

## Monitoring and Evaluation of the work of the Technology Mechanism: Results of the Third UNFCCC Survey for National Designated Entities

### I. Introduction

#### A. Background

1. COP 23 requested the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN) to undertake the monitoring and evaluation of the impacts resulting from the implementation of their respective mandates.<sup>1</sup>

2. In 2019, the TEC and CTCN agreed to jointly develop a monitoring and evaluation system<sup>2</sup> (hereinafter referred to as the M&E system) to report on activities conducted under the Technology Mechanism. As a part of this effort, both bodies also agreed to conduct a biennial survey of National Designated Entities (NDEs) and collect ex-post impacts of the support provided, in order to assess the activities and contributions of the TEC and CTCN in facilitating technology development and transfer, as well as addressing transformational changes envisioned in the Paris Agreement.

3. COP 25 welcomed the coherent approach of the TEC and the CTCN in developing and enhancing their M&E system and encouraged them to utilize these systems to improve reporting on the outputs and impacts of their work and facilitate the achievement thereof.<sup>3</sup>

4. The first NDE survey was jointly conducted in July 2020. The survey results were presented at the respective meetings of each body, namely at TEC 23<sup>4</sup> and the 21st meeting of the CTCN Advisory Board.<sup>5</sup>

5. The second NDE survey was conducted in 2022, with the survey disseminated between April and July 2022. The results were presented at the joint session of the TEC and CTCN Advisory Board held in conjunction with TEC 25 and the 20th Advisory Board meeting.<sup>6</sup>

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<sup>1</sup> See decision 15/CP.23, paragraph 5.

<sup>2</sup> Available at: <https://unfccc.int/ttclear/tec/documents.html> CTCN M&E system available at: [https://www.ctc-n.org/sites/default/files/resources/ctcn\\_me\\_system.pdf](https://www.ctc-n.org/sites/default/files/resources/ctcn_me_system.pdf).

<sup>3</sup> See decision 14/CP.25, paragraph 3.

<sup>4</sup> See document TEC/2021/23/14

<sup>5</sup> <https://www.ctc-n.org/calendar/events/17th-ctcn-advisory-board-meeting-opening-unfccc-executive-secretary-patricia>.

<sup>6</sup> <https://www.ctc-n.org/calendar/events/20th-ctcn-advisory-board-meeting-9-14-september-2022>.

6. COP 27 requested the TEC and CTCN continue enhancing their efforts to monitor and evaluate the impacts of their work, including by identifying new ways to invite feedback from NDEs on the impact of the work of the Technology Mechanism.<sup>7</sup>

7. At the joint session of the TEC and CTCN Advisory Board held in conjunction with TEC 28 and the 23rd Advisory Board meeting, the Secretariats of the TEC and CTCN presented an enhanced approach for implementing the third NDE survey. This approach included targeting both Non-Annex I and Annex I NDEs, refining the framing and scope of the questions, adopting a more targeted and coordinated approach to outreach efforts, and enhancing survey dissemination strategies to increase the response rate, including utilising regional NDE forums for survey distribution.

## **B. Scope of the note**

8. The TEC and CTCN Secretariat conducted the third NDE survey from May to August 2024. This note presents the survey results (see annex). The first section outlines the strengthened methodology used to design and implement the survey, followed by an analysis of the survey responses related to the CTCN, and a final section on the analysis of responses related to the TEC.

## **C. Possible action**

9. The TEC and the CTCN Advisory Board will be invited to take note of the information provided and discuss the results for possible follow-up action as relevant.

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<sup>7</sup> See decision 18/CP.27, paragraph 11.

## Annex 1

# Monitoring and Evaluation of the work of the Technology Mechanism: Results of the UNFCCC Survey for National Designated Entities

## I. Background

### A. Introduction

1. In response to mandates from the COP and CMA, the TEC and CTCN jointly developed a monitoring and evaluation system (hereinafter referred to as the M&E system) to report on activities conducted under the Technology Mechanism. As a part of this effort, both bodies agreed to conduct a biennial survey of National Designated Entities (NDEs).
2. The first survey was implemented in 2020, followed by a second in 2022.
3. At COP 27 in November 2022, Parties requested that the TEC and CTCN continue to enhance their efforts to monitor and evaluate the impacts of their work, including by identifying new ways to invite feedback from NDEs on the impact of the work of the Technology Mechanism.
4. In response, the TEC and CTCN developed an enhanced approach the third NDE survey, taking into account lessons learned from previous surveys. This approach included targeting both Non-Annex I and Annex I NDEs, refining the framing and scope of the questions, adopting a more targeted and coordinated approach to outreach efforts, and enhancing survey dissemination strategies to increase the response rate, including utilizing regional NDE forums for survey distribution.
5. The third NDE survey was disseminated to NDEs between May and August 2024, with results analysed in August 2024.

### B. Objective

6. The objective of the survey is to gather insights and feedback from NDEs, who serve as the national focal points for technology development and transfer. The survey aims to evaluate the ex-post impacts of the support provided by the CTCN and the TEC, in order to assess the activities and contributions of both bodies in facilitating technology development and transfer, as well as addressing transformational changes envisioned in the Paris Agreement. Finally, the survey aims to gain a clear understanding of the challenges and opportunities faced by NDEs, enabling the Technology Mechanism to learn, improve and deliver more effective support.

### C. Methodology

#### (a) Survey Design

7. The survey questionnaires were created in both online (Microsoft forms) and offline formats (i.e., Word document), and translated into English, French and Spanish. Responses were collected from May to August 2024.

**1. Awareness of the role of NDEs:**

(a) For Non-Annex I NDEs, the survey assessed awareness on their roles and sought to identify gaps and highlight best practices related to the operationalization of the NDE role at country level;

(b) For Annex I NDEs, the survey assessed their awareness of their roles and gathered donor perspectives and expectations.

**2. Impacts of the CTCN services provided:**

(a) For Non-Annex I NDEs, the survey assessed the long-term impacts of CTCN services, across all three areas – technical assistance, capacity building and knowledge sharing – with a focus on aggregated impact indicators within the CTCN M&E system;

(b) For Annex I NDEs, the survey assessed whether their Party's financial contribution to the CTCN (if applicable) met expectations, addressed priorities, and explored their willingness for future support.

**3. Impacts of the TEC services provided:**

(a) The same survey questions applied to Annex I and Non-Annex I NDEs which evaluated the long-term impacts of TEC services, including the use of TEC policy briefs in shaping national policy development.

8. Key differences between the surveys conducted in 2022 and 2024 include an expanded scope of the questions (See annex 1 for a detailed comparison of the NDE surveys conducted in 2022 and 2024). Indeed, the 2024 survey included self-evaluation by NDEs regarding their roles and potential actions. It used the CTCN document on the 'Roles and Responsibilities of Annex I and Non-Annex I NDEs' as a reference for designing the questions.

9. NDEs were asked to evaluate their environment across four dimensions: 1) capabilities and skills; 2) resources; 3) awareness and information; and 4) political influence. Furthermore, the expanded scope of the survey also included additional questions specifically relevant to the CTCN. For Non-Annex I Parties, the survey covered CTCN capacity building and knowledge sharing activities, in addition to technical assistance. For Annex I countries, the survey included questions about financial, in-kind and pro-bono contributions.

**(b) Target Respondents**

10. In addition to targeting Non-Annex I NDEs, the survey introduced a new feature which was to also include questions targeting Annex I NDEs. Survey responses from Annex I NDEs indicate that the majority of responses came from NDEs already engaged with CTCN activities, either as Advisory Board members or as donors to the CTCN.

11. Contact information for NDEs was obtained from the list maintained by the CTCN secretariat, which can be accessed on the CTCN website.<sup>1</sup> Additionally, the CTCN Technical Assistance teams provided updated contact details for newly nominated NDEs.

12. Survey responses were collected from a total 74 NDEs (out of 166 NDEs total), resulting in a response rate of 46%. This is close to the target response

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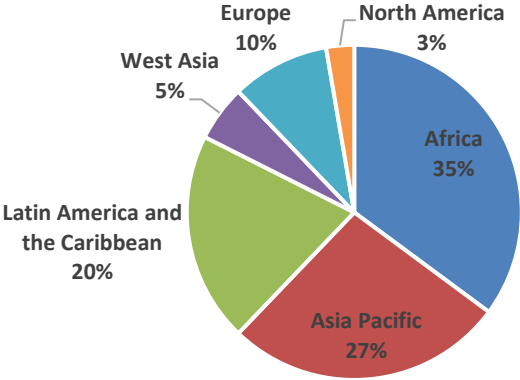
<sup>1</sup> <https://www.ctc-n.org/about-ctcn/nde>.

rate of 50% and represents an 18% increase compared to the survey conducted in 2022.

Table 1  
Survey response statistics (as of August 7th, 2024)

NDEs	# of surveys sent	# of survey responses	# of online responses	# of offline responses
Annex 1	28	11	8	3
Non-Annex 1	138	63	47	16
Total	166	74	Response rate: 45%	

Figure 1  
Regional distribution of NDE respondents to the survey



(c) **Distribution of survey**

13. An initial mass email was sent to all NDEs. Following this, CTCN’s regional teams sent 2-3 reminder emails, encouraging new NDEs to consult with their predecessors if necessary.

14. Furthermore, the CTCN NDE forums organized dedicated sessions to assist NDEs in completing the survey. These combined online and in-person follow-up strategies helped boost the survey response rate.

## II. Survey results

### A. Overview and Survey Results Relevant to the CTCN and the TEC

#### 1. Responses from Non-Annex I NDEs:

##### (a) Awareness of NDE roles among ministries and/or organizations, and their level of stakeholder engagement (Q3)

15. NDEs generally perceive their ministries or organizations as moderately informed about their roles and somewhat engaged with relevant in-country stakeholders.<sup>1</sup> While there is a reasonable level of awareness and engagement, the rating suggests that there is room for improvement in both areas to enhance the effectiveness of stakeholder interactions and the overall understanding of NDE roles (see Annex 3, Figure 2). When looking at the geographical split, it is notable that the Latin America and Caribbean region has the lowest average rating of 5.8 while the Africa region has the highest average rating of 7.1 in terms of their perception of their ministry's/organization's awareness of the NDE role and their level of engagement with stakeholders.

##### (b) Main challenges faced by NDEs in accessing and utilizing climate technologies (Q6):

16. The two primary barriers identified by NDEs in accessing or utilizing climate technologies are: 1) **Insufficient capacity** due to a lack of human resources, technical expertise, and a skilled workforce necessary for identifying, selecting, deploying, and maintaining climate technologies; and 2) **financial constraints**, encompassing both limited resources for investing in these technologies and challenges in accessing international funding mechanisms such as loans, grants, and private sector investment

17. Additionally, NDEs reported significant barriers such as inadequate institutional frameworks, policy and regulatory gaps and limited institutional collaboration for climate technology development and transfer, as well as limited access to information and public awareness about climate technologies and their benefits (see Annex 3, Table 5)

##### (c) Measures which governments can adopt to strengthen support for NDEs (Q5):

18. The most frequent categories of response to the question on how governments can enhance support for NDEs is that governments could facilitate engagement with key in-country stakeholders, including with the private sector (see Annex 3, Table 6). For example, governments could:

(a) **Foster collaboration** between NDEs, research institutions, relevant ministries, and the private sector to ensure a unified approach to technology transfer.

(b) **Establish clear communication channels** between NDEs and key entities such as the CTCN and other global climate funds to ensure smooth information exchange and efficient processing of requests.

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<sup>1</sup> Average response of 6.7 on a scale from 1 to 10.

(c) **Develop and implement supportive policies** for clean technologies, to promote the adoption and scaling of climate technologies.

19. NDEs also suggested that governments could **provide financial support** to ensure NDEs have adequate staffing and operational capacity for requesting and implementing technical assistance projects; to facilitate the organization of periodic meetings and the establishment of technical committees; to enhance the visibility of their work; and to support their capacity building.

20. Finally, NDEs also suggested that governments could enhance their support **by increasing awareness of the NDEs' roles** and integrating these roles into institutional frameworks.

(d) **Perceived governance and influence of ministries on climate technology decisions (Q4)**

21. NDEs view the governance and political influence of line ministries in climate technology decisions as moderately strong.<sup>2</sup> While the score reflects a reasonable level of effectiveness in governance and influence, it also indicates that there are areas where these ministries could enhance their role to more significantly impact the development, transfer, and deployment of climate technologies (see Annex 3, figure 3).

22. When looking at the geographical split, Latin America and Caribbean and West Asia both have an average rating of 6.0 while the Africa region has the highest average rating of 6.9 in terms of the perceived governance and influence of its line ministries in climate technology decisions.

(e) **Key sectors/areas needing additional support for climate technology development and deployment (Q7)**

23. NDEs identified several key sectors where additional support and resources that are crucial for enhancing technology development, transfer, and deployment (see Annex 3, Table 7 for a detailed table):

(a) **Renewable Energy:** Many countries emphasize the need for support in renewable energy technologies, including solar, wind, and hydropower. There is a common focus on increasing investment, improving infrastructure, and integrating these technologies into the national energy mix.

(b) **Agriculture and Food Security:** There is also a call for support in agriculture, particularly in adopting climate-smart practices, improving irrigation, and enhancing food security. This includes support for precision agriculture, drought-resistant crops, and sustainable land management.

(c) **Water Resources Management:** Countries are seeking help with technologies and systems for better water management, including efficient irrigation, desalination, and water purification. This reflects a broad concern about water scarcity and quality issues exacerbated by climate change.

(d) **Climate Resilient Infrastructure:** Several responses highlight the need for developing infrastructure that can withstand climate impacts. This includes upgrading infrastructure to be more resilient to extreme weather events, sea-level rise, and other climate-related hazards.

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<sup>2</sup> Average response of 6.5 on a scale from 1 to 10.

(e) **Waste Management:** Support for improving waste management practices, including recycling, waste-to-energy technologies, and better solid and liquid waste management, is mentioned.

(f) **Forestry and Land Use:** Support is sought for sustainable forest management, reforestation, and land use practices that can sequester carbon and preserve biodiversity.

(g) **Technology Innovation and R&D:** Some responses indicate a need for increased investment in research and development to foster innovation in climate technologies. This includes advancing new technologies and improving existing ones.

(h) **Sector-Specific Needs:** Some countries mentioned other sectors such as transportation, coastal protection, and energy efficiency in industries.

(i) **Capacity Building and Training:** There is also an emphasis on building local expertise and capacity through training programmes. Countries need support in developing skills related to technology implementation, project management, and proposal development for accessing climate funds.

## 2. Responses from Annex I NDEs:

### (a) Annex I NDE Resources and Opportunities to Facilitate Technology Transfer and Deployment (Q3)

24. Annex 1 NDEs feel their resources and opportunities, such as budget, time, and political support, are moderately sufficient for facilitating technology transfer and deployment.<sup>3</sup> This could indicate that while there are some resources and opportunities available, they may be inadequate or inconsistent (see Annex 3, Figure 4).

### (b) Awareness of Annex I NDE roles among ministries and/or organizations, and their level of stakeholder engagement (Q4)

25. Annex 1 NDEs view their ministries or organizations as somewhat informed about their roles and moderately engaged with in-country stakeholders.<sup>4</sup> While there is some awareness and engagement, there is room for improvement to ensure that ministries and organizations are fully aligned with NDE roles and actively interacting with all relevant stakeholders (see Annex 3, figure 5).

### (c) Measures which governments can adopt to strengthen support for Annex I NDEs (Q6)

26. Annex I NDEs suggested that their governments could enhance coordination, provide financial support, and strengthen capacity building while involving multiple stakeholders in climate technology initiatives to further bolster support for NDEs. Specifically, Annex 1 NDEs highlighted the following areas where their governments can provide support:

(a) **Improving coordination** between CTCN-supported Technical Assistance and bilateral and multi-lateral initiatives, as well as enhancing communication between the CTCN secretariat and other agencies.

(b) **Promoting collaboration** with the CTCN and other bodies on joint initiatives, joint capacity-building activities, and participation in events like Climate Weeks and Conferences.

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<sup>3</sup> Average response of 5.5 on a scale from 1 to 10.

<sup>4</sup> Average response of 5.7 on a scale from 1 to 10.



(c) Emphasizing the importance of **financial contributions** to support CTCN initiatives and the financing of joint initiatives. Allocating more resources to NDEs to explore CTCN possibilities and communicate with potential stakeholders that can contribute while also having the time to explore and clearly communicate pathways for scaling up successful projects beyond the CTCN phase (e.g. Art 6; Beyond the grid; GCF, Worldbank etc.).

(d) **Participating in International Bodies for the Technology Transfer**, promoting technology transfer such as electing representatives to sit on the TEC or CTCN Advisory Board;

(e) Establishing institutional, organizational, and governance **infrastructures for global technology cooperation** that actively utilize the UNFCCC Technology Mechanism. Establishing governmental strategies, roadmaps, plans, and laws to empower and guarantee the roles of the NDE.

(f) Gathering information on technologies that companies are interested in deploying in developing countries and facilitating their introduction.

(g) Involving companies, consultants, and research institutes in CTCN projects and exploring opportunities for their participation.

(h) Supporting regulatory and institutional frameworks that facilitate the adoption and transfer of clean technologies.

(i) Engaging in resource mobilization activities

Box 1: Example of Government Support for the NDE Role in the Republic of Korea <sup>5</sup>

In 2015, the Korean NDE prepared the “Global Technology Cooperation Strategy in response to Climate Change.” In 2016, it formulated the “NDE Technology Cooperation Strategy for the New Climate Regime,” and in 2017, it developed the “Climate Technology Roadmap (CTR),” which outlines the role of NDE in collaboration with the Technology Mechanism. In April 2018, the Korean NDE prepared the “Mid- to Long-term Implementation Plan for Climate Technology Cooperation” for 2018 to 2030. Additionally, in April 2021, the Korean NDE enacted “Technology Development Promotion Act in Response to Climate Change,” providing a systematic legal basis for facilitating climate technology development and transfer.

In terms of an organizational setting, in February 2016, the Korean Ministry of Science and ICT (MSIT) established the Climate Technology Cooperation Team as a dedicated organization to fulfil the role of NDE. Also, the National Institute of Green Technology (NIGT), a government-funded research institute, supported the work of the Korean NDE. Recognizing the role of CTCN network members, the Korean NDE held several global climate technology cooperation meetings in 2016, inviting government-funded science and technology research institutes and specialized universities to introduce the work of the CTCN, encourage them to join the CTCN network, and explore opportunities to participate in CTCN technical assistance (TA) projects. Since 2016, the CTCN Consultation meeting has been held regularly at least twice a year to share information, cultivate the capacity of Korean CTCN members for project development and implementation in the field of climate technology, and expand their engagement in other global activities.

<sup>5</sup> For the NDE survey, the Republic of Korea was invited to respond to questions directed at Annex 1 NDEs, given its role as a donor supporting the CTCN rather than as a recipient of CTCN technical assistance or capacity building services.

In terms of project support, the Korean NDE has played a coordinating role in helping technology holders in Korea to pursue and undertake the CTCN technical assistance projects in developing countries, collaborating with developing country NDEs and the CTCN secretariat. To provide more opportunities for Korean network members to participate in CTCN technical assistance projects and meet the technology support demands of developing countries, the Korean NDE explored pro bono technical assistance services in collaboration with the CTCN secretariat.

(d) **Perceived governance and influence of ministries on climate technology decisions (Q5)**

27. Annex 1 NDEs generally perceive their line ministries as having strong governance and significant political influence in decisions related to the development, transfer, and deployment of climate technologies.<sup>6</sup> Ongoing efforts to maintain and enhance this influence could further strengthen the impact on climate technology outcomes (see Annex 3, Figure 6).

(e) **Main challenges in accessing and utilizing climate technologies (Q7)**

28. The main challenges mentioned by Annex I NDEs in accessing and utilizing climate technologies are:

(a) **Access to materials:** Difficulty in obtaining materials needed to construct climate technologies.

(b) **Alignment of financial flows:** The challenge of aligning financial resources, including those from the private sector, with the goals of the Paris Agreement.

(c) **Lack of resources and capacities:** Limited financial and human resources to support the deployment and utilization of climate technologies.

(d) **Technological uncertainty:** Challenges related to the uncertainty of new or newly deployed climate technologies, including their mitigation effects and overall reliability.

(e) **Financial challenges:** High costs associated with some climate technologies and difficulties in securing sufficient funding.

(f) **Social acceptance:** Challenges in gaining social acceptance for new climate technologies within local communities.

(g) **Impact of conflict:** War or conflict situations hindering the ability to access and utilize climate technologies.

(h) **Technical assistance and knowledge sharing:** Difficulties in effectively providing and receiving technical assistance, including the sharing of best practices, setting up and implementing relevant regulations, and adjusting infrastructure to support new climate technologies.

(f) **Best practices and success stories in climate technology (Q9)**

29. Annex I NDEs shared the following suggestions and best practices highlighting effective approaches in funding, policy, capacity building, and international collaboration to advance climate technologies:

(a) **Utilizing funding programmes and innovation funds,** such as Horizon Europe, to support climate action and technology development.

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<sup>6</sup> Average response of 7.3 on a scale from 1 to 10.

(b) Implementing projects that **combine capacity building with market development** for energy-efficient products and exploring integration with platforms like the CTCN.

(c) Establishing national programmes to **support applied research and innovation** in climate action, including significant financial commitments and long-term objectives.

(d) **Leveraging national laws and policies** to promote energy efficiency, green transformation, and the development of hydrogen and fuel ammonia technologies.

(e) **Sharing experiences** in deploying variable renewable energy and improving infrastructure through peer-to-peer learning with international partners.

(f) **Engaging in pro bono technical assistance projects** that provide support for introducing low carbon technologies and leveraging outcomes to secure further funding and support through mechanisms like the GCF.

(g) **Developing comprehensive policy action plans for technology adoption** and exploring opportunities for future financing through international climate finance mechanisms.

(h) **Leading global initiatives to phase out harmful technologies**, such as SF6 in electricity infrastructure, and promoting the adoption of SF6-free and other net-zero technologies.

(i) **Fostering international collaboration** in areas like net-zero emission materials, buildings, transport, and waste solutions, and addressing challenges in hard-to-abate sectors.

## B. Survey Results Related to the Work of the CTCN

### 1. Responses from Non-Annex I NDEs:

#### (a) NDE Capacity, Resources, and Opportunities to Develop and Monitor CTCN Technical Assistance Projects (Q1, Q2)

30. A majority of the NDEs (61%) feel they have above-average capacity and skills to develop and monitor CTCN Technical Assistance projects, indicating a generally high level of technical competence among the respondents.

31. Despite the strong technical capacity, over half of the NDEs (56%) report having below-average resources and opportunities (such as budget, time, and political will) to develop these projects. **This suggests that while NDEs may have the necessary skills, their ability to effectively utilize these skills is hindered by a lack of resources.**

#### (b) CTCN Technical Assistance received in the Past 5 Years (Q9, Q10)

32. 69% of survey respondents (43 NDEs) reported that their country had received technical assistance from the CTCN in the past five years. Among these, over half received between 1 to 3 instances of support; 33% received between 4 to 6; 12% received between 7 to 9; and only one NDE reported receiving more than 9 instances of technical assistance during this period.

#### (c) Challenges and obstacles in receiving Technical Assistance (Q42).

33. For those NDEs who did not report having received at least one technical assistance in the past 5 years they provided information on the major barriers in receiving assistance.

34. Overall, NDE responses reveal that while many countries face barriers related to capacity, awareness, process complexity, funding, and coordination, addressing these issues through improved support, clearer procedures, and better communication could enhance access to CTCN's technical assistance. The following barriers were identified:

(a) **Capacity Constraints:** several countries reported that their National Designated Entities (NDEs) are understaffed, which affects their ability to effectively engage with CTCN and manage technical assistance. Some NDEs mentioned insufficient technical expertise within national institutions as a barrier.

(b) **Lack of Awareness and Knowledge about the CTCN:** Several countries (highlighted a lack of understanding about the CTCN's services, processes, and opportunities as a significant obstacle and reported limited knowledge about the existence of technical assistance or how to access it.

(c) **Long and Complex Processes:** Some countries, experienced delays in receiving responses from the CTCN. Countries expressed they faced challenges with the time-consuming and complicated procedures for applying for technical support.

(d) **Funding and Resource Constraints:** Several countries mentioned issues with securing adequate funding to support the implementation of technical assistance or to co-invest in projects. Some countries indicated a need for more financial support from CTCN to complement their technical assistance.

(e) **Coordination and Collaboration:** Limited coordination among various stakeholders was identified as a barrier in some countries with limited engagement and collaboration between different entities, such as government and private sector.

(f) **Context-Specific Constraints:** Some countries face unique challenges due to ongoing conflict and political instability, which hinder their ability to access and utilize technical assistance effectively. Geographic or environmental factors that complicate the implementation of climate technologies were also mentioned in some cases.

#### Examples of challenges faced by NDEs

*Not knowing the application processes, as well as the time it may take to access them."*

*"Buy-in from government entities and the understanding that the NDE just facilitates access to technical assistance whilst the line ministries should be responsible for implementation after the CTCN TA"*

*"The limited resources of the CTCN and on the other hand the lack of financial resources for the NDE, in order to be able to reach all stakeholders in the process of strengthening the resilience of populations. Due to lack of financial resources, the NDE can never go to meet the populations of the interior of the country."*

(d) **Need for Updating Nationally Determined Contributions (NDCs) and Technology Needs Assessments (TNAs)**

35. Overall, NDE responses show a high demand for assistance with updating both NDCs and TNAs. The most common need among countries is support for updating both their NDCs and TNAs, with 28 countries indicating this need. More countries need support for updating their NDCs alone (14) compared to those needing only TNA updates (10). A small number of countries (4) do not require support for either updating NDCs or TNAs.

(e) **Analysis of the Most Impactful Technical Assistance Projects Selected by NDEs (Q11).**

36. The following sections (f – j) offer a detailed analysis of the impact of the support received by 43 countries where NDEs reported having received at least one technical assistance in the past 5 years (2 countries did not specify a project title). See Annex 3, Table 9 for a full list of the technical assistance projects selected for analysis.

(f) **Implementation of Recommendations and Next Steps After Technical Assistance Completion (Q12, Q13)**

37. Among the 43 countries who received technical assistance support from the CTCN, 56% reported being aware of the implementation of recommendations and next steps related to the analyzed technical assistance projects.

38. The recommendations being implemented primarily fall into categories such as **policy and regulatory development** (e.g., Minimum Energy

Performance Standards, climate change portals), **project and technology scaling** (e.g., SLAMDAM technology in Burundi, e-mobility in Zimbabwe), and **resource mobilization and planning** (e.g., GCF proposals, coastal resilience projects in Panama). Many countries are focusing on integrating these recommendations into national strategies and securing funding for broader implementation.

Table 2  
Summary of implemented recommendations

Country	Summary of Implemented Recommendations
<b>Botswana</b>	Development of Minimum Energy Performance Standards (MEPS) and Monitoring, Verification, and Enforcement (MV&E) procedures approved and gazetted.
<b>Burundi</b>	Prepared a project to scale up SLAMDAM technology for flood and drought resilience, currently in the funding mobilization phase.
<b>Chile</b>	Integration of results from the TNA into Chile's sectoral climate change mitigation and adaptation plans is being managed.
<b>Congo Kinshasa</b>	New technical assistance requests are being made.
<b>Cook Islands</b>	Integrated TNA adaptation recommendations into two GCF proposals, with one approved in 2023.
<b>Côte d'Ivoire</b>	Established an official climate change portal as a result of technical assistance.
<b>Eswatini</b>	Developing regulations to enforce MEPS for Refrigerators and Distribution Transformers, with local standards confirmed by the Eswatini Standards Authority (SWASA).
<b>Ghana</b>	Partial implementation by the Water Resources Commission, with ongoing GCF proposal development.
<b>Haiti</b>	Developed Technology Action Plans for climate adaptation and mitigation, with ongoing efforts to mobilize resources for implementation.
<b>Jamaica</b>	Implementing a project on mapping and research of food security risks due to climate change, developed from a Research Agenda.
<b>Mauritius</b>	Implementing a public-private partnership for a waste-to-energy project, with agreements on project documentation and additional consultancy services secured.
<b>Mexico</b>	Developed a design for a construction and demolition waste marketplace, now part of a digital waste management application under development.
<b>Namibia</b>	Enforcing appliance standards at borders to ensure compliance with MEPS.
<b>Panama</b>	Developed a database on coastal marine dynamics, aiding in resilience planning and ongoing local-scale analysis of sea level rise.
<b>Papua New Guinea</b>	Promoted electric mobility through stakeholder workshops and is seeking further support for policy rollout.

Country	Summary of Implemented Recommendations
Saint Kitts and Nevis	Enhanced meteorological forecasts for farmers, improving decision-making processes.
Solomon Islands	Secured GEF funds to implement a project from the technical assistance.
Thailand	Extended technical assistance to the GCF Readiness Program, seeking further support for comprehensive implementation.
Tunisia	Planned meetings to assess the impact of a project and discuss the potential for scaling the technology across the country.
Uruguay	Developed a coastal impact assessment, forming the basis for Uruguay's National Adaptation Plan for the Coastal Zone.
Zambia	Adopted MEPS and HEPS, but lacked funds for comprehensive stakeholder engagement; ongoing complementary programs are in place.
Zimbabwe	Developed a Policy Framework and Roadmap for e-mobility, leading to procurement of e-buses and securing funding for further interventions.

(g) **Evaluation of CTCN Technical Assistance Contribution to Enabling Environments (Q14-Q22)**

39. NDEs were asked to evaluate, on a scale from 1 (Not Applicable) to 5 (Significant), the extent to which CTCN technical assistance contributed to various aspects of enabling environments for climate technology transfer, dissemination, and upscaling.

40. Overall, the responses highlight that CTCN technical assistance can have varying levels of impact depending on how well it aligns with national priorities, the quality of implementation, and the existing capacity of the recipient country. Countries with strong policy frameworks, technical capacities, and stakeholder engagement tend to achieve more significant results. In contrast, challenges remain in some areas where technical assistance has not yet fully translated into substantial improvements.

41. Impacts on the enabling environments:

(a) **High Impact Areas:** Several countries experienced significant benefits from CTCN technical assistance, particularly in strengthening policy and regulatory frameworks, boosting technical capacities, and enhancing information and awareness. For example, Jamaica and Tunisia saw notable advancements in their policy frameworks and technical skills. Similarly, countries such as Chile and Laos reported improvements in policy development and technical capacities, with progress in scaling up climate technologies.

(b) **Moderate Impact Areas:** Many countries saw moderate advancements in areas like market conditions, institutional capacity, and the ability to secure additional funding. For instance, Botswana and Honduras made notable progress, although there were still significant areas with limited impact. This suggests that while some improvements were achieved, further efforts are needed to address existing challenges and enhance effectiveness.

(c) **Limited or Low Impact:** Certain countries, including Nauru and Senegal, reported minimal or no contributions from the technical assistance,

indicating possible issues with the alignment or execution of the support provided. Additionally, countries like the Cook Islands and Honduras encountered difficulties in realizing significant impacts, potentially due to gaps in implementation or a mismatch between the assistance and local needs.

42. Key Success Factors:

(a) **Policy and Regulatory Frameworks:** Effective interventions were often linked to improvements in national policy frameworks, as seen in Tunisia and Jamaica.

(b) **Technical and Institutional Capacities:** Countries like Mauritius and Laos benefited from enhanced technical skills and institutional knowledge, showcasing the importance of capacity building.

(c) **Information and Awareness:** Several countries noted improvements in information dissemination and public awareness, highlighting the role of CTCN in enhancing climate technology understanding.

*“ Technical assistance that supports pilot projects enables populations to measure the impact of new climate technologies. This approach can significantly improve lives at a relatively low cost, as successful pilots can lead to widespread adoption. Concrete actions through technology implementation will help build confidence and demonstrate the benefits to all stakeholders.”*  
 - NDE of Senegal

(h) **Impact on Leveraging Additional Funding or Investment (Q23, Q24)**

43. Thirty-three percent of NDEs reported that the technical assistance provided had a positive impact on securing additional funding or investment. The substantial role of international funds, such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF), underscores their importance in supporting and scaling climate technology initiatives. Additionally, contributions from national governments also played an important role.

Table 3

**Summarizing information on whether and how CTCN technical assistance helped leverage additional funding or investment**

Country	Funding or Investment Leveraged
Burundi	Technical and financial support has opened avenues for future funding; Adaptation Fund in progress.
Congo - Kinshasa	New projects in agriculture, energy, and forestry seeking GCF support.
Cook Islands	Approval for GCF Readiness and PPF.
Côte d'Ivoire	\$11,320 from the country's government.
Gambia	GCF support significantly impacted project implementation.



Country	Funding or Investment Leveraged
Georgia	Concept note in progress for GCF funding.
Liberia	Funding from GCF, Adaptation Fund, GEF, etc.
Maldives	Government resources and support provided for scaling up.
Papua New Guinea	Over \$400,000 from GCF for e-mobility assistance.
Solomon Islands	Approximately \$2 million from GEF.
Thailand	GCF Readiness Program, awaiting full support from GCF.
Zambia	\$347,838 from GCF Readiness Support Funds.
Zimbabwe	\$2.3 million from GEF-8 STAR allocation; ~\$2 million for project activities.

(i) **Sustainability of Technical Assistance Impact on Climate Change Mitigation and Adaptation (Q38)**

44. NDEs were asked how likely is it that the impact of this technical assistance on climate change mitigation and adaptation can be sustained over time. Overall, financial integration (how well a project or initiative can incorporate or leverage financial mechanisms and resources to support its ongoing operations and scalability.), policy support, local engagement, and self-sustaining systems (systems or projects designed to generate enough resources or benefits to maintain themselves without ongoing external support) are key factors contributing to the long-term sustainability of technical assistance impacts. Conversely, challenges related to budgeting, implementation, and the need for ongoing capacity building are significant factors that can affect sustainability

45. More specifically, the following trends emerge in terms of the likelihood of sustaining the impact of CTCN technical assistance:

(a) **Integration with Financial Mechanisms:** Countries such as Bangladesh and Cook Islands expressed a high likelihood of sustaining impact due to their integration with financial mechanisms like carbon finance and proposals for funding under development. This indicates that leveraging financial support enhances the sustainability of CTCN technical assistance outcomes.

(b) **Government and Policy Support:** Countries like Botswana and Chile highlight that robust policies and alignment with sectoral adaptation and mitigation plans may contribute to long-term sustainability.

(c) **Adaptation Focus:** Countries such as Mozambique and Namibia that focus on adaptation and specific technological solutions show somewhat of a higher likelihood of sustained impact. This could indicate that adaptation-focused initiatives, particularly those tailored to local needs can provide lasting benefits.

(d) **Institutional and Community Engagement:** In Gambia and Togo, the engagement of stakeholders and community support were seen as important for sustaining impacts. This suggests that broad engagement and

local involvement can enhance the durability of technical assistance outcomes.

(e) **Technological and Capacity Building:** Examples from Panama and Vietnam show that continued use of technical tools and capacity-building efforts support long-term impact. Technologies that integrate into existing systems or provide ongoing benefits are likely to be sustained.

(f) **Challenges with Budget and Implementation:** Some countries faced challenges related to budget constraints or unclear applicability of the technologies, which may hinder the sustainability of impacts. This indicates that financial limitations and implementation issues can affect the long-term viability of CTCN technical assistance.

(g) **Novel Technologies and Training:** Solomon Islands and Timor-Leste emphasized the benefits of upskilling and training to maintain new technologies and their impacts. This highlights that for new or emerging technologies, adequate training and capacity building are essential for sustaining benefits.

(h) **Self-Sustaining Systems:** The example in Tanzania shows that self-sustaining systems, where local contributions or revenues support continued operation, are effective in maintaining impacts. Systems that have built-in sustainability features are more likely to endure over time.

(j) **Impact of CTCN Technical Assistance on Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) (Q39, Q40)**

46. NDEs were asked to evaluate the impact of the technical assistance on their country's NDC or NAP. Of the respondents, 72% reported that the assistance had either some impact or a significant contribution to their NDC, while 65% indicated that it had a similar impact or meaningful contribution to their NAP.

(k) **CTCN Capacity Building and Networking Outcomes and Impacts (Q44)**

47. NDEs were asked about their participation in capacity building and knowledge sharing activities (e.g., workshops, training, events, forums) over the past two years. Among the 62 respondents, 23 (38%) reported no engagement in such activities. Nineteen participants (32%) took part in 1-2 activities, 12 participants (20%) engaged in 3-4 activities, and 8 participants (13%) attended more than 5 activities.

48. The majority of participants (70%) have engaged in 0 to 2 activities, indicating a relatively low level of engagement in capacity building and knowledge sharing. Countries participated in workshops focused on specific climate technologies or issues (e.g., workshop on transportation, workshop on Green Hydrogen). Several NDEs attended regional forums and global meetings, such as the African NDEs Forum and Climate Week.

"The voluntary technology talk event organized by the CTCN apprised the NDEs on the new Center focus, brought together NDEs of project interests to interact with potential technology partners, and supported bilateral potential technology transfer discussion. As a recent forum entrant, the interaction provided learning and traction, useful for executing the role."

- NDE of Uganda

“These workshops provide practical skills and knowledge on specific climate technologies, adaptation strategies, or policy frameworks. Reason: They enhance the technical capacity of participants, enabling them to implement and manage climate projects effectively. Workshops also facilitate networking and knowledge exchange among stakeholders.”

- NDE of Nepal

“The workshop on green hydrogen, organized in Cotonou, was very beneficial. Since then, I have been following the activities of ECOWAS on this subject and together with the focal points of Senegal in this area, we are trying to develop a request to be submitted one day to the CTCN.”

- NDE of

Senegal

“Sharing of experiences between member countries on technologies in Nairobi; - Presentation of new technologies by advanced countries in this field in Nairobi; Capacity building in Cotonou.”

- NDE of Guinea

-

“CTCN Capacity Building and Knowledge Sharing workshop on transportation held in New Delhi in 2022 was very informative. Its helping us to strengthen the mitigation target in the updated NDC.”

- NDE of Bangladesh

49. The most common medium for accessing or receiving information about the CTCN is the CTCN website::

(a) **CTCN Website:** 40 NDEs mentioned accessing information from the CTCN's website, making it the most frequently used medium as a hub for accessing CTCN publications and knowledge products.

(b) **In-Person Events:** Events such as COPs and regional NDE forums were also mentioned as a common source of information, cited in 21 responses. This highlights the importance of face-to-face interactions for receiving updates and engaging with the CTCN.

(c) **CTCN Newsletters:** Newsletters were cited in 18 responses.

(d) **CTCN LinkedIn Group:** 8 NDE responses mentioned the CTCN LinkedIn group as another channel for information sharing.

(e) **Emails:** Although mentioned less frequently, emails are noted as a source of information in a few cases.

## 2. Responses from Annex I NDEs:

### (a) Financial Support Provided by Annex 1 Parties to the CTCN (Q10, Q11)

50. 8 out of 11 Annex I NDEs indicated their government had/is providing financial support to the CTCN. Overall, the comments shared reveal a strong global commitment to climate technology transfer among Annex 1 NDEs, with varying levels of financial and in-kind support based on national circumstances and strategic priorities. Some countries emphasize the need for the CTCN to be innovative, strategic, and results-oriented, with an emphasis on addressing global information gaps and facilitating effective technology transfer.

(a) **Commitment to Climate Action:** Countries like Canada, the European Union, Denmark, and Italy emphasize their ongoing commitment to climate action, particularly through technology transfer and development as part of their obligations under the Paris Agreement. Their support for the CTCN is framed within broader commitments to global climate goals.

(b) **Strategic Support:** Some countries focus on the strategic importance of the CTCN in global climate technology cooperation.

(c) **In-Kind Contributions:** Some countries noted that they primarily contributed through in-kind support rather than direct financial contributions.

(d) **Focus Areas:** Germany highlighted specific focus areas for its support, such as net-zero and emissions-free solutions in key sectors like industry and buildings.

(e) **Resource Constraints:** Some countries cite limited resources or external challenges as barriers to providing financial support. These countries still contribute to climate initiatives through other means, like the GCF and GEF, or face obstacles that limit their ability to fully engage with the CTCN.

(b) **Assessment of CTCN's Performance Relative to Government Funding Expectations (Q12, Q13)**

51. The CTCN is generally viewed as having made positive progress and having a strong foundation for providing technical assistance and capacity building. There is a range of feedback from different countries, from full support and recognition of progress to calls for more systematic approaches and better stakeholder engagement. Key areas for improvement include better integration with the financial mechanism, increased focus on tangible results, scaling up projects, and geographical and sectoral balance.

(a) **Positive Progress with Areas for Improvement:** Several respondents acknowledge that the CTCN has made significant progress in its role and operations.

(b) **Need for Enhanced Collaboration and Coordination:** Several countries highlighted the need for better collaboration between the CTCN and the financial mechanism (e.g., GCF, GEF) to maximize the impact of technical assistance.

(c) **Focus on Results and Follow-Up:** There is a call for the CTCN to place more emphasis on achieving tangible results and ensuring follow-up. Some countries specifically noted that while the CTCN has improved, there is a need for increased focus on outcomes and leveraging funding more effectively.

(d) **Geographical and Sectoral Balance:** The importance of geographical and sectoral balance in the provision of technical assistance was noted. Some countries emphasized the need for the CTCN to enhance its regional activities and sector-specific approaches.

(e) **Expectations of Enhanced Engagement:** Some countries expressed dissatisfaction with the level of engagement and efforts from the CTCN, particularly in terms of involving other organizations or ensuring higher engagement with key stakeholders from their country.

(c) **Future Initiatives Expected from CTCN to Strengthen Collaboration with Developing Countries (Q14)<sup>1</sup>**

52. Several countries recognize the CTCN's positive progress and its strong foundation in providing technical assistance and capacity building. There is an appreciation for the CTCN's efforts, especially in adopting multi-country approaches and improving coordination with the financial mechanism over the years. While the CTCN is generally viewed positively, there are calls for improved strategic alignment, better integration with the financial mechanism, enhanced follow-up, and expanded collaboration to strengthen its impact and effectiveness.

(a) **Collaboration and Stakeholder Engagement:** Several countries highlight the need for better integration with the financial mechanism such as the GCF and the GEF. This includes developing more substantial multi-country proposals and utilizing completed Technical Assistance projects to secure additional funding. There is a need for improved collaboration with stakeholders, including companies, international organizations, and national development entities. Enhancing stakeholder engagement and leveraging synergies with other initiatives are seen as crucial for advancing the CTCN's goals.

(b) **Programmatic Approach:** There is a call for a more strategic and programmatic approach to Technical Assistance, aligning efforts with broader goals and existing strategies. This includes integrating TA with the CTCN Programme of Work and focusing on thematic clusters to enhance learning and impact.

(c) **Thematic, Sectoral and Geographic Balance:** There is an emphasis on achieving a balanced approach across different sectors and geographic regions, ensuring that Technical Assistance is aligned with both global and local needs. Emphasis is placed on addressing gaps in geographic and thematic coverage, including expanding efforts in underrepresented regions and sectors.

(d) **Results-Oriented Approach:** Some feedback points to the necessity of focusing more on tangible results and impact. This includes ensuring that Technical Assistance projects lead to measurable outcomes and leveraging results to attract further investment.

(e) **Scaling Up and Follow-Up:** Some countries stress the importance of scaling up completed Technical Assistance projects and effectively following-up on project outcomes to maximize impact.

(f) **Exploring New Opportunities:** There is interest in exploring new political initiatives and synergies with other projects, such as the Energy Efficient Lighting and Appliances (EELA) and Article 6, to enhance the effectiveness and reach of the CTCN's efforts. The integration of emerging technologies, such as AI, into technical assistance and outreach to technology companies, nonprofits, and foundations are suggested to drive further innovation and efficiency in CTCN's activities.

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<sup>1</sup> The CTCN notes some overlap between the responses to this question and those provided for the previous ones.

**(d) Opportunities for CTCN Engagement with Annex 1 Countries (Q15)**

53. Annex 1 NDEs highlighted various strategic opportunities where the CTCN can expand its engagement and align its activities with upcoming milestones and funding prospects in different regions. These include:

(a) **G7 Chairmanship:** Canada will be the G7 Chair in 2025, potentially offering new avenues for climate and technical cooperation.

(b) **EU Budget Negotiations:** The European Parliament elections that took place in June 2024 will influence the next EU long-term budget (2028-2034), presenting an opportunity for the CTCN to align with future EU climate financing priorities. Exploring further support for climate technologies through bilateral funding to EU partner countries and integration with ongoing initiatives via EU Delegations, could enhance the impact of CTCN's technical assistance.

(c) **German Initiatives:** Launch of "green lead markets" focusing on climate-friendly materials like cement and steel. Support for transitioning to F-gas free solutions and updated carbon management strategies, providing opportunities for collaboration on sustainable technologies.

(d) **South Korean Support:** Ongoing financial support to the CTCN Partnership & Liaison Office (PALO) through 2025. A dedicated budget for pro bono technical assistance from 2022 to 2030. Development of a new budget for RD&D projects that may align with the CTCN's initiatives.

(e) **U.S. Engagement:** The U.S. noted opportunities through increasing collaboration with USAID, the Clean Energy Ministerial, Mission Innovation, and the Agriculture Innovation Mission for Climate which could open new channels for CTCN involvement.

(f) **Bilateral Activities:** Italy's ongoing bilateral activities with non-Annex I countries could offer pathways for the CTCN to engage in new technical assistance and collaborative projects.

(g) **Collaboration through the NDE:** Both Germany and Korea suggested that working with their respective NDEs could facilitate connections with ongoing initiatives.

**(e) Similar Programmes Supported and Potential Benefits of Collaboration with CTCN (Q16)**

54. Several programs were identified as potential opportunities for collaboration and engagement with the CTCN. These include:

Table 4  
**Recommended Programs and Initiatives for CTCN to Explore Collaboration**

<b>Program/Initiative</b>
Allen Institute for AI
Beyond the Grid
Bloomberg Philanthropies
Breakthrough Energy
EELA
FAO
Forest and Climate Leaders' Partnership
Gates Foundation
German export initiative for energy solutions
IEA Clean Energy Transition Program
IRENA Clean Energy for Rural and Remote Communities Program
Innovation Commission for Climate Change, Food Security, and Agriculture
International Chamber of Commerce
International Model Forest Network (IMFN)
ITU on digitalization and AI
Joint Crediting Mechanism under Article 6 of the Paris Agreement
Power to Africa
R&D projects, including 'Digital-based climate change prediction and damage minimization'
Rockefeller Foundation
UN Committee of Experts on Global Geospatial Information Management
UNIDO
US Council for International Business
US Department of Agriculture (climate-smart agriculture)
US Department of Energy
US Trade and Development Agency (feasibility studies and pilot projects)
USAID
US Universities: MIT, Stanford, USC, Loyola, University of Chicago
World Bank on Digitalization

**(f) Preferred National and International Institutions for CTCN Collaboration (Q21)**

55. Annex 1 NDEs highlighted a broad interest for the CTCN to strengthen its collaboration with the Financial Mechanisms and multilateral development banks, international organizations, research institutions, and engaging with specific technology and development-focused entities as priorities to enhance the impact of CTCN's work.

**(g) Accessing Information on CTCN Publications and Knowledge Products (Q22)**

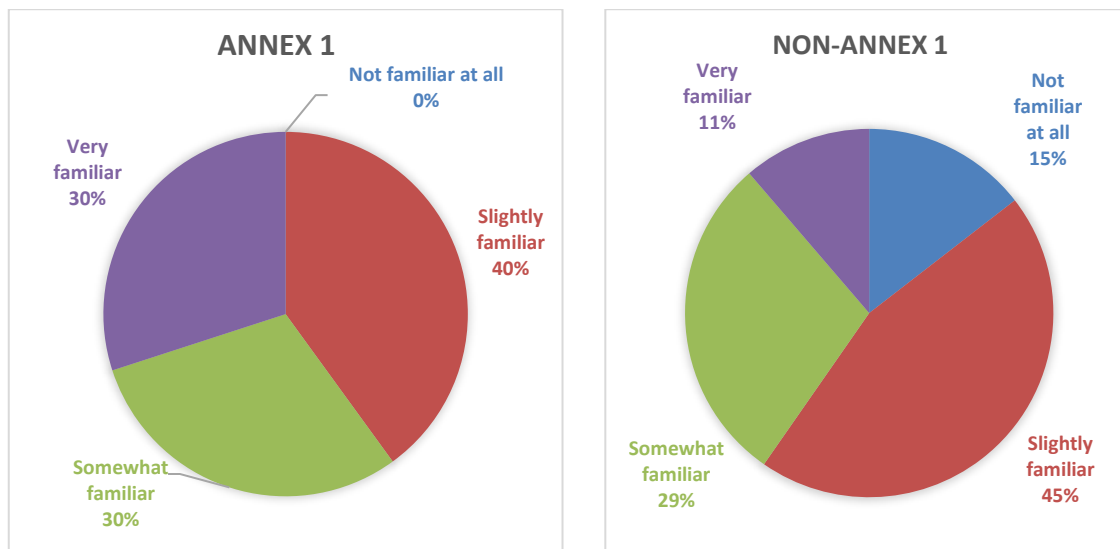
56. Annex I NDEs primarily receive information about the CTCN through the following channels, listed in order of popularity:

- NDEs
- (a) The CTCN Website as the primary source of information for most
  - (b) In-Person Events
  - (c) CTCN Newsletters
  - (d) CTCN LinkedIn Group
  - (e) CTCN Facebook Page
  - (f) Direct Communication with the Secretariat



## C. Survey Results Related to the Work of the TEC

### 1. Question 1. How would you describe your level of familiarity with the work of the TEC?



57. Overview of the responses: Majority of the respondents indicated that they are slightly familiar (I have heard of the TEC, but I do not know exactly what it does), or somewhat familiar (I know the TEC and I have a good understanding of its work). with the work of the TEC. High level of the familiarity (I have extensive knowledge of the TEC products and/or I have already used TEC products), was amongst 30% of Annex 1 and 11% of Non-annex 1 NDEs. Only 15% of the Non-annex 1 'NDE's marked non familiarity (I have never heard of the TEC nor of its work) with the work of the TEC.

58. With regards to the follow up question on specific TEC product NDE's are familiar, the answers are listed based frequency of responds as follows:

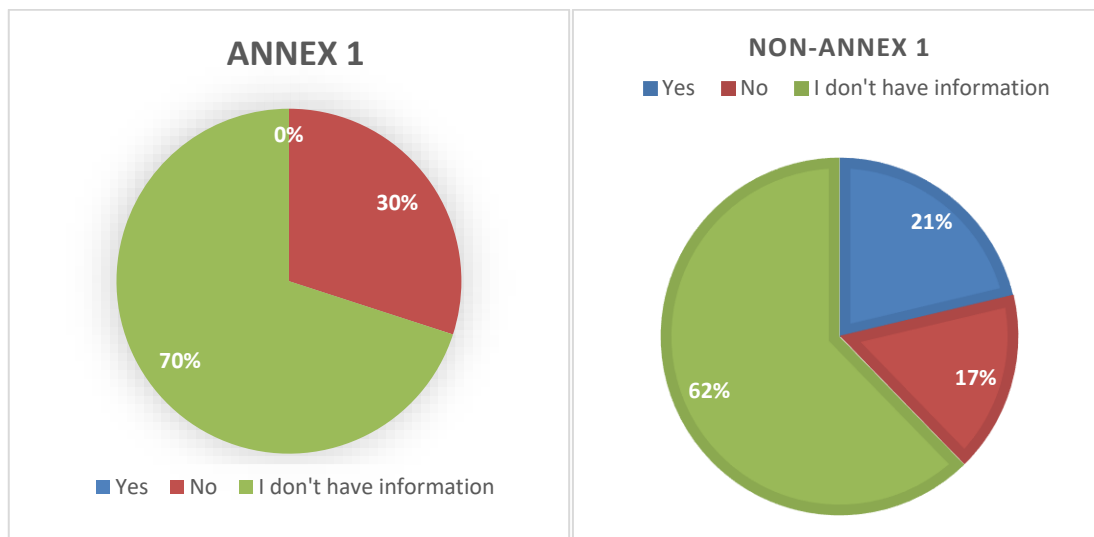
- (a) TEC Policy briefs
- (b) Climate Technology Progress Reports
- (c) The Technology Mechanism Joint Programme of Work (2023-2027)
- (d) TNA Step by Step: A guidebook for countries conducting a Technology Needs Assessment and Action Plan
- (e) TEC key messages and recommendations

59. Only 1.5% of the NDE's provided information on specific TEC products, namely:

- (a) Technology and National Determined Contributions- Stimulating the Uptake of Technologies in Support of Nationally Determined Contribution Implementation
- (b) Good Practices and Lessons Learned on the Setup and Implementation of National Systems for Innovation.
- (c) Compilation of good practices and lessons learned on International collaborative research development and demonstration (RD&D) initiatives of climate technology.

(d) Future needs in Research Development and Demonstration Report.

2. **Q2. To the best of your knowledge, have the TEC products been used in your country?**



60. Overview of the responses: with regards to the use of the TEC products in countries NDE represent, most of the Annex 1 NDE's responded that, either it has not been used, or they don't have information. In case on Non-Annex 1 NDE's, 79% responded that TEC products have not been used or they don't have information and 21% responded that TEC products have been used namely<sup>1</sup>:

- (a) To raise awareness of national stakeholders on climate change adaptation/mitigation issues;
- (b) The recommendations have been followed to promote climate technology development and transfer, and develop technology policies;
- (c) They have been considered while making investment or other decisions;
- (d) Circulated with relevant entities;
- (e) They have been used as reference in other publications;
- (f) They have been read by the relevant governmental body in charge of climate technologies;

61. With regards to the follow up question, that provided opportunity for more details on the publication used, and the type of actors involved, only 2% of the NDE's provided information on the concrete examples which were<sup>2</sup>:

- (a) Publication on Technology and National Determined Contributions;
- (b) TEC Brief #15 - Linkages between technology needs assessment process and nationally determined contributions process;

<sup>1</sup> *Note: answers are listed based frequency of responds*

<sup>2</sup> *Responses to follow up questions occur only from Non-Annex 1 NDE's*

(c) TEC Brief #13 - Enhancing Implementation of the Results of Technology Needs Assessments;

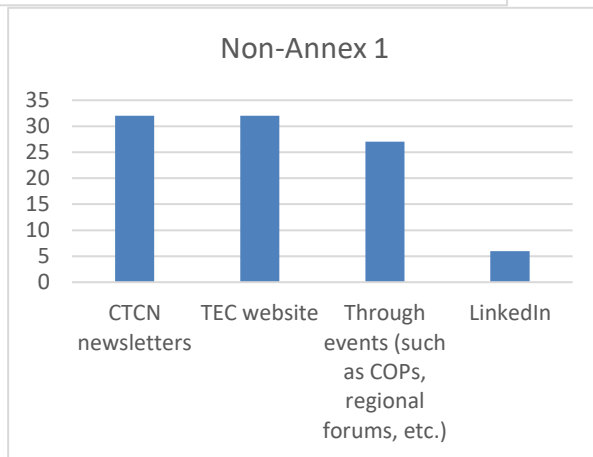
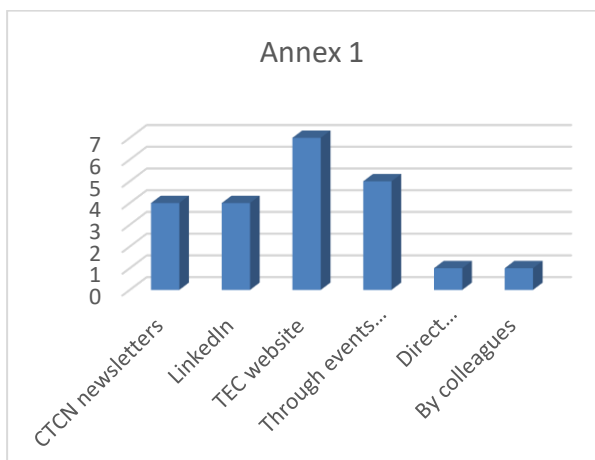
(d) TEC publications used while developing Technology Needs Assessment and Technology Action Plans;

(e) Technology and NDC publication for the relevant stakeholder to consider while developing and implementing NDC;

(f) Information material presented at regional NDE forums.

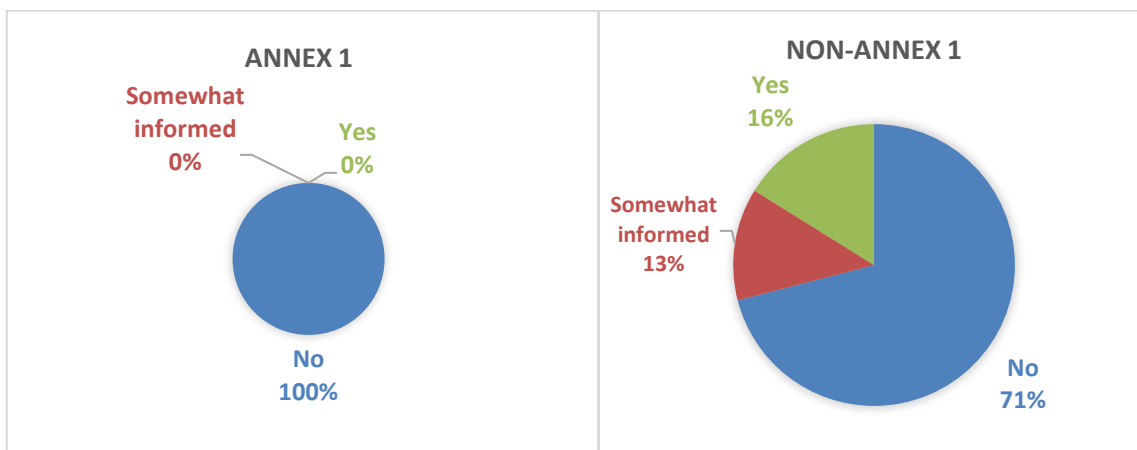
62. In terms of the actors involved, NDE's named national climate coordination platforms and line ministries.

**3. Q3. How do you access or receive information on TEC publications and knowledge products?**



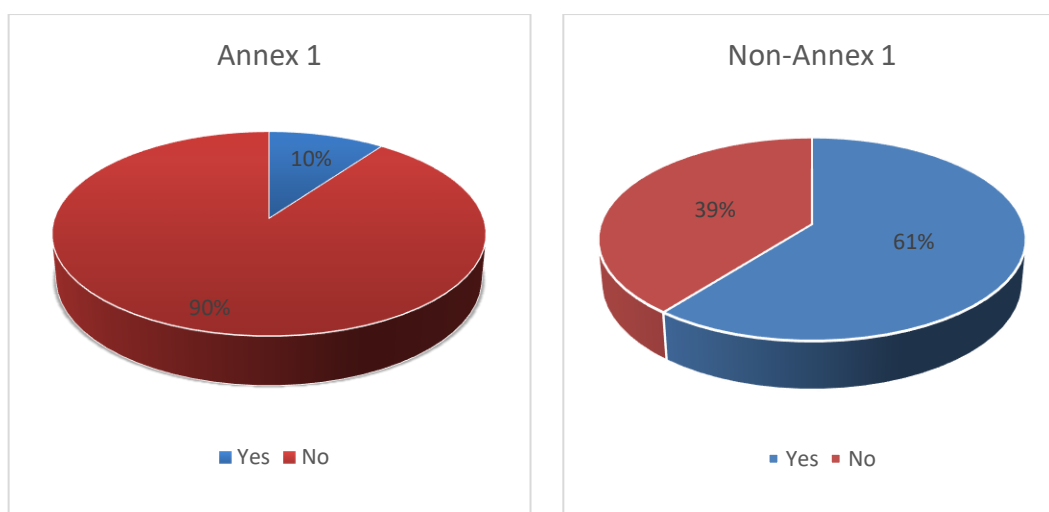
63. Overview of the responses: Most of the NDE's responded that they receive information from TEC website, followed by the CTCN newsletter and events (such as COP, regional forums etc.), some NDEs also receive information from LinkedIn. Few Annex 1 NDE's responded that they got information through direct communication with the secretariat, as well as colleagues.

4. Q4. Have TEC publications informed the NDC update in your country?



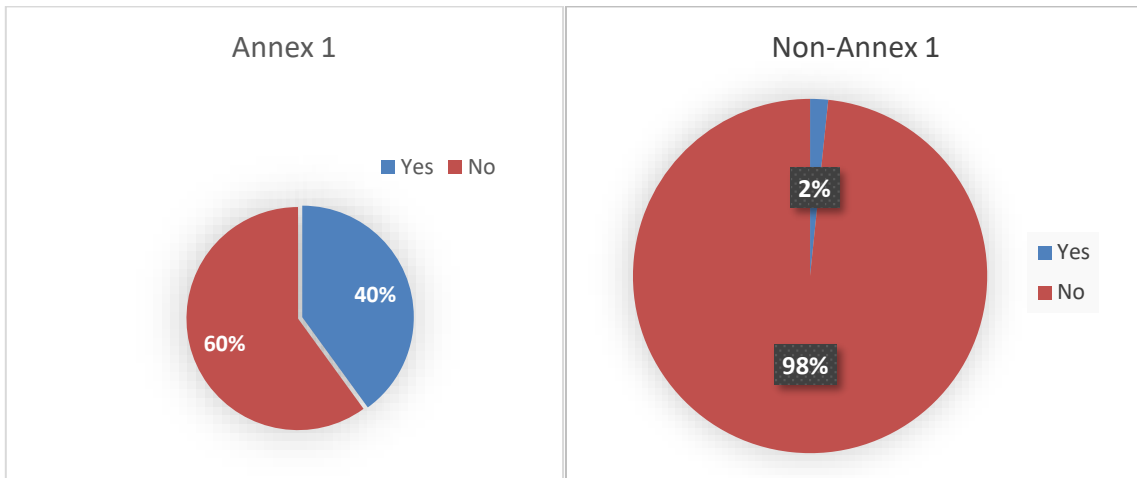
64. Overview of the responses: NDE 100% of the NDE's from Annex 1 responded that TEC publications have not informed their NDC update. In case on Non-Annex 1 NDE's 71% responded negatively, 13% responded that TEC publications have somewhat informed the NDC update and 16% of NDES responded positively. NDE's highlighted TEC publications such as Technology and NDC, TEC briefs, as well as Technology Needs Assessment which informed the NDCs.

5. Q5. Does your country's NDC refer to technology planning tools such as Technology Needs Assessment (TNA) and Technology Roadmaps (TRM)?



65. Overview of the responses: on the question if NDC is referring to the technology planning tools, 10% of Annex 1 NDE's responded positively that their NDC's refer to the Technology Planning tools such as TNA's and TRM's, 90% responded that their NDC's does not refer to the Technology Planning tools such as TNA's and TRM's. In Non-Annex 1 NDE's 61% responded that their NDC's refer to the Technology Planning tools such as TNA's and TRM's and 39% their NDC's does not refer to the Technology Planning tools such as TNA's and TRM's.

6. Q6. Have you contributed to the development of TEC publications and/or knowledge products over the past two years (such as contributing through case studies and/or reviewing them)?



66. Overview of the responses: 40 % of the Annex 1 NDE's responded that they have contributed to the development of the TEC publications and knowledge products, and 60% responded negatively. While in case of Non-Annex 1 NDE's only 2% responded that they have contributed to the development of the TEC publications and knowledge products and 98% responded negatively.

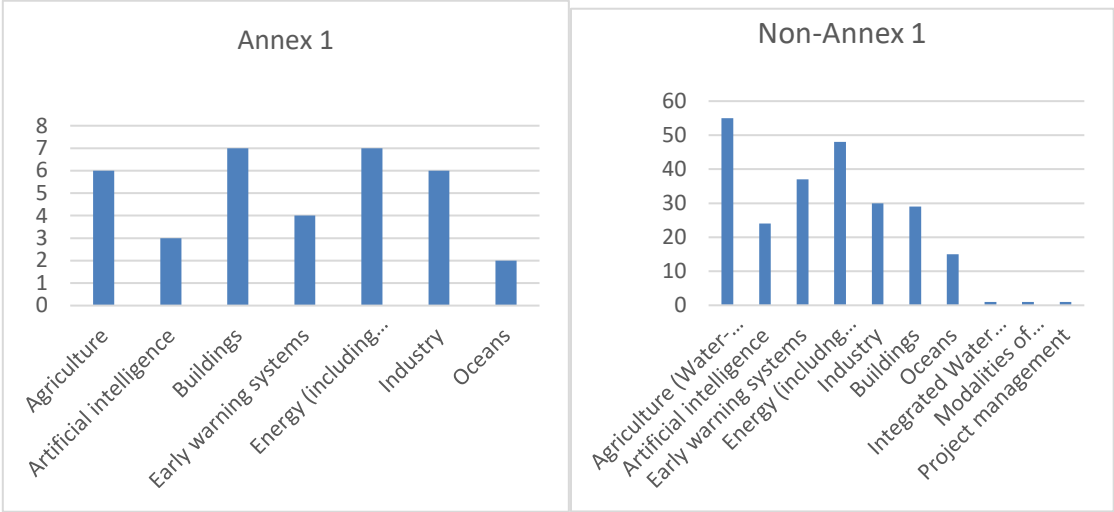
67. With regards to the follow up question to specify the type of contribution, NDE's responded as follows<sup>3</sup>:

- (a) Review of TEC documents
- (b) Development of several TEC products
- (c) Provided financial support for development of the report
- (d) As interviewee

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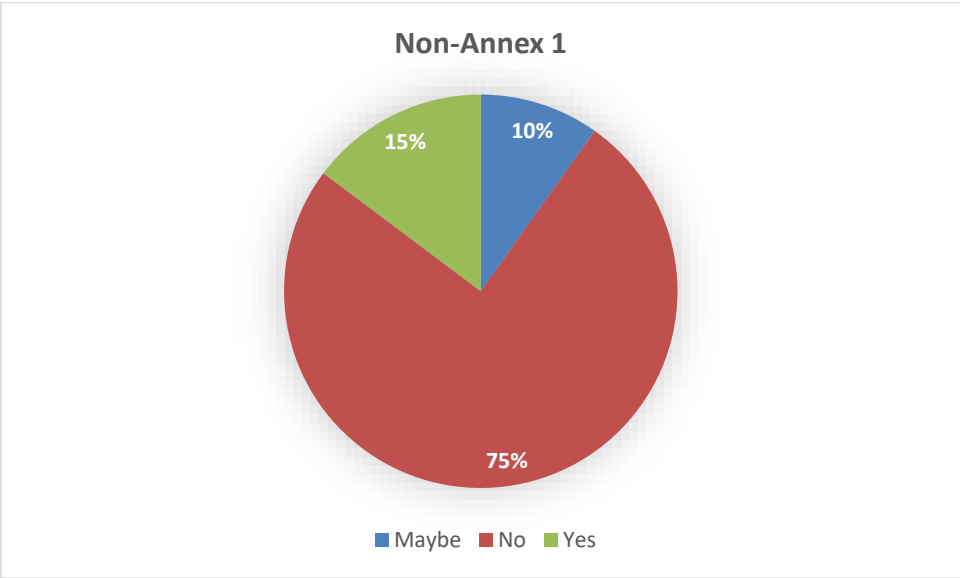
<sup>3</sup> *Note: answers are listed based on general responses, not frequency of responds*

7. Q7. In which sectors or areas of work would your priorities lie, where the work of the TEC could be most beneficial?



68. Overview of the responses: Overall responses show that top three area for Annex 1 and Non-Annex 1 NDE's are agriculture, energy (including storage) and buildings. In terms of splitting between Annex 1 and Non-Annex 1 response: Annex 1 NDE's top 3 areas are: Buildings, energy (including storage) and agriculture and industry with the same number of responses, in Non-Annex 1 NDE's top 3 priority areas, they are: Agriculture is the biggest priority, followed by energy (including storage) and early warning systems.

8. Have you used the TEC products to prepare technical assistance requests for the CTCN?

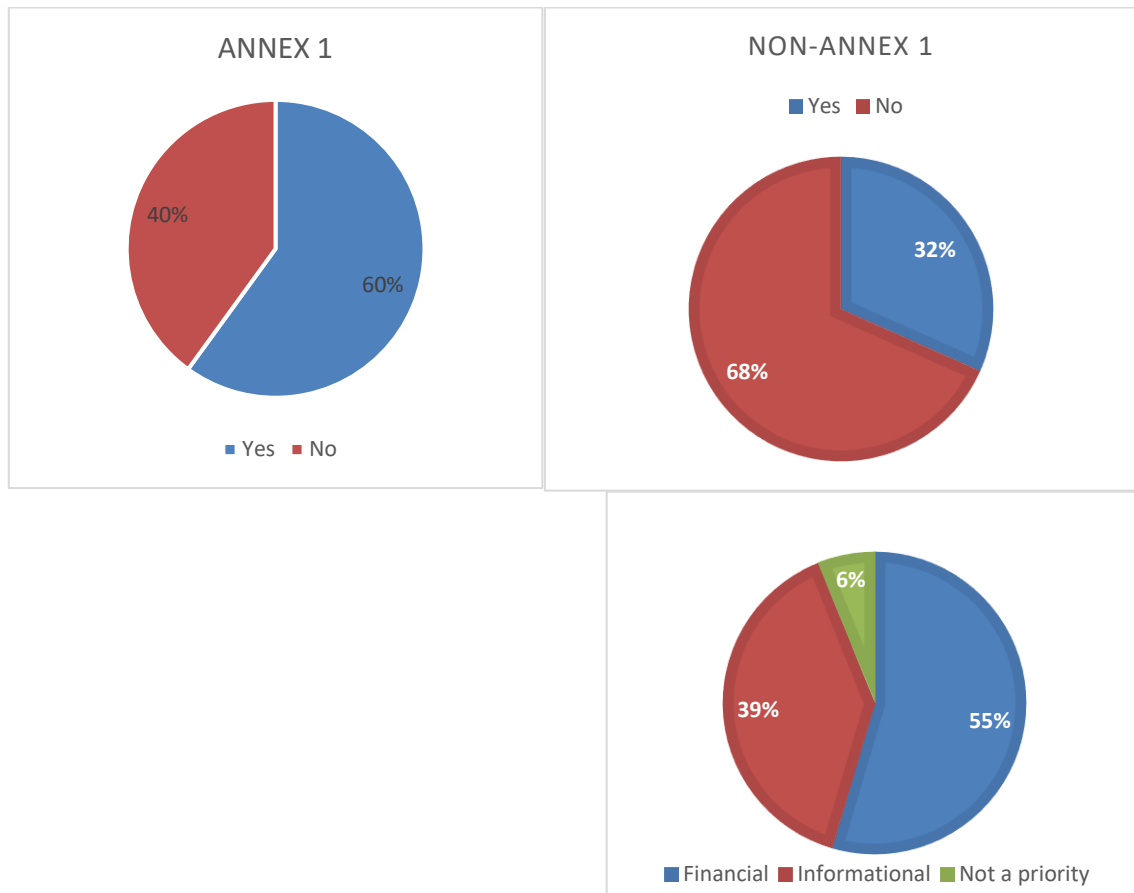


69. Overview of the responses: Responses were received only from Non-Annex 1 NDE's, most of the Annex 1 NDE's marked question as non-relevant. In terms of the responses, 15% of the NDE's responded that they have used TEC products to prepare CTCN technical assistance requests, 75% responded negatively, while 10% do not have information.

70. With regards to specifying the TEC product few NDE's mentioned: TEC brief #13 Enhancing Implementation of the Results of Technology Needs

Assessments and Technology and NDC. Majority of the NDE’s did not have information on the TEC product to be used for CTCN TA, as well as TEC publications.

**9. Have you participated TEC events, either standalone TEC events or joint TEC-CTCN events, over the past two years**



71. Overview of the responses: 40% of the Annex 1 NDE’s responded that they have participated at the TEC events and 60% responded negatively. In case on Non-Annex 1 NDE’s - 32% responded that they have participated at the TEC events and 68% responded negatively.

72. Non- Annex 1 parties provided reasons for not participating at the TEC events, majority of NDE’s (55%) mentioned financial barriers, 39% highlighted lack of information and 6% responded that issue is not a priority in their country.

73. With regards to the events NDE’s participated the most are:

- (a) COP and SB side events (including SBI 60 in-session workshop: Linkages between the Technology Mechanism and the Financial Mechanism)
- (b) NDE regional forums
- (c) Climate weeks

10. **Q10. Do you have any suggestions on how the TEC could better engage with you to ensure that the knowledge products reach you and those who would benefit the most from the work**

74. Overview of the responses: Question was open ended which gave NDE's flexibility to express their ideas how TEC could better engage with them. In total 67% of the NDE's responded to the question, suggesting the ways to improving engagement.

(a) Number of responses were recommending TEC to engage with the NDE's directly and more often, including through sharing important update via direct channels (WhatsApp channel, mailing list, LinkedIn) and through the webinars;

(b) Regional TEC members were seen to be important actors for disseminating information to their NDE's, as well as participating and representing TEC in more events;

(c) Inviting NDE's to the TEC events were highlighted as good source of information;

(d) Some NDE's responded that translation of the TEC products to the UN languages, and potentially at national languages, as well as providing information in various formats (infographics, videos) to enhance accessibility would be beneficial;

(e) Number of NDE's expressed their interest to be informed of the various TEC decisions, publications, and successful case studies, in this regards providing training and capacity building workshops would help stakeholders understand and use knowledge products effectively;

(f) **Several NDE's suggested to involve NDEs in the development of knowledge products to ensure that their perspectives and needs are incorporated;**

(g) Including information on access to funding for the technologies covered in the knowledge products would increase the interest for NDEs

(h) Partner with regional organizations that have strong relationships with NDEs could facilitate the dissemination of TEC knowledge products through existing networks.



## Annex II

### Comparison of the UNFCCC Technology Mechanism NDE Surveys conducted in 2022 and 2024

	2022	2024	
<b>Online collection (survey tool)</b>	Survey Monkey	Microsoft Forms	
<b>Offline collection</b>	None	Word documents collected via emails On site NDE fora (Asia Pacific and Africa)	
<b>Languages</b>	English, Spanish, French	English, Spanish, French	
<b>Survey period</b>	April 2022 – July 2022	May 2024 – August 2024	
<b>Target audiences</b>	Non-Annex I NDEs	Non-Annex I NDEs and Annex I	
<b>Number of respondents</b>	45 NDEs (28%)	74 NDEs (45%) <b>+17%</b>	
<b>Number of questions</b>	25 questions	40 questions for Annex I 60 questions of Non-Annex I (open-ended questions xx, Likert scale questions yy, single select questions zz, multi-select questions zz)	
<b>Average time to complete</b>	~ 20min	~ 40min	
<b>Objective</b>			
<b>Questions</b>	Non-Annex I <ul style="list-style-type: none"> <li>Outcomes and Impacts of the CTCN Technical Assistance</li> </ul>	Non-Annex I <ul style="list-style-type: none"> <li>Past Engagement with the CTCN and Awareness on the Role of NDEs</li> <li>Outcomes and Impacts of the CTCN Technical Assistance, Capacity Building and Knowledge Sharing</li> <li>Contribution of TEC Policy Recommendations and Publications</li> </ul>	Annex I <ul style="list-style-type: none"> <li>Past Engagement with the CTCN and Awareness on the Role of NDEs</li> <li>Contribution of Annex I NDEs to support the CTCN</li> <li>Contribution of TEC Policy Recommendations and Publications</li> </ul>
<b>Outreach efforts</b>	2 online reminders	Online reminder, 2-3 follow up by regional teams, Onsite session at NDE fora	
<b>Dissemination of key messages</b>	AB session	AB session Internal discussions NDE fora	

## Annex III

### Detailed analysis of NDE responses

Figure 2  
**Non-Annex 1 NDE Ratings on Ministry/Organization Awareness of the NDE Role and Stakeholder Engagement**

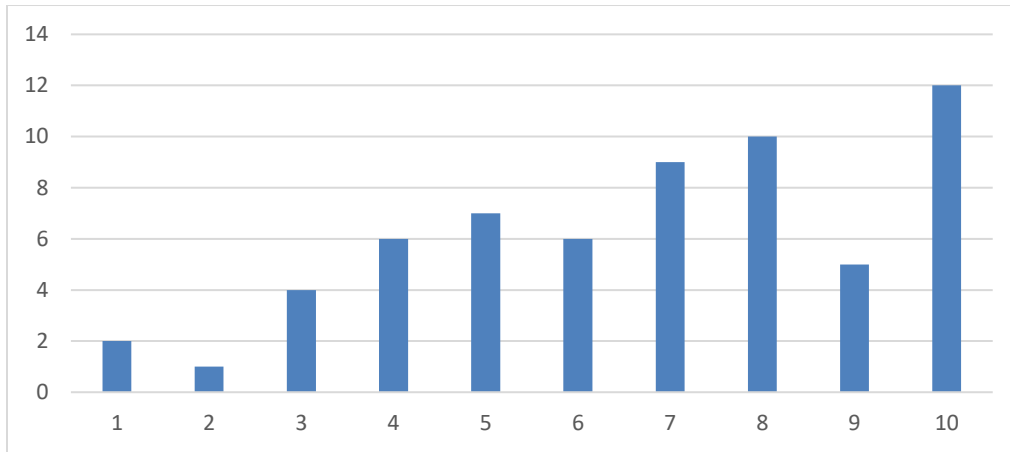


Figure 3  
**Non-Annex 1 NDE Ratings on Line Ministries' Governance and Influence in Climate Technology Decisions**

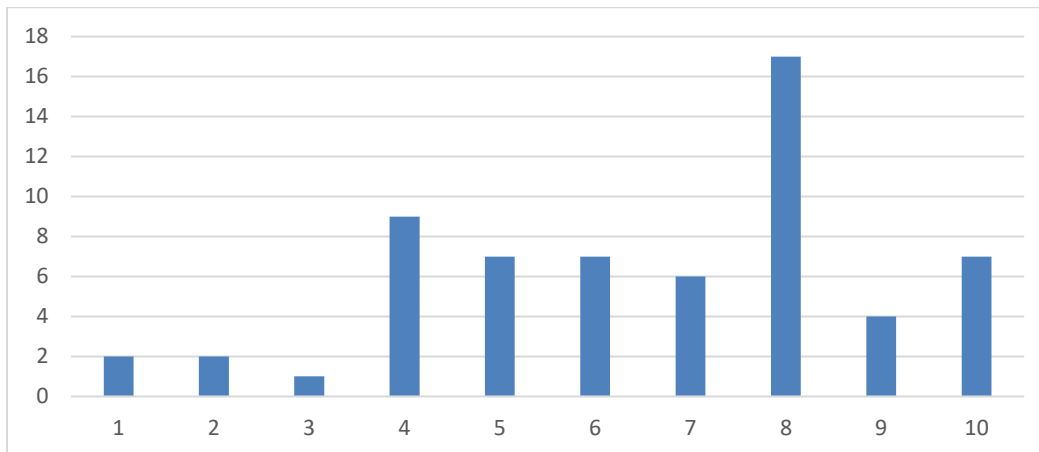


Figure 4  
**Annex 1 NDE Ratings on Resources and Opportunities to Facilitate Technology Transfer and Deployment**

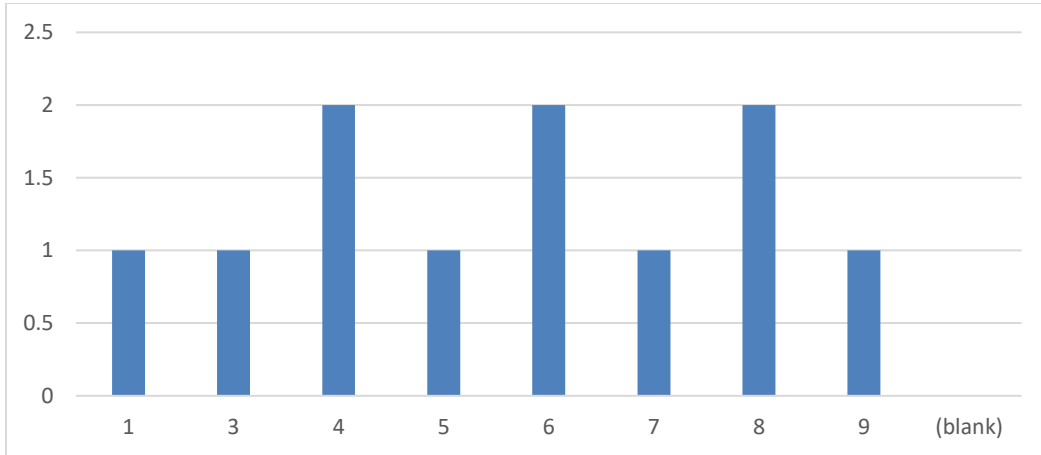


Figure 5  
**Annex 1 NDE Ratings on Ministry/Organization Awareness of the NDE Role and Stakeholder Engagement**

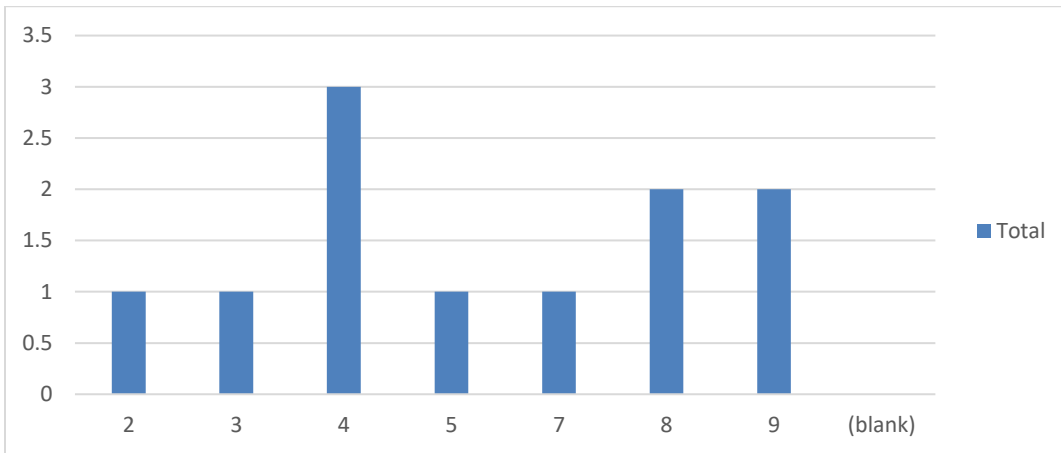


Figure 6  
**Annex 1 NDE Ratings on Line Ministries' Governance and Influence in Climate Technology Decisions**

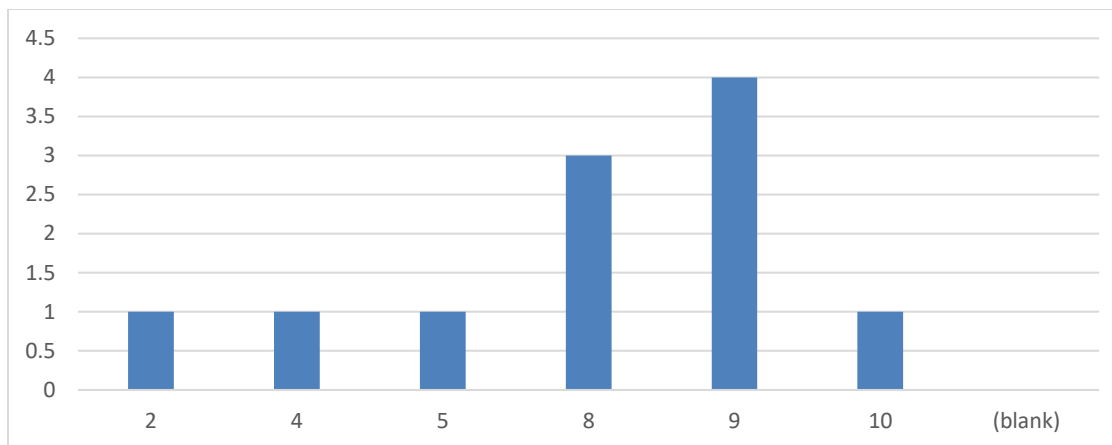


Table 5  
**Main challenges expressed by NDEs with regards to accessing and utilizing climate technologies**

Main categories	Frequency
Insufficient capacity due to a lack of human resources, technical expertise, and skilled workforce needed to identify, select, deploy and maintain advanced climate technologies.	47
Limited financial resources, including those needed for implementing technical assistance outcomes and pilot projects, as well as difficulties in accessing climate funds	40
Insufficient national policies and institutional frameworks and/or lack of institutional collaboration and/or inadequate integration of climate-related technologies into the overall development portfolio	16
Limited access to information on technology transfer activities and low public awareness at the country level.	13
Limited research and development and/or lack of technological resources and/or lack of specialized technology solutions and the high upfront costs of advanced climate technologies	10
Limited infrastructure to deploy technologies and/or for integrating new climate technologies.	10
Insufficient economic incentives	5
Limited availability of climate technologies adapted to the national context	4
Conflict / Political situation in-country	3
Lack of coordination between different levels of government, bureaucratic hurdles, and challenges in engaging and aligning stakeholders	3
Extreme weather and challenging geographical conditions	2
Intellectual Property Barriers	2

Table 6  
**Measures the government can take to strengthen the roles of NDEs in advancing climate technology development and transfer**

Main categories	Frequency
Facilitating engagement with key in-country stakeholders, including the private sector	16
Providing (financial) support to NDEs	14
Strengthening awareness of and/or engagement with the CTCN	13
Strengthening awareness of the role of the NDE and/or integrating the roles of the NDE into institutional frameworks	13
Facilitating Capacity Building	13
Allocating budget for climate technology projects and/or piloting CTCN outputs and/or facilitating access to climate finance	11
Strengthening national laws and public policies on climate technology development and transfer, emphasizing their role in climate change strategies, and leveraging existing institutional work and political influence	6
Enhancing technical and human resources	2
<b>Grand Total</b>	<b>88</b>

Table 7  
**Sectors or areas where NDEs report that the country needs additional support or resources to improve technology development, transfer, and deployment.**

Sector	Key needs and focus areas as expressed by the NDE
<b>Energy Efficiency</b>	<ul style="list-style-type: none"> <li>- Carbon finance and project development skills (Afghanistan).</li> <li>- Information on available technologies, measures, and financing skills (Afghanistan).</li> <li>- Traditional customs and administered pricing (Afghanistan).</li> <li>- Building codes and standards on appliances and equipment (Afghanistan).</li> <li>- Clean cooking, heating, and power projects (Afghanistan).</li> <li>- Enhanced technology development and transfer for energy efficiency (Botswana).</li> <li>- Increased investment in solar and wind energy technologies, infrastructure for grid integration and energy storage, and modernization and efficiency improvements in existing hydropower plants (Brazil).</li> <li>- Needs support in energy sector (Chile).</li> <li>- Application required for various geographical areas, including coastal regions, high Andean areas, and areas of ecological importance (Colombia).</li> <li>- Energy sector support (Congo - Kinshasa).</li> <li>- Energy sector support (Ivory Coast).</li> <li>- Agriculture, Industry, and Energy (Dominican Republic).</li> <li>- Additional support needed in energy sector (Eswatini).</li> <li>- Energy sector: solar photovoltaic power plants, micro-hydro plants, solar water pumps (Haiti).</li> <li>- Energy transition and sectorial emission reductions in energy (Fiji).</li> <li>- Energy efficiency, transportation, industries, waste, agriculture (Kuwait).</li> <li>- Energy security for industry and transportation masterplan (Laos).</li> <li>- Support for establishing a national framework (Marshall Islands).</li> <li>- Technology roadmap and study for available/needed technologies (Saudi Arabia).</li> <li>- Just energy transition in energy, transportation, agriculture, construction sector</li> </ul>

Sector	Key needs and focus areas as expressed by the NDE
	(Vietnam).
<b>Energy</b>	<ul style="list-style-type: none"> <li>- Human and institutional capacity for adoption of cleaner technology (Afghanistan).</li> <li>- Capital markets that encourage investment in decentralized systems (Afghanistan).</li> <li>- Information and intellectual property rights for mitigation technologies (Afghanistan).</li> <li>- Renewable energy, entry costs support, access to capital, and subsidies (Afghanistan).</li> <li>- Environmental compliance standards (emission and indoor) (Afghanistan).</li> <li>- Development and deployment of low-carbon technologies in key industrial sectors, such as cement, steel, and chemicals (Brazil).</li> <li>- Needs support in energy sector (Chile).</li> <li>- Application required for different geographical areas, such as high Andean areas and coastal regions (Colombia).</li> <li>- Energy sector support (Congo - Kinshasa).</li> <li>- Energy sector support (Ivory Coast).</li> <li>- Agriculture, Industry, and Energy (Dominican Republic).</li> <li>- Energy transition and sectorial emission reductions in energy (Fiji).</li> <li>- Energy efficiency, transportation, industries, waste, agriculture (Kuwait).</li> <li>- Energy security for industry and transportation masterplan (Laos).</li> <li>- Power grid system transition from gas to solar and efficient hydroponics and agrivoltaics (Palau).</li> <li>- Technology roadmap and study for available/needed technologies (Saudi Arabia).</li> <li>- Just energy transition in energy, transportation, agriculture, construction sector (Vietnam).</li> </ul>
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>- Landfill management, decentralized wastewater treatment (Afghanistan).</li> <li>- Climate project development skills (Afghanistan).</li> <li>- Technologies for improving recycling rates, converting waste into energy, and promoting circular economy principles (Brazil).</li> <li>- Recycling of solid and liquid waste (Burundi).</li> <li>- Needs support in waste sector (Chile).</li> <li>- Waste management support (Ivory Coast).</li> <li>- Additional support needed in waste management sector (Eswatini).</li> <li>- Improved waste management technologies, including recycling and waste-to-energy solutions (Gambia).</li> <li>- Energy forests managed for producing wood for energy (Haiti).</li> <li>- Management and infrastructure for municipal and industrial waste; circular economy; nature-based solutions (Mexico).</li> <li>- Waste (waste to energy, methane capturing) (Zimbabwe).</li> </ul>
<b>Forests and Rangelands</b>	<ul style="list-style-type: none"> <li>- Carbon sequestration on forest/rangelands, and forest carbon skills (Afghanistan).</li> <li>- Funding institutional capacity to monitor and verify projects (Afghanistan).</li> <li>- Better spatial planning for community and production agriculture (Afghanistan).</li> <li>- Reduce rural peoples' dependence on fuel for cooking and heating (Afghanistan).</li> <li>- Technologies for monitoring and preventing illegal deforestation, promoting reforestation and afforestation, and silviculture and genetic improvement of native tree species (Brazil).</li> <li>- Needs support in agroforestry sector (Chile).</li> <li>- Application required for areas of ecological importance such as humid forests of the Chocó biogeographical region and the Amazon (Colombia).</li> <li>- Forests sector support (Ivory Coast).</li> <li>- Agriculture, Water resources, and Forestry (Guinea-Bissau).</li> <li>- Development of a national forest management plan and strengthening the capacity of public institutions and agricultural organizations (Haiti).</li> </ul>

Sector	Key needs and focus areas as expressed by the NDE
<b>Industry and Mining</b>	<ul style="list-style-type: none"> <li>- Cleaner coal mining, , combustion, and transportation of minerals (Afghanistan).</li> <li>- Hydrocarbon fields management (Afghanistan).</li> <li>- Technical industrial capacity to link basic industry and mining private and public sector with climate sector experts (Afghanistan).</li> <li>- Adoption of energy-efficient technologies and practices in industrial processes, including advanced manufacturing, waste heat recovery, and development and deployment of low-carbon technologies in key industrial sectors (Brazil).</li> <li>- Technical and financial support for the decarbonization of cement (Burundi).</li> <li>- Agriculture, Industry, and Energy (Dominican Republic).</li> <li>- Industry sector support (Kuwait).</li> <li>- Industry (Vietnam).</li> </ul>
<b>Agriculture and Livestock</b>	<ul style="list-style-type: none"> <li>- National herd, reduction in fuel used, or cleaner fuel technologies (Afghanistan).</li> <li>- South-south collaboration on low-carbon agriculture, study tours (Afghanistan).</li> <li>- Funding for R&amp;D activities (Afghanistan).</li> <li>- Improved national dataset on agriculture, food security data (Afghanistan).</li> <li>- Implementation of precision agriculture technologies, improved irrigation systems, and sustainable land management practices (Brazil).</li> <li>- The agriculture sector, including the sub-sectors of crop production and livestock (Chad).</li> <li>- Support in agriculture sector (Chile).</li> <li>- Application required for agriculture and rural development (Colombia).</li> <li>- Agriculture sector support (Congo - Kinshasa).</li> <li>- Agriculture (Dominican Republic).</li> <li>- Climate-smart agricultural technologies, improved irrigation systems, and drought-resistant crop varieties (Gambia).</li> <li>- Agriculture, water resources, livestock (Guinea-Bissau).</li> <li>- Agriculture sector (Liberia).</li> <li>- Agriculture and energy sectors (Mongolia).</li> <li>- Technology related to agriculture (Timor-Leste).</li> </ul>
<b>Water Resources Management</b>	<ul style="list-style-type: none"> <li>- Technologies for efficient water use and management in agriculture, industry, and urban areas (Brazil).</li> <li>- Development of cost-effective desalination and water purification technologies to address water scarcity issues (Brazil).</li> <li>- Technical and financial support for the solarization of boreholes (Burundi).</li> <li>- The water resources sector, including groundwater and surface water (Chad).</li> <li>- Needs support in water sector (Chile).</li> <li>- Water resources (Egypt).</li> <li>- Efficient water use and management (Gambia).</li> <li>- Water sector support (Liberia).</li> <li>- Water and energy sector support (Nauru).</li> <li>- Water resources management, including desalination plants, drought-resistant crops, and efficient irrigation (Yemen).</li> </ul>
<b>Urban Development</b>	<ul style="list-style-type: none"> <li>- Promotion of green building technologies and standards to improve energy efficiency and reduce carbon footprint (Brazil).</li> <li>- Implementation of sponge cities technologies (Brazil).</li> <li>- Implementation of smart city technologies for sustainable urban planning, including smart grids, sensors, and data analytics (Brazil).</li> <li>- Feasible model of utilization of Solar PV in public buildings/facilities (Tanzania).</li> </ul>
<b>Climate-Resilient Infrastructure</b>	<ul style="list-style-type: none"> <li>- Development of infrastructure resilient to climate impacts, such as extreme weather events and sea-level rise (Brazil).</li> <li>- Early warning systems and climate information services to enhance preparedness and response to climate-related hazards (Brazil).</li> </ul>

Sector	Key needs and focus areas as expressed by the NDE
	<ul style="list-style-type: none"> <li>- Enhance climate-resilient infrastructure to withstand extreme weather events (Yemen).</li> </ul>
<b>Research and Innovation</b>	<ul style="list-style-type: none"> <li>- Increased funding for climate research and innovation, including new climate technologies and adaptation strategies (Brazil).</li> <li>- Strengthening international collaboration and knowledge exchange to access cutting-edge technologies and best practices (Brazil).</li> </ul>
<b>Education and Capacity Building</b>	<ul style="list-style-type: none"> <li>- Development of training programmes to build local expertise in climate technologies and sustainable practices (Brazil).</li> <li>- Initiatives to raise public awareness and engagement on climate change and the benefits of adopting climate technologies (Brazil).</li> <li>- Proposal development on climate technologies in order to access climate funds (Bangladesh).</li> <li>- Assessing appropriate adaptation technologies for country circumstances (Cook Islands).</li> <li>- Understanding the roles of CTCN and NDE (Ivory Coast).</li> <li>- Agriculture, Industry, and Energy (Dominican Republic).</li> </ul>



Table 8  
**Best practices or success stories in technology development, transfer and deployment**

**Africa**

Country	Success Stories / Best Practices
<b>Burundi</b>	The country has been successful in securing three technical assistances from the CTCN: - Capacity building on solar energy - Technical assistance on SLAMDAM technology - Biomass-to-energy conversion
<b>Chad</b>	- Construction of soil conservation and restoration structures for the development of agricultural activities in response to degradation caused by climate change - Improvement of knowledge on water resources through the conduct of studies
<b>Congo - Kinshasa</b>	- Clean cooking technologies - Photovoltaic energy
<b>Côte d'Ivoire</b>	- Platforms on climate technologies, air quality, and circular economy
<b>Egypt</b>	- Renewable energy production and increased electricity generation - Energy efficiency improvements in industry and transport
<b>Eswatini</b>	- Use of drones for disaster risk reduction – CTCN TA - Development of minimum energy performance standards (MEPS) for appliances – CTCN TA
<b>Gambia</b>	- Solar panels in rural areas - Drought-resistant crops and water-efficient irrigation - Partnerships with UNDP, World Bank, African Development Bank - Community-based adaptation projects like rainwater harvesting systems and renewable energy for water pumps - National Climate Change Policy for strategic guidance
<b>Ghana</b>	- Green Cooling Africa Initiative
<b>Guinea</b>	- Improved stoves reducing forest pressure: the popularization of these stoves has allowed us to considerably reduce the pressure on our forest resources. - Biodigesters improving soil fertility and providing cooking gas and lighting: the popularization of this technology has promoted the conservation and improvement of soil fertility, hence the increase in agricultural production by using effluents as organic fertilizers. They provide cooking gas and public lighting.
<b>Kenya</b>	- Policy influence from CTCN TA: Formulation of Kenya's national agroforestry strategy (2020 – 2030)
<b>Liberia</b>	- Liberia's Readiness proposal to GCF through the CTCN and UNEP is one of Liberia's success stories that we be happy to share with other NDEs. The project is

Country	Success Stories / Best Practices
	currently in the implementation stage.
<b>Mauritius</b>	- Anaerobic digestion plant based on a CTCN feasibility study
<b>Namibia</b>	<p>1. Efficient refrigeration - Harmonised standards for appliances in Namibia and other countries in Southern Africa. Lessons include the involvement of stakeholders is important but political will and coordination among the stakeholders which is key to technology deployment.</p> <p>2. Water harvesting technologies for Namibia. Lessons learned is that each area has peculiar circumstances and therefore the deployment of technology should be area.</p> <p>3. Efficient lighting technology for Namibia. Same lessons learnt like in 2. In addition, incentives from authorities are important to fast track technology deployment.</p>
<b>Senegal</b>	<ul style="list-style-type: none"> <li>- Integration of renewable energies into the country's energy mix</li> <li>- Climate-resilient agriculture with short-term seeds</li> <li>- Bioclimatic buildings and mangrove protection</li> </ul>
<b>South Africa</b>	- Past successes shared at the 2023 NDE Forum
<b>Tanzania</b>	- Solar PV water pump and filtration unit in Ng'ambi village, Dodoma region
<b>Tunisia</b>	<p>Currently, two attractive pilot projects are being developed in Tunisia and concern:</p> <ul style="list-style-type: none"> <li>- Establishment of a smart electricity network through the use of smart electricity meters</li> <li>- Establishment of an intelligent water network through the use of intelligent water meters</li> </ul> <p>These two technologies will allow good management, remote control, network control, fault detection, energy control, control of bills and consumption.</p>
<b>Uganda</b>	<p>The technical assistance extended to Uganda to study the geothermal energy resources was targeted at developing an Act and policy, which however enhanced to development of a comprehensive energy policy, spurred interest in studying and identifying other geothermal source improving the estimated reserves from 450MW to 1500MW. No successful technology transfer was achieved, the lessons learned inform the preferred approach of supporting technology transfer demonstrations as a catalyst, that can be scaled up when the demand for energy is realized and expanded. The best practice technology development, transfer and deployment approach may be one that prioritizes piloting technology followed by policy development.</p>
<b>Zimbabwe</b>	<ul style="list-style-type: none"> <li>- Electric Mobility Policy Framework</li> <li>- Water and energy audit for the private sector</li> </ul>

## Asia and the Pacific

Country	Success Stories / Best Practices
<b>Cook Islands</b>	- 90% of TNA deliverables integrated into the sustainable development pathway
<b>Fiji</b>	Under planning and future implementation-nature based sea walls that will be implemented through the AF. Renewable energy example solar projects by Department of Energy.
<b>Laos</b>	- City climate vulnerability assessment - Ecosystem-based solutions for urban resilience - Power to Gas Masterplan
<b>Maldives</b>	- Experiences with water desalination and renewable energy production
<b>Mongolia</b>	- Salkhit Wind Farm (50 MW) - Solar Ger Project for nomadic families - Building insulation programmes - Sustainable livestock management and training - GHG inventory development
<b>Nepal</b>	- Integrated Water Resources Management (IWRM) - Customized weather and climate information system - Biomass briquettes for energy
<b>Papua New Guinea</b>	- E-Mobility policy support and stakeholder engagement
<b>Solomon Islands</b>	- Desalination plants improving clean drinking water access; challenges include maintenance and human resource capacity
<b>Tajikistan</b>	- Climate Resilience Programme through Climate Investment Funds and GCF Engagement
<b>Thailand</b>	- South-South technology transfer of transportation/traffic technology to Bhutan - National Technology Transfer Platform development

## Latin America and the Caribbean

Country	Success Stories / Best Practices
<b>Brazil</b>	- Brazil's Proalcool Programme promoted ethanol from sugarcane as a renewable fuel alternative to gasoline. Brazil is now a global leader in ethanol production and usage, with a robust biofuel industry that has significantly reduced the country's reliance on fossil fuels.
<b>Chile</b>	- Technical assistance on biomass-to-energy conversion technology
<b>Colombia</b>	- Developments by Colombian Petroleum Institute (ICP) within Ecopetrol

Country	Success Stories / Best Practices
Haiti	- Development of biogas technology
Jamaica	- Largest wind farm in the English-speaking Caribbean financed through several mechanisms including loans, the stock market, and CDM. The company generating revenue from this wind farm is currently being diversified into other forms of renewables such as solar. The Jamaican public can also participate in this transformation from using fossil fuels to generate energy to renewables by investing directly in the company. Therefore as the company grows and Jamaica becomes more energy secure the company can benefit Jamaicans in more than one way. - Renewable energy projects including floating solar systems and EV charging stations - Technology Needs Assessment identifying priority sectors
Mexico	- Marketplace for construction and demolition waste in Mexico City with CTCN support: This was achieved with support from the CTCN and the participation of INECC and the Secretariat of Environment of CDMX. This project demonstrated the potential of these technologies both in mitigating greenhouse gases and providing other environmental and social benefits. Additionally, it strengthened interinstitutional relationships for its development.
Nicaragua	- Capacity building on solar energy
Panama	Two CTCN technical assistances have evolved positively after completion: - Transition to low-emission transport in Panama City - Marine dynamics database for sea level rise impacts
Paraguay	- Technical assistance on SLAMDAM technology
Saint Kitts and Nevis	- The CTCN project Drought risk modeling for climate change adaptation planning
Uruguay	- National roadmap for the use of low-enthalpy geothermal energy for thermal conditioning in residential, industrial, and commercial service sectors was successful. Currently, efforts are underway to secure funding for a pilot installation. - GHG emission reduction in dairy production through circularity and climate technologies
Venezuela (Bolivarian Republic of)	- Replacement of incandescent bulbs with LED technology which started in 2016

## West Asia

Country	Success Stories / Best Practices
Georgia	- We have some lessons learnt from the TNA development process  1. The TNA development process was quite successful due to the engagement of the private sector representatives. It was for the first time that the private sector was widely involved in the climate-related document development process. The business saw opportunities and not some "upcoming burden"

Country	Success Stories / Best Practices
Kuwait	- Preliminary studies on using algae to reduce carbon emissions
Yemen	<p>While Yemen faces challenges in widespread technology deployment, there have been some success stories that offer valuable insights for other National Designated Entities (NDEs) and stakeholders:</p> <p>Success Story 1: Solar Power Surge</p> <ul style="list-style-type: none"> <li>i.Challenge: The ongoing conflict crippled Yemen's electricity grid, leaving many without power.</li> <li>ii.Technology: Due to the urgent need for alternative energy, there's been a surge in the adoption of rooftop solar panels by households and businesses.</li> <li>iii.Benefits: This decentralized approach offers a reliable source of electricity and reduces dependence on the damaged grid.</li> <li>iv.Lessons Learned: The success of solar illustrates how local communities can find innovative solutions to pressing challenges, highlighting the importance of fostering an enabling environment for bottom-up initiatives.</li> </ul> <p>Success Story 2: Rainwater Harvesting</p> <ul style="list-style-type: none"> <li>I.Challenge: Water scarcity is a major concern in Yemen. Traditional water sources are often unreliable.</li> <li>II.Technology: The adoption of rainwater harvesting systems at the household level has proven successful in some regions.</li> <li>III.Benefits: These systems collect rainwater during the wet season, providing a valuable source of water throughout the dry season.</li> <li>IV.Lessons Learned: Rainwater harvesting demonstrates the effectiveness of low-tech solutions that address local needs and climatic conditions, the potential for traditional and low-cost climate technologies alongside advanced solutions, and the need for support capacity building programmes to equip local communities with the knowledge and skills to operate and maintain these systems.</li> </ul>

Table 9  
List of CTCN Technical Assistance Projects Analyzed

Country Name	Name of the CTCN Technical Assistance
Bangladesh	<a href="#">Saline water purification for households and low-cost durable housing technology for coastal areas of Bangladesh</a>
Botswana	<a href="#">National Framework for leapfrogging to Energy Efficient appliances and equipment in Botswana</a>
Burundi	<a href="#">SLAMDAM Technology</a>
Chile	<a href="#">Technology Needs Assessment (TNA) and Technology Action Plan (TAP) for Chile`s NDC implementation</a>
Congo - Kinshasa	<a href="#">Conducting a Technology Needs Assessment (TNA) and a Technology Action Plan (TAP) for the implementation of NDC in DRC</a>

Cook Islands	<a href="#">Technical support and guidance to conduct a Technology Needs Assessment, develop a Technology Roadmap and provide technical assistance to develop a GCF Readiness proposal</a>
Côte d'Ivoire	Appui à l'élaboration du Système d'Information Environnementale (SIE) pour adresser les problèmes liés au changement climatique en Côte d'Ivoire
Eswatini	<a href="#">Leapfrogging Eswatini's market to energy-efficient refrigerators and distribution transformers</a>
Gambia	<a href="#">Improving Capacity for Recycling of Waste &amp; Organic Materials</a>
Georgia	<a href="#">Updating of Georgia's technology needs assessment (TNA) through development of technology road maps for prioritized technologies</a>
Ghana	<a href="#">Developing a national policy for deploying and scaling up e-mobility in Ghana</a>
Honduras	<a href="#">Technical Assistance for nature-based solutions with an ethnic and gender equity approach in rural mountain communities</a>
Jamaica	<a href="#">Development of Multidisciplinary Climate Change Research and Technological Development (R&amp;TD) agenda</a>
Kenya	<a href="#">Catalysing low-cost green technologies for sustainable water service delivery</a>
Laos	<a href="#">City Climate Vulnerability Assessment and Identification of Ecosystem-based Adaptation Intervention in Laos</a>
Liberia	<a href="#">Upscaling lowland rice production to improve food security through improved solar powered irrigation practices</a>
Maldives	<a href="#">Establishment of a skimming well gallery system for agricultural use</a>
Mauritius	Feasibility study of anaerobic digestion of the organic fraction of solid wastes in Mauritius
Mexico	<a href="#">Analysis of the current situation of the construction and demolition sector in respect of the Circular Economy in Mexico City</a>
Mozambique	<a href="#">Development of an action plan for rainwater harvesting system and financing proposals for Mozambique</a>
Namibia	<a href="#">Leapfrogging Namibia's market to energy-efficient refrigerators and distribution transformers</a>
Nauru	<a href="#">OTEC: Ocean Energy Technical Pre-Feasibility Study</a>
Nepal	<a href="#">Customized weather and climate information system for climate-resilient agriculture in Nepal</a>
Panama	<a href="#">Development of a Marine Dynamics database for the Panamanian coasts to assess vulnerability and climate change impacts to sea level rise</a>
Papua New Guinea	<a href="#">Developing a national policy for deploying and scaling up E-mobility and supporting sustainable infrastructure in Papua New Guinea</a>
Paraguay	CTCN helped us develop our first TNA and TAP

Saint Kitts and Nevis	<a href="#">Increase the water supply system resilience by managing aquifers recharge (MAR) and incorporating drought risks modelling as a planning tool for climate change adaptation measures</a>
Senegal	<a href="#">Technical and economic feasibility of solar milling in women-led agri-food SMEs</a>
Solomon Islands	<a href="#">Feasibility Study for Low Carbon Transport in Solomon Islands</a>
South Africa	<a href="#">Capacity Development for the Deployment of Demand Response (DR) in South Africa to Mitigate against Carbon Emissions and Electricity Supply Shortages</a>
Sudan	<a href="#">Developing methodology and capacity for monitoring climate change and its impacts on agriculture in Sudan Context</a>
Tanzania	<a href="#">Sustainable domestic water pumping using solar photovoltaic</a>
Thailand	<a href="#">Fostering Green Building in Thailand for a Low Carbon Society - Enabling Readiness for Up Scaling Investments in Building Energy Efficiency for Achieving NDC Goals</a>
Timor-Leste	<a href="#">Capacity building in Timor-Leste's renewable energy sector</a>
Togo	<a href="#">Development of climate-smart municipalities</a>
Tunisia	<a href="#">Smart drinking water network in Tunisia: first phase in Sousse and Monastir</a>
Uruguay	<a href="#">Development of technology tools for the assessment of impacts, vulnerability and adaptation to climate change in the coastal zones of Uruguay</a>
Vietnam	<a href="#">Cost-benefit assessment of mitigation options in rice production</a>
Zambia	<a href="#">Leapfrogging Zambia's market to energy-efficient refrigerators and distribution transformers</a>
Zimbabwe	<a href="#">Developing a national framework for deploying and scaling up e-mobility</a>