebook.com/search/top/?q=%23climatetech&ref=eyJza.

51. To support the TEC in such efforts, the secretariat has continued to update TT:CLEAR with the latest information on the TEC, including an overview of its work, documents and key messages for the COP.

52. COP 23 invited the TEC to enhance its communication and outreach strategy.[46] In 2018 the TEC enhanced interaction with NDEs through regional NDE forums and by involving them in TEC surveys on endogenous capacities and technologies, extended its engagement with regional policymakers, practitioners and stakeholders through regional events and climate weeks, and collaborated with other organizations to expand the reach of TEC products.

C. Challenges and lessons learned

53. The current rolling workplan of the TEC will conclude at the end of 2018. Over the past three years the TEC has undertaken increasing activities in various technology thematic areas and produced numerous outputs in implementing its functions and also responding to guidance from Parties.

54. The TEC extends its appreciation for the generous contributions received to support the implementation of its activities, noting that the availability of financial resources to implement its workplan and additional mandated activities was a challenge.

55. The TEC has continuously enhanced its collaboration with other UNFCCC constituted bodies, operating entities and relevant United Nations and international organizations. Such collaboration is effective and useful, but creates additional workload.

56. The TEC will continue to implement its workplan as efficiently as possible, recognizing the need to address its mandates subject to resource availability.

57. The TEC has enhanced communication and outreach to its target audiences, including policymakers, the private sector and international organizations, through regional engagement and collaboration with other organizations. It will continue to improve such efforts, including making available its publications in other official United Nations languages, subject to resource availability.

58. The TEC underscores that monitoring and evaluating the impacts of its work remains a key challenge and area of work. In order to effectively implement its activities and monitor and evaluate their impacts, appropriate methodologies and indicators and sufficient data and information are needed.

59. The TEC is appreciative that its composition this year reflects an increase in gender balance and women leadership. The TEC looks forward to further improving the gender balance, recognizing that it is the prerogative of Parties to nominate representatives to the TEC.

D. Monitoring and evaluation of the impacts of the implementation of the Technology Executive Committee's mandates

60. COP 23 requested the TEC to monitor and evaluate the impacts of the implementation of its mandates.[47] In response, the TEC considered, through its task forces, to what extent the relevant mandates of the TEC have been fulfilled and the impacts of the implementation of activities in each thematic area.

61. The TEC will continue to consider the monitoring and evaluation of the impacts of its work in 2019, so as to link the monitoring and evaluation to the development of its next rolling workplan, taking into account possible outcomes of COP 24 on the elaboration of the technology framework under Article 10, paragraph 4, of the Paris Agreement and on the

[46] Decision 15/CP.23, paragraph 11.
[47] Decision 15/CP.23, paragraph 5.

scope of and modalities for the periodic assessment of the Technology Mechanism in relation to supporting the implementation of the Paris Agreement.

E. Key messages for the Conference of the Parties

62. Building on the work carried out in 2018, the TEC wishes to deliver the following key messages to COP 24.[48]

1. Climate technology entrepreneurship

63. Entrepreneurs play an important role in developing climate technologies and face challenges in undertaking successful innovation in this field in all countries, often exacerbated in developing countries, including:

(a) Limited opportunity to engage in entrepreneurship;

(b) Lack of enabling environments to innovate solutions for addressing climate change;

(c) Limited support for undertaking climate innovation activities.

64. Climate technology incubators and accelerators provide broad-ranging support to entrepreneurs, helping them to develop business know-how, market connections and technical capacity and providing guidance on sources and procedures for access to finance.

65. The TEC recommends that the COP encourage Parties and non-State actors to enhance the effectiveness and impact of climate entrepreneurs by:

(a) Developing a strong national entrepreneurial environment;

(b) Promoting opportunities and providing incentives for actors to engage in entrepreneurship and focus on climate technologies;

(c) Enhancing the effectiveness of incubation models for supporting climate entrepreneurs.

2. South–South and triangular cooperation on climate technologies

66. The TEC:

(a) Recalls the key messages on South–South and triangular cooperation submitted by the TEC to COP 22[49] and highlights that they should apply to both adaptation and mitigation technologies for the implementation of NDCs and NAPs;

(b) Notes that there are several examples of evidence-based successful South–South and triangular cooperation on technologies for adaptation and mitigation;

(c) Highlights that developing countries face challenges in successfully promoting and scaling up South–South and triangular cooperation on climate technologies, including limited access to information, limited coordination and underdeveloped support arrangements on South–South and triangular cooperation initiatives, including approaches, mechanisms and tools for their planning and implementation.

67. The TEC recommends that the COP encourage Parties, United Nations agencies, relevant UNFCCC institutions, operating entities, intergovernmental organizations, multilateral development banks and other relevant stakeholders, as appropriate, to work together to address the challenges highlighted above.

3. Technology needs assessments

68. The TEC recognizes that there is further potential to use TNA results and lessons learned from their implementation to assist countries in undertaking and implementing their mitigation and adaptation actions, NDCs and NAPs.

[48] Also available at http://unfccc.int/ttclear/policies.

[49] FCCC/SB/2016/1, chapter III.C.

69. Following the good work of developing country Parties in phases I and II of the global TNA project, phase III targets mainly small island developing States and the least developed countries (LDCs). The work on conducting technology action plans (TAPs) may be even more beneficial to those countries, particularly with a view to facilitating support for climate technologies and developing bankable projects.

70. The TEC recommends that the COP:

(a) Further promote the mature methodology and results of TNAs and TAPs in a broad international context, which would be beneficial in highlighting the added value of the TNA and TAP work of developing countries and in assisting the implementation of Paris Agreement;

(b) Encourage Parties to enhance collaboration and knowledge-sharing between national stakeholders and teams involved in the TNA and NAP processes with the aim of enriching their efforts, effectively use the available results and consider the lessons learned and good practices from both processes.

IV. Report on the activities and performance of the Climate Technology Centre and Network in 2018

A. Organizational matters: Advisory Board meetings and membership

71. At its 11th meeting, held from 7 to 9 March 2018 in Copenhagen, the Advisory Board of the CTCN welcomed new members Ms. Orly Jacob (Canada), Mr. Pei Liang (China), Ms. Maia Tskhvaradze (Georgia), Mr. Julian Frohnecke (Germany), Ms. Claudia Octaviano (Mexico), and Ms. Moa Forstorp (Sweden), who were elected in accordance with the Advisory Board's rules of procedure; and elected, at the end of the meeting, Ms. Tskhvaradze as its new Chair. Mr. Karsten Krause (European Commission) was nominated intersessionally as the new Vice-Chair in line with the Board's rules of procedure. At the end of the meeting, it thanked Ms. Mette Møglestue (Norway) for her services as the previous Chair of the Advisory Board.

72. At its 12th meeting, held from 3 to 5 October 2018 in Vienna, the Advisory Board welcomed new members Mr. Henrique Schneider, Mr. Soumya Dutta and Mr. Matthew Kennedy, representing business and industry non-governmental organizations (NGOs), environmental NGOs, and research and independent NGOs, respectively. It additionally decided to appoint Mr. Hamid Souleymane to represent the LDCs. A list of the members of the Advisory Board is available on the CTCN website.[50]

73. Parties and observer States were invited to participate in the Advisory Board meetings, which were webcast live. The Advisory Board meeting documents and presentations are available on the CTCN website.

74. The Advisory Board provided guidance to the CTCN on collaboration with the GCF (including modalities for GCF support for CTCN technical assistance), on the approach of the CTCN to strengthening linkages with the GEF and the Adaptation Fund, on CTCN engagement in collaborative RD&D, on outreach to NDEs, on the monitoring and evaluation of the activities of the CTCN, and on additional actions that can be taken by the CTCN in response to the 2017 independent review of the CTCN. It also provided input to the draft management response of UNEP, in its capacity as co-host of the CTCN, to the recommendations contained in the independent review of the CTCN. The response was provided for consideration at SBSTA and SBI 48.1.

75. The Advisory Board took note of the draft resource mobilization strategy for meeting the costs associated with the CTCN. Furthermore, it endorsed the CTCN 2017 financial statement and the CTCN planned budget for 2019, approved the CTCN annual operating plan for 2019 and took note of the draft CTCN programme of work for 2019–2022.

[50] https://www.ctc-n.org/about-ctcn/advisory-board.

76. The Advisory Board continued to make active use of its task forces in 2018, hosting joint calls for inputs on the following topics: the development of guidance on resource mobilization; the four-year vision underlying the CTCN programme of work for 2019–2022; the aforementioned programme of work; and the findings that emerged from a preliminary analysis of the first 40 completed CTCN technical assistance response plans, including actual activities undertaken and expected quantitative impacts.

B. Activities of the Climate Technology Centre and Network

1. Function 1: responding to requests from developing countries

77. As at October 2018, the CTCN had engaged with 85 developing country Parties regarding a total of 210 requests for technical assistance. The figure below illustrates the progression over time of the requests that have been both deemed eligible and prioritized. As at the end of the third quarter of 2018, the responses to 55 such requests had been successfully completed, the responses to 40 requests were being implemented, the response plans for 22 requests were being designed and 22 requests were under review. The remaining requests had been withdrawn or recalled by the relevant NDEs, deemed ineligible by the CTCN or classified as eligible but not prioritized (owing primarily to CTCN-internal financial constraints), and are not reflected in the figure below.

78. In 2018 the Climate Technology Centre (CTC) surveyed partners, implementers and NDEs involved in its first 40 completed technical assistance interventions. Analysis of the data gathered, which remain subject to further review, enabled the CTC to determine a series of preliminary indicative findings on the anticipated quantitative impacts of the interventions over a period of approximately 10 years. The total cost of the technical assistance was approximately USD 5 million and highlights of the analysis include:

(a) Activities:

(i) 130 workshops, building the capacity of 2,400 people across 160 institutions;

(ii) 51 projects implemented, deploying 100 technology types as a result of 40 CTCN technical assistance interventions;

(b) Estimated impacts:

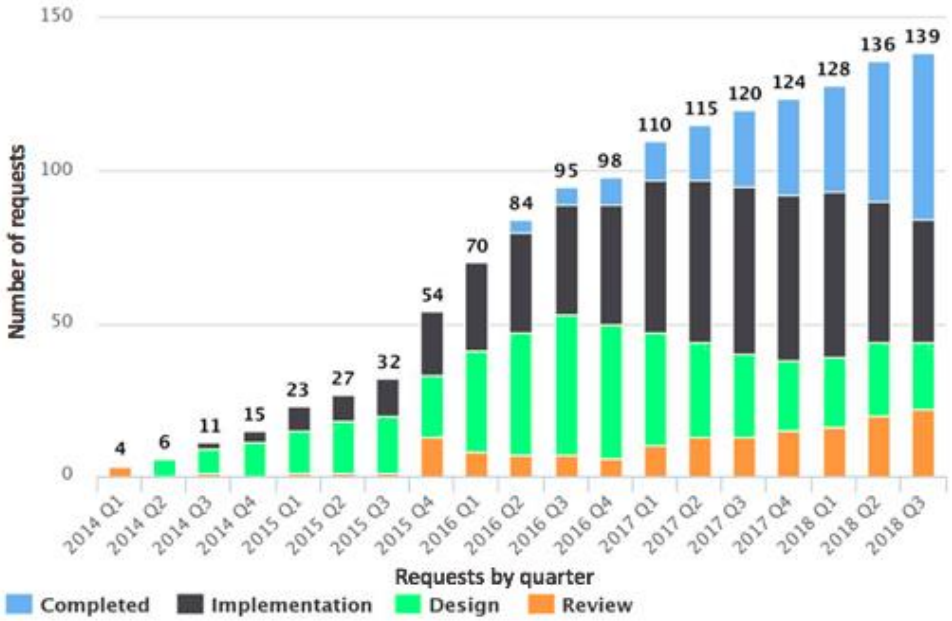
(i) Approximately USD 700 million in anticipated investment leveraged as a result of technical assistance activities;

(ii) An estimated 11 million tonnes of carbon dioxide equivalent emissions likely to be reduced or sequestered annually as a result of projects supported by technical assistance over a 10-year period;

(iii) An estimated 85 million people with improved livelihoods as a co-benefit of anticipated actions based on CTCN technical assistance interventions.

79. The CTCN has increasingly drawn on the expertise of its Network members to respond to requests for technical assistance received from developing countries. Network members now respond to approximately two thirds of requests through a competitive bidding process managed by CTCN co-host UNIDO.

Status of requests for technical assistance from the Climate Technology Centre and Network and its responses



80. The comparative decrease in single-country requests has been balanced by the development of regional multi-country requests. The requests to the CTCN cover both climate change adaptation and mitigation, with 31 per cent focused on adaptation, 53 per cent focused on mitigation and 16 per cent relating to both mitigation and adaptation. The requests are well distributed geographically, with 87 requests received from Africa, 66 requests from Asia-Pacific, 47 from Latin America and the Caribbean, and 4 from Eastern Europe.

81. Approximately half of technical assistance requests are directly related to recommendations and priorities identified in country TNAs. There is an increasing emphasis on direct alignment between technical assistance requests and country NDCs and NAPs.

82. Seven requests have so far been submitted to the CTCN jointly by multiple (from 3 to 13) countries, with a number of additional multi-country requests in the process of being formulated. The CTC encourages the submission of multi-country requests due to their high potential for impact at scale, guided by the experience of the CTCN thus far and the priority themes identified through the TEM process. Those themes have been prioritized on the basis of successful past technical assistance and regional trends with high impact. A full list of CTCN technical assistance is available on the CTCN website, including:

(a) Mainstreaming gender in energy systems in West Africa;

(b) Coastal zone adaptation in West Africa;

(c) Appliance efficiency standardization in Southern Africa;

(d) Refrigeration and air conditioning in Ghana, Kenya, Mauritius and Namibia.

2. Function 2: fostering collaboration and access to information

83. The CTCN knowledge management system supports the delivery of the CTCN core functions to developing country NDEs, government officials and other climate technology practitioners. The CTCN website[51] provides information on current technical assistance bidding opportunities, events, webinars and membership criteria as well as visualizations of technical assistance requests and lists of Network members (including details of their experience in relevant sectors). The online presence of the CTCN is making the impacts of

[51] www.ctc-n.org.

its responses to technical assistance requests and the wealth of technology information provided by consortium partners and Network members more visible.

84. The CTCN website has experienced increases of 40 per cent in site visits and 63 per cent in the number of users over 2018. In addition to the home page, the most visited pages are those related to technical assistance requests, the Network and technology sectors. As at October 2018, over 17,000 knowledge resources were available in the knowledge management system, including climate technology publications, case studies, tools, national planning documents, climate technology descriptions and webinars.

85. Climate technology information, including reports, case studies, tools and webinars, is continually being added to the knowledge management system and tagged with relevant keywords from the CTCN taxonomy to allow for an integrated approach and to improve user-friendliness.

86. The CTCN technical assistance dashboard provides visualizations,[52] including their distribution by sector, region and the partners involved in the responses. The web pages on individual technical assistance requests[53] are continually updated to provide summaries, impact briefs and other key information.

87. Outreach is continually conducted through the CTCN newsletter and social media channels to highlight the resources available on topics such as water, renewable energy and gender mainstreaming. The CTC responds to direct requests for climate technology information from a range of stakeholders, including ministries, the private sector, academic institutions and students.

88. A web page displaying CTCN monitoring and evaluation information has been created; it includes links to documents such as COP decisions on monitoring and evaluation, independent reviews and associated recommendations, and monitoring and evaluation frameworks for CTCN operation.[54] Work is under way on making available data on the impacts of the implementation of CTCN technical assistance, which will be made public in due course.

3. Function 3: strengthening networks, partnerships and capacity-building

89. In 2018 the CTCN collaborated with the secretariat to organize climate weeks in Latin America and the Caribbean, Africa and Asia-Pacific, and convened meetings for interested Network members and regional NDEs on the margins of those climate weeks. The CTCN continued its outreach to GCF and GEF focal points, and in some cases, was able to organize complementary meetings to enable focal points to begin to develop working relationships or to intensify existing partnerships. A one-day regional TEM was organized as part of each climate week, providing a number of private sector Network members with the opportunity to discuss topics of relevance to the Talanoa Dialogue.

90. The CTCN also organized regional NDE forums to present the latest developments related to CTCN services in the region, to share national and regional experience and best practices from the implementation of CTCN technical assistance, to strengthen linkages between the support provided by the CTCN and measures identified through TNAs and TAPs, and to provide inputs to the TEP and the Talanoa Dialogue.

91. The CTCN convened a regional NDE forum in Seoul. Participants shared best practices related to collaboration with the GCF, information on opportunities arising from the provision of voluntary support, and lessons learned from ongoing and completed technical assistance responses in the region.

92. The CTCN was invited by the GCF secretariat to lead a session at its structured dialogues with Asia, and Eastern Europe and Central Asia. At both sessions, the CTCN highlighted its efforts to enhance linkages with the Financial Mechanism and presented work undertaken with the support of the GCF Readiness and Preparatory Support Programme.

[52] See https://www.ctc-n.org/technical-assistance/request-visualizations.
[53] https://www.ctc-n.org/technical-assistance/data.
[54] https://www.ctc-n.org/about-ctcn/monitoring-evaluation.

93. The CTCN mobilized Network members to provide, via the NDE of the Republic of Korea, voluntary support for its response to four technical assistance requests. Through the delivery of technical assistance, it facilitated the establishment of partnerships and twinning arrangements between Network members from developed countries and developing countries (North–South collaboration).

94. The CTCN supported Network members in organizing capacity-building events and workshops featuring the participation of NDEs. It also supported NDEs in organizing national events to improve the preparation of country activities on technology transfer and to establish linkages between focal points under the Convention.

95. The CTCN has started to collaborate with other regional and global technology initiatives such as the Technology Bank for the Least Developed Countries and the Economic and Social Commission for Western Asia Technology Centre. Joint capacity-building activities on climate financing have also been undertaken with regional development banks in Africa.

96. The CTCN has supported capacity-building activities on the development of GCF concept notes for climate financing through its 'vision to concept' programme. The programme was implemented in six countries and has led to the drafting of concept notes that are now being elaborated by other entities accredited to the GCF with a view to their eventual submission to the GCF for funding approval.

97. The Request Incubator Programme for the LDCs continues to enhance the capacity of participating LDCs to develop high-quality requests for technical assistance, attract investment and strengthen institutional capacities related to climate technologies. The Programme has been expanded to cover small island developing States and now places a stronger emphasis on the identification and prioritization of technological innovation in support of NDC priorities.

98. The CTCN Secondment Programme continues to provide early- and mid-career professionals with the opportunity to contribute to the strategic and operational work of the CTCN while enhancing their understanding of climate technology implementation and knowledge transfer. In August 2018, a new cohort of participants, from CTCN consortium partner The Energy and Resources Institute and the Green Technology Center of the Republic of Korea, embarked on their 6–12 month secondments.

99. CTCN webinars, now delivered primarily by Network members, introduce the main climate technologies and sectors and their contribution to increasing resilience and reducing emissions. To date, over 3,500 participants have benefited from the 46 CTCN webinars delivered and the almost 50 partner webinars promoted by the CTCN.

100. The CTCN and Radboud University (Netherlands) organized a week-long summer school course to build the capacity of participants on climate change mitigation. Twenty-eight participants, half from the LDCs, from 23 countries presented technologies that could be relevant for deployment in connection with their countries' NDCs.

C. Organizational structure of the Climate Technology Centre and Network

1. Climate Technology Centre

101. In 2018 the CTC, consisting of one Director, five Professional level staff and two administrative staff, continued to experience some routine staff turnover. The position of Financial Management Officer became vacant in the middle of the year and the CTC replaced its liaison officer with an official from one of the co-hosts of the CTCN. During periods of staff shortage, the two co-hosts of the CTCN – UNEP and UNIDO – provided the CTCN with additional personnel support.

102. The continued backing of its consortium partners enables the CTCN to deliver its services, in particular smaller-scale technical assistance that can be quickly provided to developing countries, and in 2018 joint work with the TEC and one of its consortium partners on preparing guidance on ways to support the development of endogenous technologies. The

CTCN thanks its strategic partner, DNV GL, for the support provided during its four-year partnership and will continue to collaborate on issues of common interest related to the mandates of the CTCN.

2. Climate Technology Network

103. The COP requested the CTC to set up and facilitate a network of institutions capable of responding to requests from developing countries related to climate technology[55] development and transfer.[56]

104. A total of 469 applications for membership of the Network had been received by the CTCN as at September 2018. Of those, 451 had been accepted, 15 applications were under assessment and 3 early applications were deemed not to fulfil all the criteria. This represents an increase of 123 Network members since 2017.

105. The number of Network membership applications has grown steadily over the past 40 months and this trend is expected to continue.

3. National designated entities

106. NDEs serve as domestic focal points for the development and transfer of technologies and as points of contact with the CTC. Developing country NDEs coordinate and submit requests related to their countries' technology needs to the CTCN, whereas developed country NDEs coordinate the provision of in-country support and technical knowledge to enhance the capabilities of the CTCN to respond to those requests.

107. As at September 2018, 160 countries had nominated their NDEs, 133 of which were from Parties not included in Annex I to the Convention. NDEs are critical to the success of the CTCN as the gateway to engaging with and benefiting from CTCN services. As part of its regular regional forums and outreach activities, the CTCN has been focusing increasingly on the involvement of developed country NDEs and on how they can assist collaboratively in achieving common goals.

4. Funding

108. The COP decided that the CTC and the mobilization of the services of the Network should be funded from various sources, ranging from the Financial Mechanism to philanthropic sources, as well as financial and in-kind contributions from the co-hosts of the CTCN and from participants in the Network.[57] Parties in a position to do so were invited to support the CTCN by providing financial and other resources,[58] and the CTCN has also been supported by in-kind resources from its co-hosts UNEP and UNIDO. The funding secured for the CTCN as at October 2018 is shown in the table below.

Financial support secured for the Climate Technology Centre and Network as at October 2018

Donor	*Total contribution secured (USD)*
European Union	14 429 688
Norway	8 499 850
Denmark	7 225 293
Japan	6 660 173
United States of America	4 930 308
Switzerland	4 507 785
Canada	4 376 018

[55] In line with the definition of the Intergovernmental Panel on Climate Change, 'climate technology' refers to any equipment, technique, practical knowledge or skills needed to adapt to a changing climate or to mitigate greenhouse gas emissions, and includes both adaptation and mitigation measures.

[56] Decision 1/CP.16, paragraph 123.

[57] Decision 14/CP.18, annex I, paragraphs 22 and 23.

[58] Decision 2/CP.17, paragraph 141.

Donor	*Total contribution secured (USD)*
Germany	1 158 207
Republic of Korea	922 125
Italy	849 653
Sweden	473 209
Finland	216 640
Ireland	216 548
Spain	59 737
Subtotal[a]	**54 609 671**
Global Environment Facility	1 971 000
Green Climate Fund	1 417 614
United Nations Industrial Development Organization	1 125 000
Total[a]	**59 121 205**

Note: Further information related to donor agreements and in-kind support is available at https://www.ctc-n.org/about-ctcn/donors.

[a] Numbers subject to change pending endorsement of the precise value of the contribution from the Government of Norway to UNEP. This also applies to numbers in paragraphs 109 and 137 of this document.

109. As at October 2018, the CTCN had secured a total of USD 54.6 million from bilateral sources and a further USD 1.4 million from the GCF and USD 2.0 million from the GEF for the project "Promoting Accelerated Transfer and Scaled up Deployment of Mitigation Technologies through the Climate Technology Centre & Network (CTCN)". It also received USD 1.125 million from its co-host UNIDO. The total bilateral and multilateral contributions to the CTCN, as listed in the table above, amounts to USD 59.1 million.

110. In 2018 the CTCN continued to receive funds from bilateral donors as part of the USD 23 million pledged to the CTCN at COP 22. It continues to experience challenges related to the availability of sufficient and sustained funding as it strives to fund its activities in future years. The Advisory Board took note of a resource mobilization strategy in 2018 that will be implemented in 2019. Requests for technical assistance that were not prioritized are anticipated to be served in 2019.

111. The CTCN continues to explore financing sources other than contributions from bilateral donors so as to diversify funding sources and ensure the sustainability, adequacy and predictability of funding for CTCN operations. UNEP and UNIDO, as the co-leads of the CTCN consortium, continue to engage with current and potential donors to secure additional funds.

112. The CTCN is also inviting Network members, including NDEs and governments, to provide and fund CTCN services through in-kind contributions and voluntary support in the form of contributing technical expertise to partly or wholly respond to requests for technical assistance. It is in the process of responding to several such requests through voluntary partnerships with the Governments of the Republic of Korea and Japan. The value of this support is estimated at USD 1.0 million for 2018, with potential for additional contributions as the procedure for providing in-kind and voluntary assistance is further refined and promoted.

113. The CTCN continues to explore linkages between the Technology Mechanism and the Financial Mechanism. It is engaging with both the GCF and the GEF on approaches to refine the collaborative arrangements for responding to requests for technical assistance submitted to the CTCN that can then seek additional funding to expand the scale of the intervention.

114. The CTCN has presented a proposal to the GEF on accessing future support for technology transfer. In line with a request from the COP,[59] it has provided, for the purpose of the GEF report to COP 24,[60] information on the experience of NDEs in collaborating with GEF operational entity focal points on matters related to the development and transfer of climate technologies.

115. The GCF and the CTCN are exploring a partnership wherein CTCN services and expertise can be used to bolster proposals seeking support under the GCF Readiness and Preparatory Support Programme and from the GCF Project Preparation Facility. The CTCN has prepared and presented capacity-building modules to assist in the implementation of this approach, which would allow for the creation of conditions for, and the development of, more robust GCF proposals and thus help to accelerate the scaled-up deployment of climate adaptation and mitigation technologies in developing countries. It will have completed two GCF Readiness Programme funded proposals by the end of 2018.

116. The CTCN is actively engaging with multilateral development banks and the regional climate technology transfer and finance centres funded by these banks and by the GEF. Collaborative activities include responding to technical assistance requests that have scalable investment potential, participation in relevant regional NDE forums and the organization of joint meetings to promote knowledge-sharing and strengthen networks.

5. Other activities

(a) Gender mainstreaming

117. According to the UNFCCC gender action plan,[61] the CTCN is to facilitate knowledge-sharing on gender mainstreaming and to update the report on how the CTCN has taken account of gender considerations while contributing to the acceleration of the development and transfer of technology.

118. The CTCN collaborates with Network members and knowledge partners on gathering, generating and disseminating relevant knowledge, information, tools, webinars and best-practice examples related to gender and climate action via the gender hub on the CTCN website,[62] which currently contains more than 400 resources. It is actively seeking to establish partnerships with organizations having experience in gender and climate matters, and to increase the number of Network members with demonstrated gender expertise.

119. The CTCN recently provided technical assistance on gender mainstreaming for a climate-resilient energy system in the Economic Community of West African States (ECOWAS). This support was provided in partnership with the Private Financing Advisory Network and the ECOWAS Centre for Renewable Energy and Energy Efficiency and was directed at women-led sustainable energy enterprises from West Africa, which received coaching on the development of financially, socially and environmentally sustainable business plans. A business plan competition led to four submissions with a total investment request in excess of USD 30 million. The technical assistance provided also made possible a training workshop for organizations and the gender focal points of relevant ministries in the ECOWAS countries, which focused on the integration of gender dimensions in all phases of energy projects in order to strengthen local capacity.

(b) Communication and outreach

120. The CTCN continues to implement its communication and outreach strategy in order to promote its services and to raise awareness of the benefits of climate technology. In 2018 it made further use of social media and website communications to support engagement with stakeholders, including the media. In the same vein, it distributed electronic newsletters, published its annual progress report and produced impact briefs and short videos on the outcomes of CTCN technical assistance. It hosted a UNFCCC Technology Mechanism booth

[59] Decision 10/CP.23, paragraph 13.
[60] FCCC/CP/2018/6.
[61] Decision 3/CP.23.
[62] https://www.ctc-n.org/technology-sectors/gender.

and organized side events and bilateral meetings during COP 23 and SBSTA and SBI 48.1. Moreover, it provided NDEs with information resources in English, French and Spanish, as well as in other languages depending on demand and availability of resources.

D. Challenges and lessons learned

1. Technical assistance

121. Technical assistance interventions can lead to situations where the preferred technology options of a country are found to be unfeasible due to local conditions. Redesign of the response options by the CTCN to take such constraints into account helps to ensure that investment in technologies is appropriate for the country.

122. Scalability and replicability will be key over the next four years. Accordingly, the CTCN will expand the scope of its multi-country technical assistance activities with a view to ensuring that a single project can benefit several countries facing similar challenges.

123. The CTCN continues to seek to make its provision of technical assistance more efficient. Experience to date confirms that a stronger focus on quality during the preparation and submission of a technical assistance request can reduce delays later on in the process.

124. The CTCN has noted that there is uneven distribution among developing countries with regard to the submission of technical assistance requests. In response, the CTC has developed a fast technical assistance process, which is time sensitive, narrower in scope and of shorter duration. The process should also enable the CTC to respond to a greater number of requests and serve more countries, potentially leading to larger-scale follow-up activities.

2. Knowledge management

125. The CTCN succeeded in developing a world-class knowledge management system during the first five years of its existence. Over the next four years, it must draw on its knowledge management and outreach experience to shift its focus to engagement and learning.

3. Capacity-building and networking

126. Capacity-building designed to strengthen, empower and connect developing country NDEs and to build their relationship with other focal points has been key to CTCN technical assistance having a lasting impact and leading to additional external investment. For instance, a strong working relationship between a country's NDE and national designated authority (NDA) increases the likelihood of leveraging additional financing from the GCF once the CTCN has completed its technical assistance intervention.

127. The CTCN will engage more consistently with NDEs from both developed and developing countries to enhance their roles in the promotion of opportunities within their respective countries and regions.

128. The CTCN needs to continue to step up its efforts to raise awareness of its capacity-building services in developing countries, in particular by reinforcing the involvement of Network members in its activities and increasing collaboration with the private sector.

4. Funding

129. Securing sustained funding to enable the CTCN to continue to deliver on its mandate is an issue of concern. The provision of technical assistance for technology development and transfer and building of endogenous capacities to developing countries is a core element of the Convention, the Paris Agreement, and several COP decisions. The Advisory Board welcomes the planned engagement of a deputy director by the CTCN to lead resource mobilization efforts.

5. Review of the CTCN[63]

130. The independent review of the CTCN indicates that the partners and stakeholders of the CTCN in general have acknowledged the added value of the CTCN in terms of supporting developing countries in the process of accessing international funds and building enabling environments. The activities of the CTCN have also responded to the needs of developing countries, which appreciate its intense groundwork and its reactive and tailored assistance.

131. Recommendations to the CTCN included enhancing NDE cooperation with other national focal points, clarifying the roles of developed country NDEs, reinforcing the involvement of Network members, collaborating further with the Financial Mechanism, and ensuring transformational change through re-examination of CTCN governance, procedures and monitoring.

132. The CTCN is responding to the recommendations arising from the review across all its core functions. This includes, but is not limited to, strengthening the role of NDEs in national climate processes and through engagement in regional meetings, supporting the development of multi-country requests for technical assistance that build on regional needs identified through CTCN experience in its first five years of operation, implementing approximately two thirds of technical assistance through its growing Network, and strengthening its monitoring and evaluation system in order to better capture and report on the impact of its operations.

E. Key messages for the Conference of the Parties

133. During its five years of operation, the CTCN has assisted developing countries by responding to over 50 technical assistance requests and providing tailored capacity-building to more than 20 LDCs, while networking 160 institutions and 2,400 governmental and other stakeholders. The CTCN has built up a global pool of experts with skills in such areas as flood modelling to inform urban planning in low-lying megacities; the adaptation of agricultural practices to increase resilience in water-poor areas; and the development of regional efficiency standards for electrical appliances to enable countries to make better use of finite natural resources and achieve economic growth by providing reliable electricity to their citizens and industry.

134. A total of 469 applications for membership of the Network had been received by the CTCN as at October 2018. The number of membership applications has grown steadily over the past three years.

135. The CTCN has increasingly drawn on the expertise of Network members to respond to requests for technical assistance submitted by developing countries. It expects this trend to continue.

136. The CTCN is also inviting Network members, including NDEs, to provide technical expertise on a voluntary basis to respond to requests from developing countries. Technical assistance activities are currently under way that are being supported by funds from the Governments of the Republic of Korea and Japan amounting to USD 1 million.

137. As at October 2018, the CTCN had secured a total of USD 54.6 million from bilateral sources and a further USD 1.4 million from the GCF, USD 2 million from the GEF and USD 1.125 million from its co-host UNIDO. The total contributions to the CTCN to date amount to USD 59.1 million.

138. The GCF and the CTCN are partnering to provide CTCN services and expertise in support of proposals seeking funding under the GCF Readiness Programme and from the GCF Project Preparation Facility. The CTCN estimates that, through collaboration with NDEs and NDAs, it will access approximately USD 2 million of GCF Readiness Programme funding in 2018.

[63] The report on the independent review of the effective implementation of the CTCN is available at https://unfccc.int/resource/docs/2017/cop23/eng/03.pdf.

139. The CTCN is actively engaging with the GEF and multilateral development banks, as well as with the regional climate technology transfer and finance centres funded by the banks and the GEF. Potential collaborative activities include the implementation of technical assistance response plans that involve clean technologies with scalable investment potential.

140. The Advisory Board, at its 12th meeting, reaffirmed its support for the request on behalf of the environmental, business and industry, and research and independent NGO Advisory Board members that their maximum term be extended from one to two years to allow their constituencies to contribute more effectively to Board discussions and to bring their terms of office in line with those of other members. It was noted that this is a decision that must be made by the COP.

Annex I

Recommendations of the Technology Executive Committee on ways forward and actions to be taken based on the outcomes of the technical expert meetings on mitigation

[English only]

1. The Technology Executive Committee (TEC) highlights that the organization of the technical expert meetings on mitigation (TEM-M) in conjunction with regional climate action events proved to be effective in:

(a) Ensuring broader participation, together with policymakers, of a higher number of researchers, technology developers and practitioners from the respective region;

(b) Facilitating greater engagement of lead expert organizations, constituted bodies under the Convention and non-Party stakeholders;

(c) Enabling the examination of the specific finance, technology and capacity-building resources necessary to scale up action in regional contexts.

2. Regarding the topics covered by the TEM-M in 2018, including waste-to-energy and circular economy, the TEC underlines that:

(a) Waste-to-energy technologies have reached a high level of maturity, but their replicability and scalability is hindered by the lack of specific incentive schemes and regulatory frameworks that address technical and market challenges;

(b) The implementation of circular economy requires the ability to move away from the current linear consumption and production patterns by redesigning business and financial models, policy frameworks and ways of collaboration. This shift also implies the capacity for innovation and seizing the opportunities offered by new technologies.

3. As policymakers have a critical role to play in setting standards, policies and regulations that incentive circular economy, including waste-to-energy, the TEC recommends that the COP encourage Parties:

(a) To promote policies, schemes and programmes, which may include:

(i) Introducing incentive schemes that support the use of waste as a resource;

(ii) Reducing disposal and landfilling of waste;

(iii) Mainstreaming circularity in fiscal policies, energy policies and waste management policies;

(iv) Facilitating the establishment of public–private partnerships to enable risk sharing between public and private actors and to catalyse investments in new technologies;

(v) Introducing or improving financial instruments that support the research, development, deployment and transfer of innovative technology that advances circular economy;

(b) To enhance the capacities of various actors at different levels, including in areas such as assessing waste-to-energy potential at the regional level and collecting quality data on waste availability and composition;

(c) To encourage collaboration and knowledge-sharing among relevant actors through instruments such as digital platforms, councils, coalitions, accelerators and incubators.

4. The TEC also recommends that the COP encourage relevant organizations to finance or co-finance projects for waste-to-energy and circular economy and disseminate knowledge on best practices and successful case studies.

Annex II

Inputs of the Technology Executive Committee to the stocktake on pre-2020 implementation and ambition taking place at the twenty-fourth session of the Conference of the Parties

[English only]

1. The adoption of the Paris Agreement and related decisions provided a strong signal for enhanced engagement and collaboration among Convention bodies and non-Party stakeholders to support Parties' actions in the pre-2020 period and the implementation of the Paris Agreement.

2. In the context of enhancing pre-2020 action, the Technology Executive Committee (TEC) has been proactively engaging in the technical examination process (TEP) since 2015 to facilitate the implementation of scalable climate technologies and policies.

3. The TEC was mandated by the Conference of the Parties (COP) to engage in the TEP through decision 1/CP.21, when Parties resolved to further accelerate the process by 2020, and at COP 23, when the TEC was requested to enhance its engagement in the process.

4. These mandates are reflected in the mitigation and adaptation activities in the TEC rolling workplan, which are being implemented by the TEC at different levels:

(a) Provision of inputs and recommendations on the implementation of the TEP:

(i) Provided recommendations to the high-level champions, the Chairs of the subsidiary bodies and the secretariat on potential topics for future technical expert meetings (TEMs) on mitigation (September 2016);

(ii) Provided inputs to the assessment of the TEP to improve its effectiveness (September 2017);

(iii) Provided inputs on the topics for the TEP on mitigation for the period until 2020 (communicated to the high-level champions on 31 January 2018);

(b) Engagement in the TEMs on mitigation:

(i) Engaged in the TEM on mitigation 2015 (in June 2015 in Bonn) and provided updates on TEC work on distributed renewable electricity generation;

(ii) Engaged and provided updates on its work on renewable energy and technology needs assessments (TNAs) in the thematic session on renewable energy supply and efficient public transport during the TEM on mitigation 2016 (in May 2016 in Bonn);

(iii) Organized a thematic session on innovative technology solutions for sustainable urban development during the TEM on mitigation 2017 (in May 2017 in Bonn);

(iv) Organized a regional TEM on industrial energy efficiency in collaboration with the Climate Technology Centre and Network (CTCN), held during Africa Climate Week 2018 (9–13 April 2018 in Nairobi);

(v) Engaged in the TEM on mitigation 2018 (in May 2018 in Bonn) and contributed to the round-table discussion on replication and upscaling of innovations and best practices on waste-to-energy and circular economy;

(vi) Supported the organization of a regional TEM on waste-to-energy, held during Asia-Pacific Climate Week 2018 (10–13 July 2018 in Singapore);

(vii) Organized a regional TEM on industrial waste-to-energy and circular economy in collaboration with the CTCN and the United Nations Industrial Development

Organization, held during Latin America and Caribbean Climate Week 2018 (20–23 August 2018 in Montevideo);

(c) Follow-up on policy options identified through the TEP:

(i) Organized a thematic dialogue on industrial energy efficiency and material substitution in carbon-intensive sectors, held in conjunction with the 14th meeting of the TEC (March 2017);

(ii) Developed and published a TEC Brief on industrial energy and material efficiency in emission-intensive sectors (November 2017);

(iii) Developed and published executive summaries on industrial energy and material efficiency for target groups (i.e. financial institutions, industry actors, international organizations, domestic policymakers) (November 2017);

(iv) Prepared key messages for the COP on industrial energy and material efficiency in emission-intensive sectors (November 2017);

(v) Prepared recommendation to the COP on ways forward and necessary actions to be taken based on the outcomes of the TEMs in 2018 (October 2018).

5. The TEC has been engaging with and contributing to the work of the Adaptation Committee in the preparation of TEMs on adaptation. The TEC responded to the invitation of the Adaptation Committee to participate in its work on preparing TEMs on adaptation for the period 2017–2020 and engaged actively in the process by providing relevant inputs.

6. The TEC met, on the margins of the first part of the forty-eighth sessions of the subsidiary bodies, with the Chairs of the subsidiary bodies, the high-level climate champions, the Co-Chairs of the Adaptation Committee and the Director of the CTCN to exchange views on synergies and complementarity within the TEP.

7. The work of the TEC focused on key areas other than mitigation and adaptation technologies, namely climate technology financing; emerging and cross-cutting issues; innovation and research, development and demonstration; and TNAs. All TEC activities in these key areas contributed to enhancing pre-2020 action by concentrating efforts on supporting countries in identifying climate technology policies to support them in achieving the goals of the Convention and in accelerating their development and transfer.

8. Information on TEC activities and outcomes in each key area, including policy briefs, recommendations to the COP, technical papers and other publications, are available on TT:CLEAR, the UNFCCC technology information clearing house.[1]

[1] http://unfccc.int/ttclear/tec/impact.html.

Annex III

Inputs of the Technology Executive Committee to the Talanoa Dialogue

[English only]

I. Where are we?

1. The Technology Executive Committee (TEC) has been working to support countries in identifying climate technology policies to support them in achieving the goals of the Convention, the Paris Agreement and sustainable development:

(a) Since its inception, the work of the TEC has focused on supporting Parties and non-Party stakeholders in accelerating the development and transfer of climate technologies to implement their mitigation and adaptation actions. With the adoption of the Paris Agreement, the TEC expanded its work to respond to the calls of Parties to support the implementation of the Paris Agreement in the areas of technology development and transfer, including technology research, development and demonstration as well as development and enhancement of endogenous capacities and technologies;

(b) The TEC conducted analysis and provided policy recommendations on technology policy issues in a number of key areas, including adaptation technologies; climate technology financing; emerging and cross-cutting issues; innovation and research, development and demonstration; mitigation technologies; and technology needs assessments (TNAs);

(c) In 2011–2017 the TEC provided key messages and policy recommendations to the Conference of the Parties and produced 11 policy briefs on key climate technology issues, including, but not limited to, technologies for adaptation in the agriculture and water sectors, enhancing access to climate technology financing, strengthening national systems of innovation, South–South and triangular cooperation on adaptation technologies, distributed renewable energy, and industrial energy and material efficiency in carbon-intensive sectors;

(d) The TEC developed other products, such as guidance and compilations of good practices; for example, guidance on preparing a technology action plan, aimed at enhancing the implementation of priority mitigation and adaptation technologies identified in TNAs, compilations on good practices for South–South and triangular cooperation and for TNAs;

(e) The TEC engaged in processes established by the UNFCCC to support countries' efforts in the development and transfer of climate technologies, such as the technical examination processes on mitigation and adaptation. The TEC connected with other UNFCCC institutions, such as the Marrakech Partnership for Global Climate Action and the Financial Mechanism, to strengthen linkages and foster synergies regarding technology development and transfer;

(f) The involvement and support of the global climate technology community in the work of the TEC has been crucial for achieving meaningful outcomes. The TEC worked closely with its sister body, the Climate Technology Centre and Network (CTCN). The TEC also established collaboration with the United Nations Office for South–South Cooperation, the Green Climate Fund, the Global Environment Facility, the Paris Committee on Capacity-building, the Executive Committee of the Warsaw International Mechanism on Loss and Damage associated with Climate Change Impacts, and other UNFCCC constituted bodies. Furthermore, it has worked throughout the years with United Nations organizations, intergovernmental organizations and non-governmental organizations.

2. The TEC recognizes that cooperation between governments as well as between governments and non-Party stakeholders at different levels presents a large potential for improving and scaling up climate technologies and creating new market opportunities:

(a) From its work on **South–South cooperation**, the TEC observed that current cooperation initiatives need to be enhanced and enable the participation of a higher number

of countries to enhance their relevance, reach and impact – facilitating large-scale deployment of low-emission and climate-resilient technologies – and therefore their contribution to achieving the Paris Agreement and the Sustainable Development Goals. South–South cooperation can complement these efforts, helping countries to build capacity and transfer knowledge on innovating in similar contexts;

(b) Further, the TEC saw many examples of successful South–South and triangular cooperation on technologies for adaptation and mitigation in many sectors, including those prioritized in nationally determined contributions (NDCs), national adaptation plans (NAPs) and TNAs (e.g. energy, agriculture and water). Such collaboration is within reach for all countries;

(c) From its work on **innovation**, the TEC highlighted there is a pressing need to accelerate and strengthen technological innovation so that it can deliver environmentally and socially sound, cost-effective and better-performing climate technologies on a larger and more widespread scale. There are national, regional and international efforts under way to support developing countries in strengthening their national systems of innovation regarding climate technology;

(d) The TEC further emphasized that collaborative research, development and demonstration (RD&D) may play a productive role in helping developing countries to accelerate their action on climate change. Platforms for international RD&D collaboration involving developing countries already exist. However, the current scale of international RD&D collaboration for climate technologies is limited, involving about 30 developing countries and less than 1 per cent of the global RD&D expenditure for agriculture. International collaboration on RD&D may offer benefits such as cost saving, accelerated learning, harmonization of standards and approaches and elimination of duplication.

3. Opportunities for further action on technology development and transfer:

(a) Through its work the TEC observed opportunities for further action on technology development and transfer for countries to speed up and scale up their national efforts to exploit their full potential to reduce emissions and adapt to the impacts of climate change;

(b) On **TNAs** for example, the TEC noted that the priority sectors identified in TNAs do not differ much from those reported by Parties in their NDCs. Therefore, strengthening linkages between the TNA process and the NDC and NAP processes would enhance their effectiveness and responsiveness towards implementation in developing countries. Technology action plans (TAPs) developed as part of the TNA process should be viewed as a platform for NDC and NAP implementation;

(c) South–South and triangular cooperation can be an agile vehicle for advancing the NAP process and the implementation of NDCs, where relevant, in particular through effective knowledge transfer, practical learning and endogenous capacity development for adaptation technologies. Fifteen developing countries highlighted South–South and triangular cooperation in their NDCs as a promising means for supporting the implementation of climate action, complementing national efforts and international support;

(d) On **adaptation**, technologies, for example, in the agriculture and water sectors enhance resilience to climate change and can offer mitigation co-benefits. In applying technologies for adaptation, the significant synergies, trade-offs and co-benefits with mitigation should be considered and pursued;

(e) On **mitigation**, the identification and implementation of adequate mitigation measures in the energy sector often fails because of a number of unaddressed needs and challenges. Among the most important are little awareness of energy efficiency and renewable energy potential, limited access to finance, the need for capacity-building of different target groups, and lack of effective policy and regulatory frameworks. Addressing these barriers would accelerate the widespread use of the technologies;

(f) On **technological innovation**, incubators and accelerators may play an important role in addressing the challenges faced by small firms and entrepreneurs;

(g) On **climate technology financing**, the promotion of enabling environments conducive to climate technology financing and investment that are long-lasting, loud and legal needs to be continuously encouraged;

(h) The TEC appreciates that its composition has progressed over time in terms of gender balance and women leadership.

II. Where do we want to go?

4. The future work of the TEC will need to consider technological solutions that can help countries to achieve the purpose of the Paris Agreement as guided by the technology framework:

(a) Environmental sound and socially acceptable climate technologies for mitigation and adaptation will play an important role in the implementation of NDCs and NAPs for all countries to realize the transformational changes envisioned in the Paris Agreement;

(b) In this regard, the future work of the TEC will need to consider technological solutions that can help countries to implement the Paris Agreement, which may include available technologies, indigenous knowledge and technologies, endogenous, innovative and new technologies for adaptation and mitigation. The co-benefits, opportunities, risks and social, economic and environmental impacts of such technologies will need to be taken into consideration;

(c) The TEC should contribute to increasing resource efficiency and strengthening cooperation among various actors, such as governments, the private sector, financial institutions and the scientific community in the field of climate technology development and deployment.

III. How do we get there?

5. The TEC is of the view that governments and non-Party stakeholders must step up efforts to accelerate the deployment of emerging technologies and innovative solutions to support the transformational changes envisioned in the Paris Agreement. The TEC will facilitate its engagement in these activities with stakeholders:

(a) Measures should be adopted for **scaling up the deployment of viable technologies** that encompass and address regulatory, financial, technical and societal aspects:

(i) Enhanced financial, technical and capacity-building support are needed to facilitate the implementation of TAPs and updating of TNAs, which will bring economic, environmental and social benefits to countries. Further funding to conduct TNAs and implement TNA results, beyond the current scope of the global TNA project funding, is encouraged;

(ii) Cooperation between countries could help them to implement the results of TNAs, beyond the current technical support provided and beyond the current scale of implementation. Such cooperation may include information-sharing on regional implementation of environmentally sound adaptation and mitigation technologies, related success stories, lessons learned, opportunities and challenges;

(iii) Engaging the financial and business community at the international and national level, at an early stage, is crucial to enhancing access to financing for technology development and transfer. The government plays a key role in fostering private sector involvement by designing and implementing policies, regulations and standards that create enabling environments and favourable market conditions for climate technologies;

(iv) Facilitating the involvement of the research community and civil society in the development and testing of low-emission and climate-resilient technologies is fundamental to accelerating the transition to a low-carbon economy;

(b) **New and innovative technologies** are needed to accelerate the transition towards low greenhouse gas emissions and climate-resilient development:

(i) National systems of innovation play a central role in supporting Parties in undertaking efficient and effective technological change in response to climate change. Strengthening them provides an effective and efficient way to enhance national capacity to address climate change;

(ii) Governments can accelerate efforts to meet climate challenges by increasing public expenditure on climate technology RD&D. To stimulate private RD&D spending, governments can provide a clear policy signal of long-term commitment to reducing greenhouse gases and building resilience to climate change. They can furthermore strengthen enabling environments that accelerate private investment;

(iii) Governments can also ensure that investments in national technological innovation are aligned with national priorities and effective in the context of broader economic and social development;

(iv) Collaborative RD&D should be promoted as a way to share knowledge and experience between developed and developing countries, including through North–South and South–South collaboration, in order to meet the technology needs of developing countries;

(v) Attention should be paid to the creation of an inclusive innovation process that involves all key stakeholders, facilitating the incorporation of diverse and relevant expertise, knowledge and views and generating awareness of the benefits and impacts. Indigenous and local knowledge and technologies should be incorporated into national innovation systems;

(vi) There are estimated to be around 2,000 technology incubators and 150 accelerators worldwide. However, fewer than 70 are estimated to be climate technology incubators and accelerators, and just 25 of the 70 are in developing countries. There is a need to develop a greater understanding of why there is such a limited number of climate technology incubators and accelerators in developing countries, given the potential benefits. There is also a need to gather more information on the impact of the existing climate technology incubators and accelerators in developing countries;

(c) It is important to ensure sustainable, predictable and sufficient funding for the two bodies of the **Technology Mechanism**, the TEC and the CTCN, for them to continue implementing their functions to support countries in accelerating the development and transfer of climate technologies and the implementation of climate policies;

(d) Strengthening the link with both the **Technology Mechanism and the Financial Mechanism** is also important, particularly increasing the existing collaboration between the TEC, the CTCN and the Green Climate Fund with respect to exploring ways of catalysing finance for climate technology incubators and accelerators in developing countries.