REVIEW OF THE CLIMATE TECHNOLOGY CENTRE AND NETWORK

To inform ongoing negotiations to establish the Santiago Network for Loss and Damage

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Contents

Acronyms

AFCIA	Adaptation Fund Climate Innovation Accelerator
AfDB	African Development Bank
AILAC	Independent Alliance of Latin America and the Caribbean
ARC	African Risk Capacity
AWG-LCA	Ad Hoc Working Group on Long-term Cooperative Action
BINGO	business and industry non-governmental organization
CDM	Clean Development Mechanism
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CREWS	Climate Risk and Early Warning Systems initiative
CTC	Climate Technology Centre
CTCN	Climate Technology Centre and Network
EB	executive board
EbA	ecosystem-based adaptation
EGTT	Expert Group on Technology Transfer
ENGO	environmental non-governmental organization
EU	European Union
ExCom	Executive Committee of the WIM
GCA	Global Center on Adaptation
GCF	Green Climate Fund
GEF	Global Environment Facility
GST	Global Stocktake
HoD	Heads of Delegation
IPRs	intellectual property rights
KMS	Knowledge Management System
L&D	loss and damage
LDCs	least developed countries
MDBs	multilateral development banks
NbS	nature-based solutions
NDAs	national designated authorities
NDC	Nationally Determined Contribution

NDE	national designated entity
RD&D	research, development, and demonstration
RINGOs	research and independent non-governmental organizations
SASSCAL	Southern African Science Service Centre for Climate Change and Adaptive Land Management
SBs	subsidiary bodies
SBSTA/SBI	Subsidiary Body for Scientific and Technological Advice/Subsidiary Body for Implementation
SIDS	small island developing states
SNLD	Santiago Network for Loss and Damage
SOEs	slow-onset event
TEC	Technology Executive Committee
TM	Technology Mechanism
TNA	Technical Needs Assessment
TOR	terms of reference
UN	United Nations
UNDP	UN Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
UN-SPIDER	UN Platform for Space-based Information for Disaster Management and Emergency Response
US	United States
WIM	Warsaw International Mechanism
WFP	World Food Programme
WMO	World Meteorological Organization

Executive summary

Loss and damage associated with the adverse effects of climate change is an urgent issue, with impacts already being experienced by vulnerable countries. The establishment of the Santiago Network for averting, minimizing, and addressing loss and damage associated with the adverse effects of climate change (SNLD), as part of the Warsaw International Mechanism (WIM), is a step in the right direction. However, there has been no decision on the operationalization of the SNLD, nor a mandate to adopt modalities to facilitate cooperation and collaboration between parties and such organizations, bodies, networks, and experts. There is also no common understanding of what the functions of the SNLD will be. As a result, it is unclear how parties can come together to discuss the future of the SNLD to ensure that it meets the needs of climate-impacted people and countries, and that it is operationalized as a technical implementation arm of the WIM through which vulnerable countries can receive support to avert, minimize, or address loss and damage.

As it can be difficult to create new institutions under the United Nations Framework Convention on Climate Change (UNFCCC), current practice is to use existing models in terms of lessons learned. In this instance, there are no relevant models under the UNFCCC other than the Climate Technology Centre and Network (CTCN).

This report reviews the establishment, operations, and effectiveness of the CTCN and relies on lessons learned to inform ongoing negotiations to operationalize the SNLD. It also proposes recommendations for the operationalization of an effective SNLD and briefly looks at possible governance structures.

Section 1 provides background on the Technology Mechanism (TM) under the UNFCCC, while Section 2 takes a closer look at the evolution of the CTCN, in particular issues, barriers, and challenges that had to be overcome in its establishment. Section 3 examines the operational structure of the CTCN, including its mandate, functions, and terms of reference, and Section 4 looks at its governance structure.

Section 5, which explores the implementation of the CTCN's functions, looks at the CTCN's early days and how it provides technical assistance. It also looks at how the CTCN is funded, how this shapes its functions, how the CTCN's work is aligned with its mandate, and how it functions as a wide-reaching network. Another area of investigation is how it delivers on the needs of developing countries and how effective it is in meeting these needs, as well as how it collaborates with other mechanisms.

Section 6 analyses the performance of the CTCN, its strengths and weaknesses, and how these impact its operations. From this, the study arrives at lessons learned, which are aimed at guiding the SNLD process going forward. We are reminded that any international instrument is the product of compromise. It is therefore important to ensure that such negotiations are the result of a country-driven process and that the SNLD is operationalized in a manner that will deliver on the needs of vulnerable countries. It is also necessary to keep in mind that there will be unintended consequences, and that even well-intended designs might cause both implementation delays and have a detrimental impact on the success of the SNLD. One of the

unintended consequences emanating from the CTCN design is that it seems that while the Climate Technology Centre (CTC) is dominant, the Network has essentially become a list of potential contractors. This is one of the main risks currently faced by the SNLD and its future: what is needed is more than a list of potential contractors.

Section 7 looks at the lessons learned. One of the main lessons emanating from the CTCN negotiations is that requests have to be realistic – if not, this will result in a political barrier. Another lesson is that the finance system must be designed from the start to ensure that no one is left behind and that the vulnerable are protected. Funding is needed for both the host institute and secretariat, and to finance activities. Often this is problematic, as donors tend to finance activities but not the coordinating entity.

Importantly, operationalization does not happen in an instant. It takes time to put in place the necessary structures and to ensure that the intended beneficiaries are able to take part. Given the response component of the SNLD, it may be tested on its first day or it may be a year before there is a major test of its ability to address loss and damage. It is therefore crucial that the SNLD is fit for purpose as soon as possible.

In addition, capacity has been shown to be an issue. When the process relies on requests from countries, via their national designated entities (NDEs), these NDEs must be capacitated accordingly. However, such capacity building has been problematic. For a mechanism to truly succeed as a country-driven process, more national institutions must be capacitated. This will ensure that enough requests are made to the NDE and will build long-term capacity in the country itself. And while NDEs should be the first point of contact, they should not be burdened with too many responsibilities. Instead, focal points, NDEs, and national designated authorities (NDAs) should be brought together to build a common understanding of processes.

Another lesson has been that one size does not fit all and that countries have different needs and competencies. Also, the size of the project matters, as it can be a struggle to get funding for smaller projects, while bigger projects may be too difficult to implement – or the donor funding comes with too many conditionalities.

The CTCN also indicated that it had various takeaways from its experiences, namely using a geographic lens, ensuring that there is an understanding of local circumstances, focusing on identifying and implementing solutions that are replicable and scalable, connecting developing country NDEs to other climate change focal points, and ensuring the data is in place to demonstrate impact.

Section 7 also examines the functions of the SNLD and looks at the steps already taken by the UNFCCC, as well as some of the resultant outcomes. It also sets out recommendations on operationalizing the SNLD. While there may be unintended negative impacts over the long term if there is a failure to consider all aspects of the SNLD's operationalization, it is equally important to prevent delays. It is therefore crucial to have a clear idea of how relevant parties view its functions. Such a common understanding is vital in negotiating an SNLD that can deliver on its mandate. This also means that it needs to be able to deliver on developing countries' expectations and respond to the impacts of slow-onset and extreme weather events. Equally important, the SNLD needs to tie in with existing structures, while keeping in mind that

it is only as strong as the link between it and the country – in this case it is the NDE. In addition, financial arrangements have to be in place from the outset, and care must be taken with the selection of an operating entity. Other recommendations are to enter into framework contracts with network partners on a drawdown basis, to encourage the participation of the private sector, and to establish a programme of work.

To further these goals, this section also includes three proposed governance structures for the SNLD and their relative strengths, weaknesses, and feasibility.

Clearly, there are many different views, as seen in the conclusion, on operationalizing the SNLD. Developed countries, in the main, tend to feel that a formal process is not needed, while developing countries have been outspoken about their belief in the importance of its operationalization. Developed countries also expressed views that the SNLD merely needs to catalyse support. A strong concluding argument is made that the decision language makes provision for two functions: coordination and implementation. The situation should be avoided, at all cost, where the SNLD becomes nothing more than a list of potential contractors. The coming months will determine the direction of this conversation. At the same time, loss and damage is increasing exponentially. As one of the negotiators pointed out, ‘We mustn’t wait but shouldn’t rush’.

1 Introduction

It has taken years for the loss and damage negotiations to gain momentum and for parties to agree on and establish the Santiago Network for Loss and Damage (SNLD). At the same time, developing countries face increasing levels of loss and damage to lives and property owing to climate change impacts, for example extreme weather events such as superstorms and slow-onset events such as sea-level rise and desertification.

At the opening of the Climate Dialogues on 23 November 2020, the chair of the G77, and China noted: 'We are poised on a precipice and much is at stake, as climate change continues to carve a destructive path across the globe … We all need to be reminded that maintaining a "business as usual" approach, or doing nothing, or backsliding on our commitments, is not an option. We also cannot be indifferent to its effect in undermining the development gains of our countries, even as we strive to achieve the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals'. She continued: 'The world now deals with the economic, social, and environmental impacts of the COVID-19 pandemic. Now more than ever, we must come together to fashion solutions that go beyond narrow national interests and build the future we want for people, planet, and prosperity' (G77 and China, 2020: para. 3).

1.1 The need to establish the Santiago Network for Loss and Damage

The loss and damage discussion is not an easy one, nor is addressing loss and damage. In 2019, during the United Nations (UN) Climate Change Conference, COP25, the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) established, as part of the Warsaw International Mechanism (WIM), the Santiago Network for averting, minimizing, and addressing loss and damage associated with the adverse effects of climate change (SNLD). This was meant to catalyse the technical assistance of relevant organizations, bodies, networks, and experts for the implementation of relevant approaches at the local, national, and regional level in developing countries that are particularly vulnerable to the adverse effects of climate change (UNFCCC, 2020c: para. 43).

Decision 2/CMA.2, however, did not provide for a process to convene or make the SNLD operational. This means there is no decision on the operationalization of the SNLD nor a mandate to adopt modalities to facilitate cooperation and collaboration between parties and such organizations, bodies, networks, and experts. The establishment of the SNLD is not yet a formal agenda item on the May–June 2021 meetings of the Subsidiary Bodies (SB) of the United Nations Framework Convention on Climate Change (UNFCCC) or of COP26. This leaves further uncertainty on how parties can come together to discuss the future of the SNLD so that it meets the needs of climate-impacted people and countries. There is also no mandate given to the Executive Committee of the WIM (ExCom) to take steps to operationalize the SNLD.

As a result, the COP President currently guides its implementation (G77 and China, 2020: para. 5).[1] The incoming presidency views the SNLD as a key instrument to catalyse technical assistance in addressing loss and damage in the context of the WIM. It has called on parties, the private sector, academia, international organizations, and financial institutions to participate in

and contribute to this initiative in making coordinated efforts to mobilize assistance and resources in support of vulnerable developing countries.

Without a clear mandate to operationalize the SNLD, it is a complex discussion to determine what should be put in place to catalyse assistance to vulnerable countries. The implication is that needs are being anticipated while a structure is being proposed, yet any structure needs to be clear on requirements.

This lack of clarity on what is being proposed is already visible within the UNFCCC. An information note sent to parties at the end of 2020 said that, while 'building on the *strategic workstreams* for cooperation and facilitation under the Warsaw International Mechanism (WIM), the Santiago Network aims to *provide a platform* for connecting developing countries with providers of [the] technical resources they need for implementing relevant approaches to manage climate risks comprehensively at the local, national and regional level' [emphasis added] (Youssef, 2020).

The SNLD website, on the other hand, states: 'Building on the *thematic areas* of cooperation and facilitation under the Warsaw International Mechanism for Loss and Damage, vulnerable developing countries would be able to *request technical assistance for relevant approaches* for averting, minimizing and addressing' (UNFCCC, 2021a).

In addition, the Santiago Network will 'connect vulnerable developing countries with providers of technical assistance, knowledge, resources they need to address climate risks comprehensively in the context of averting, minimizing and addressing loss and damage' (UNFCC, 2021d).

These are different visions. While one aims to establish a platform to connect parties, the other proposes to allow requests for technical assistance.

The COP decision, meanwhile, states the need to 'catalyze the technical assistance of relevant organizations, bodies, networks and experts, for the implementation of relevant approaches at the local, national and regional level, in developing countries that are particularly vulnerable to the adverse effects of climate change' (UNFCCC, 2020b: para. 43).

The decision language is clear in that technical assistance will be catalysed, and that this assistance will come from relevant organizations, bodies, networks, and experts. This will be done in order to implement relevant approaches at local, national, and regional levels in developing countries that are particularly vulnerable to the adverse effects of climate change.

What is crucial is ensuring that the SNLD is operationalized as a technical implementation arm of the WIM through which vulnerable countries can receive support to avert, minimize, or address loss and damage.

1.2 Using the CTCN as a possible modality

As it can be difficult to create new institutions under the UNFCCC, current practice is to use existing models in terms of lessons learned. In this instance, there are no relevant models under the UNFCCC other than the CTCN. Since the TM already has these policy and implementation

components, there was consensus among civil society groups that it would serve as a suitable model for loss and damage.[2]

The question was, should a separate and distinct network be established from scratch, or could the existing institutional architecture and model of the CTCN be used to help the SNLD get off the ground? This has been complicated by the need to recognize the politics surrounding loss and damage.

This study will be used to determine whether the CTCN is a suitable model for the proposed SNLD. It will review the establishment, operations, and effectiveness of the CTCN and will rely on lessons learned to inform ongoing negotiations to operationalize the SNLD. This study also proposes recommendations for the operationalization of an effective SNLD and briefly looks at proposed governance structures.

1.3 Project methodology

The following methodology was applied to conduct the review:

1) Inception phase.
2) Literature review and document analysis: synthesizing literature that addresses the objective and scope of the project.
3) Interviews conducted with 15 informants from the CTCN, UNFCCC Secretariat, parties, members of the TEC and Advisory Board, negotiators during the establishment of the CTCN, those involved in the operationalization of the CTCN ('originators'), and other stakeholders involved in the work of the CTCN.
4) Drafting: developing the project document.
5) Participation in various relevant meetings and stakeholder consultations to gain further information and insight.
6) Regular meetings with the project group to provide updates on progress and to ensure the objective and scope of the project were still being met.

2 The technology mechanism under the United Nations Framework Convention on Climate Change – a background

Technology transfer to deal with climate change, for both mitigation and adaptation solutions, has been an objective of the UNFCCC since its adoption in 1992 (UNFCCC, 1992: Art. 14).

In 2001, during COP7, which led to the adoption of the Marrakesh Accords, parties agreed to implement a technology transfer framework, at the time officially known as the Framework for Actions to Enhance the Implementation of Article 4, Paragraph 5, of the Convention (see TT:Clear TTF, n.d.). Parties also established the Expert Group on Technology Transfer (EGTT), a joint Subsidiary Body for Scientific and Technological Advice/Subsidiary Body for Implementation (SBSTA/SBI) measure. The expert group would enhance the implementation of this framework and further technology transfer activities (UNFCCC, 2001). Since then, the focus has been on implementing the activities set out in the framework's main themes: technology needs and needs assessments, technology information, enabling environments, capacity building, and mechanisms for technology transfer (Lee and Mwebaza, 2020). In 2007 at COP13 in Bali, the EGTT was reconstituted for a further five years (UNFCCC, 2007). Negotiators wanted to improve its ability to provide advice and focus more on implementation work. The 2007 Bali Action Plan (UNFCCC, 2008) had technology transfer as one of its pillars. Discussions began on the need for a new mechanism to strengthen action on technology development and transfer, to support developing countries in terms of adaptation and mitigation.

In 2009, at COP15 in Copenhagen, it was decided that a TM would be established to enhance action on the development and transfer of technology on adaptation and mitigation that would be guided by a country-driven approach and be based on national circumstances and priorities (UNFCCC, 2010: para. 11). During this time, the UNFCCC also observed a change of terminology when parties started referring to 'technology development and transfer' instead of merely 'technology transfer' (Craft et al., 2017: 6). In December 2010, during COP16 in Cancun, the TM was established as part of the Cancun Agreements (UNFCCC, 2011a: 117) and the EGTT's mandate was terminated (ibid.: para. 124). The Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) under the UNFCCC worked throughout 2011 to ensure the full operationalization of the TM in 2012 (ibid.: para. 128).

In 2015 it was decided that the TM would serve the Paris Agreement (UNFCCC, 2016a: Art. 10(1)). The Paris Agreement also sets out a shared long-term vision of the parties, which is the importance of fully realizing technology development and transfer to improve resilience to climate change and to reduce greenhouse gas emissions (ibid.: Art. 10(1). The Paris Agreement established the Technology Framework which would provide overarching guidance to the work of the TM in promoting and facilitating enhanced action on technology development and transfer to support the implementation of the Paris Agreement, in pursuit of the long-term vision on technology development and transfer (ibid.: Art. 10(4).

The objective of the TM is to enhance action on climate technology development and transfer. The TM consists of two components – the Technology Executive Committee (TEC) and the Climate Technology Centre and Network (CTCN). The CTCN, in turn, comprises the Climate Technology Centre – a coordinating body based in Copenhagen – and the global network of organizations that deliver both virtual and actual CTCN services. The centre therefore operates the network and together they form the CTCN – an important distinction to bear in mind whenever one sees the acronym 'CTCN'. The CTCN fulfils its mandate within specific terms of reference (TOR) and is guided by an advisory board that meets twice a year. It is accountable to the COP through this board (UNFCCC, 2012a: Annex VII).

The TEC and CTCN each have their respective functions, decided in Cancun, and should facilitate the effective implementation of the TM under the guidance of the COP (UNFCCC, 2011a: para. 118). The TEC, serving the COP, is a strategic body and functions as the policy arm of the TM, providing guidance, doing strategic planning, identifying barriers, and ensuring collaboration, while the CTCN serves countries and functions as the implementation arm of the TM.

To ensure the effective functioning of the CTCN, it was decided that a host organization would provide the necessary administrative and infrastructural support to the Climate Technology Centre. Interested organizations, and consortia of organizations, were invited to submit proposals to host the Climate Technology Centre (UNFCCC, 2012a: paras 136, 137).

The UN Environment Programme (UNEP) and the UN Industrial Development Organization (UNIDO), with a consortium of 11 partners that provides extensive expertise in knowledge management and network development to the CTCN, won this bid. UNEP and UNIDO manage the CTCN not as an independent institution but rather as a joint project, and in turn it relies on various processes within them (UNFCCC, 2017b).

The CTCN is the primary source of information and technical assistance on climate technology issues under the UNFCCC, for both mitigation and adaptation efforts (UNFCCC, 2013b: 7).

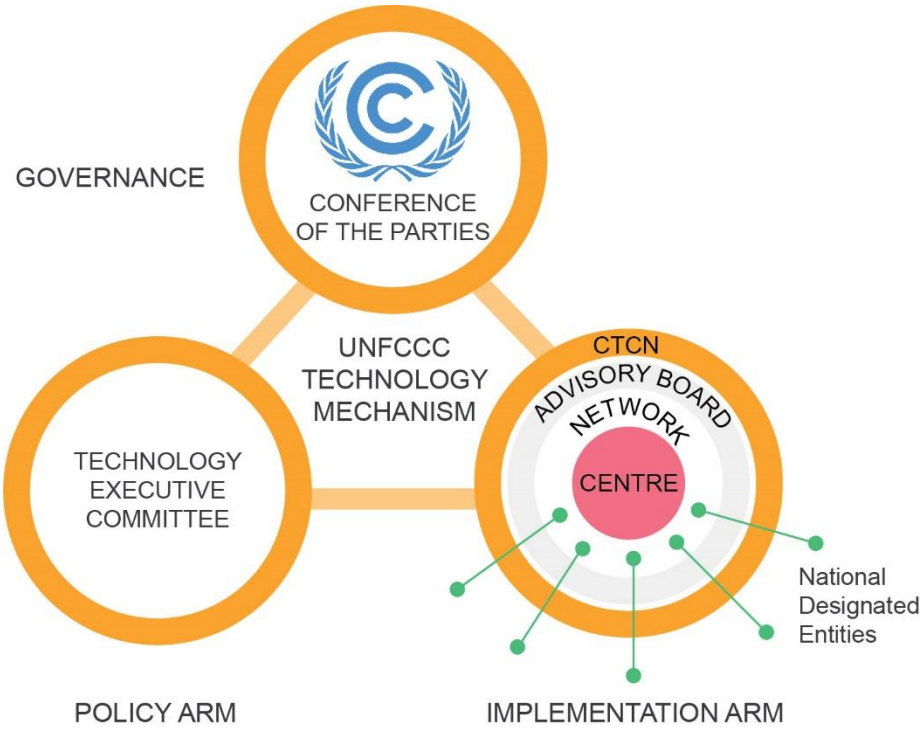

Figure 1 The UNFCCC Technology Mechanism

Source: adapted from TT:Clear, n.d.

3 The evolution of the Climate Technology Centre and Network

The first step during the negotiations was to move technology transfer out of the SBSTA[3] mode of advice giving, which had its limitations, into implementation in developing countries. This planted the seed for the creation of the CTCN. The negotiations in Bali started the momentum, with the CTCN and its mandate established at the Cancun negotiations (AOSIS Negotiator, 2021).

3.1 Issues, barriers, and challenges that had to be overcome to establish the CTCN

During the initial years of the negotiations, there were a few barriers to overcome to reach an agreement to establish the CTCN that made technology transfer a controversial topic. But, as the negotiations continued and the barriers and challenges were addressed, the topic became less controversial and met with less resistance at the negotiations.

3.1.1 Technology fund

While it was agreed that developing countries should be given technical assistance, the main difference among the various groupings was that only some wanted to establish a technical fund (CTCN Originator, 2021). Early in the negotiations developing countries wanted such a fund, which essentially meant asking developed countries to pay for technology transfer. Since this was difficult to put into practice, the issue blocked discussions for a long time (ibid.). Developed countries did not want any obligations to provide financial assistance and resisted the establishment of the TM.

When the CTCN was set up, the initial hope was that it would be possible to create a trust fund on a contribution basis. However, countries would decide on their own amounts of funding, aimed at different purposes and beset with conditions. For example, half the funds from the United States (US) would be targeted at US institutions. The European Union (EU), on the other hand, was focused on capacity building, which meant that CTCN beneficiaries would have to report to each donor on different priorities, which would become an administrative nightmare (ibid.).

Eventually, the CTCN was created as the operational arm of a technical assistance mechanism, and not a fund transfer mechanism. The compromise was that something parallel to the Global Environment Facility (GEF), and later the Green Climate Fund (GCF), specifically for technology would not be set up but that assistance to understand technology needs would be given (ibid.). Essentially, what this meant for developing countries is that there was no technology fund created that could be accessed by countries as and when the need arose. Instead, countries have to submit requests, through their NDEs, to initiate the process of receiving technical assistance.

3.1.2 Intellectual property rights

Intellectual property rights (IPRs) were a highly contested issue in the discussion on technology transfer and development. The lack of agreement on the issue often resulted in negotiating texts on IPRs remaining bracketed. One the one side were those who viewed IPRs as a precondition for technology transfer. On the other side were those who perceived IPRs as an obstacle in any attempt to scale the transfer of climate change technologies and ensure swift and affordable access to these (Abdel Latif et al., 2011: 3).

Compulsory licensing was the most contentious proposal in the UNFCCC negotiations on improving technology transfer. The US, for example, claimed that it would discourage investment in innovation (Schwartz and Niyogi, 2009; 2).

At the December 2010 UNFCCC meeting in Cancun, developing countries suffered a setback when the final text of the decision of the AWG-LCA failed to even mention intellectual property. The text was adopted by the President of the COP, the Mexican Minister of Environment, overriding the objection of the Bolivian delegation. After the Cancun conference, India and other developing countries tried to restore the IPR issue to the UNFCCC's AWG-LCA negotiating agenda, but developed countries, particularly the US, maintained that the issue had been settled in Cancun.

The disagreement on IPRs continued and arose again at the TEC's inaugural meeting in September 2011. Eventually, Sudan suggested a compromise whereby IPRs would be discussed when dealing with barriers to technology transfer, instead of being addressed directly. This was eventually agreed to (Khor, 2012: 31).

3.1.3 Bidding process: CTCN host

It was decided that the CTCN host would be determined by means of a tender process. This was the first time such a step was taken, resulting in a fascinating if complicated bidding process within the UNFCCC process. UNEP, GEF, and the private sector were among those bidding for the host position. UNEP, with an 11-member consortium, won the bid (UNFCCC Subsidiary Body for Scientific and Technological Advice, 2013: section 2). UNEP is based in Nairobi, and developing countries were pleased that the host would be based in Africa. However, they were not aware that UNEP would host with UNIDO, based in Copenhagen, resulting in the base being in Europe (LDC Negotiator, 2021). This was because the Danish government, which also had an interest in hosting the CTCN, offered it the use of office space in a new UN building in Copenhagen. This proximity to other UN organizations was helpful in terms of fundraising and collaboration (CTCN Originator, 2021).

UNEP entered into a framework contract with each consortium partner on a drawdown basis. If a partner were selected for a task, an internal procedure would follow. For example, if there was a project in Botswana on solar energy, partners could state their interest and bid on it in an internal process. Selections were made by the Secretariat, after which the contract would be drawn down, so it was not necessary to draw up a new contract every time for relatively small amounts (ibid.). This structure worked well and delivered fast and flexibly, thereby keeping countries interested and the momentum going.

From the beginning the CTCN had to solicit funds, occupying a lot of the Director's time and to a certain extent it meant that the CTCN had a false start. Also, initial funding received from the

GEF was less than anticipated. Without sufficient funding in place it was not possible for the CTCN to properly compensate knowledge partners and so guarantee their engagement (ibid.).

3.1.4 Role of the private sector

While the UNFCCC is an intergovernmental process, technology development and transfer requires the involvement of the private sector. Securing effective involvement of the private sector in a governmental process that is aligned with the most pressing technology development and transfer needs was one of the initial challenges. While developed countries wanted the World Bank, and assumed it would ensure the involvement of the private sector, developing countries instead wanted the private sector to come on board via governments and not directly.

Today the private sector comprises 48.8 per cent of the Centre's Network (GDI, 2020: 4). When working with the private sector, the CTCN mostly uses the services of small- and medium-sized companies for technical assistance and capacity development. Applications to join the Network are vetted by the CTCN, which uses the procurement services of UNIDO and UNEP to contract implementers from the Network (ibid.).

3.1.5 Two components of the TM

The TMs having two components was the result of a compromise during negotiations. Initially, developing countries only advocated a 'technology policy council', but the US had reservations and instead proposed a technology centre and network. After negotiations, it was decided that together these two elements would form a Technology Mechanism. Ongoing negotiations addressed the relationship between the two components, since developing countries wanted the centre and network to fall under the authority of a 'policy committee'. This would mean that the committee would make decisions on policy matters, including the operations of the centre/network. The US, on the other hand, wanted them to be autonomous, in terms of lines of authority, from each other (Khor, 2012: 28).

At the inaugural meeting of the TEC, where the modalities and procedures of the committee were elaborated, there was still no clarity on the relationship between the TEC and CTCN. While Turkey, for example, felt that the TEC would be hamstrung if it were purely advisory, Australia maintained that the relationship between the TEC and the CTCN should be limited to information exchange (ibid.: 31).

Finland, meanwhile, contended that the Cancun decision had been clear on the functions, mandate, and roles of the CTCN and the TEC. The TEC, which served the COP, was a strategic body, while the CTCN, which would serve countries, was the TM's operative arm. TEC members should therefore be able to discuss policy, finances, and the CTCN, providing guidance and advice. It added that the TEC had no funds, while the CTCN should have funds and dedicated experts to respond to countries' requests for advice (ibid.: 28).

4 Operational structure of the Climate Technology Centre and Network

As work was undertaken to operationalize the TM and its two components, it was agreed that the CTCN would operate on the basis of a country-driven process (Khor, 2012: 31). What was left for parties to decide was:

- the TOR and governance structure of the CTCN;
- the criteria and selection procedure for the host of the CTCN;
- the relationship between the TEC and the CTCN to ensure coherence, and the reporting lines of these two bodies within the Convention;
- how parties would finance the TM; and
- how the TM would interact with other parts of the international climate change architecture in the most efficient and effective way (ibid.: 32).

Many emphasized that the TM should be operationalized as soon as possible, with the CTCN starting small and remaining flexible so that it could grow over time in response to the needs of developing countries (ibid.).

Table 4.1 summarizes the various COP decisions that operationalized the CTCN (CTCN Founding Documents, n.d.). Based on its mandate, the CTCN operates within its TOR to fulfil its functions and is accountable to, and under the guidance of, the COP through its Advisory Board. The modalities and procedures of the CTCN[4] and the rules and procedures of the Advisory Board were adopted in 2013 at the Warsaw COP19. This in effect meant that the CTCN could start its work.

Table 4.1 COP decisions that operationalized the CTCN

COP	Decision	Action
COP16 Cancun 2010	Decision 1/CP.16, para. 117	The TM is established with the TEC and CTCN as its two components
	Decision 1/CP.16, para. 121	Function of the TEC
	Decision 1/CP.16, para. 123	Functions of the CTCN
COP17 Durban 2011	Decision 2/CP.17, para. 133, annex VII	TOR of the CTCN
	Decision 2/CP.17, para. 136	Selection process for the host of the CTC
COP18 Doha 2012	Decision 14/CP.18	Arrangements to make the CTCN fully operational
	Decision 14/CP.18, para. 2	UNEP selected as host of the CTC
	Decision 14/CP.18, para. 3	MOU with UNEP formalizes the roles and functions of the COP, UNEP, the CTCN, and consortium partners, as well as the financial arrangement for hosting the CTC
	Decision 14/CP.18, para. 5	Establishment of the Advisory Board
	Decision 14/CP.18, annex II	Constitution of the CTCN Advisory Board
COP19	Decision 25/CP.19, annex I	Adoption of the modalities and procedures of the CTCN

COP	Decision	Action
Warsaw 2013	Decision 25/CP.19, annex II	Adoption of rules and procedures of the CTCN Advisory Board

4.1 Mandate of the CTCN

The mandate of the CTCN, as defined in Durban, was kept broad and flexible, with soft definitions, with the intention that specifics would be decided during future negotiations. UNEP and UNIDO then translated the COP mandates into operational activities, and in 2013 the Advisory Board approved the CTCN's programme of work for 2013–2017 (CTCN, 2013b). The programme of work sets out the CTCN's operations, services, activities, timeline, and budget, and defines its vision as: 'Developing country parties to the UNFCCC have acquired the capacity, tools, and know-how to develop and upscale technology for climate change mitigation and adaptation' (UNFCCC, 2017b).

It also determines the CTCN's three core services (ibid.):

- providing technical assistance at the request of developing countries;
- creating access to information and knowledge on climate technologies; and
- organizing outreach and networking activities among climate technology stakeholders.

While the thinking behind the CTCN therefore did not change that much, its core services have been refined.

The UNFCCC Secretariat commissioned an independent review of the effective implementation of the CTCN four years after its inception (UNFCCC, 2011b: para. 11).[5]

In 2018 the CTCN instituted a regional operational model, giving it a more integrated approach to service delivery, and improving its ability to leverage common solutions to regional challenges. Each NDE now has a single point of contact, while previously there were multiple points of contact based on the relevant activity (e.g. technical assistance, capacity building, network outreach).

In 2019 the second Programme of Work was adopted for 2019–2022 (see CTCN, 2019a). Its focus is on strengthening and scaling up CTCN activities through the effective use of additional resources from partner organizations, the private sector, and other similar initiatives. The aim is to deliver more impactful technical assistance. This Programme of Work comprises various essentials, such as the CTCN's regional approach; strategic adaptation and mitigation technical assistance tools; North–South, South–South, and triangle cooperation; an emphasis on the gender dimension of its work; and a more efficient monitoring and reporting system.

4.2 Functions of the CTCN

The functions of the CTCN are to, at the request of a developing country, facilitate national, regional, sectoral, and international technology networks, organizations, and initiatives to engage network participants in the following (UNFCCC, 2011a: 123):

- Providing advice and support in identifying technology needs and implementing environmentally sound technologies, practices, and processes.
- Facilitating information, training, and support for programmes to build or strengthen developing countries' capacity to identify technology options, make choices, and operate, maintain and adapt technology.
- Facilitating prompt action in deploying technology in these countries.
- Stimulating and encouraging, through collaboration with the public and private sector, the development and transfer of environmentally sound technologies.
- Facilitating a network of international, national, regional, and sectoral technology centres, networks, organizations, and initiatives to:
    - Enhance cooperation with technology centres and relevant institutions.
    - Facilitate international public–private partnerships to accelerate the innovation and diffusion of environmentally sound technologies.
    - Provide in-country technical assistance and training.
    - Stimulate the establishment of twinning centre arrangements to promote North–South, South–South and triangular partnerships.
    - Identify, disseminate, and assist in developing analytical tools, policies, and best practices for country-driven planning.

4.3 Terms of reference of the CTCN

The TOR of the CTCN (UNFCCC, 2011b: Annex VII, para. 133) sets out the mission of the CTCN, namely, to stimulate technology cooperation, enhance the development and transfer of technologies, help developing countries to strengthen their capacity to identify technology needs, and ease the implementation of technology projects to support action on mitigation and adaptation and enhance low emissions and climate-resilient development. The functions, as decided in the Cancun Agreements, are reiterated in the TOR and the architecture of the CTCN, consisting of the Climate Technology Centre and a Network (UNFCCC, 2012a: Annex VII). The Network consists of national and regional technology centres and institutions; intergovernmental, international, regional, and sectoral organizations, partnerships and initiatives; and public and private research, academic and financial, non-governmental organizations, partnerships, and initiatives capable of responding to relevant requests from developing countries.

5 Governance structure of the Climate Technology Centre and Network

5.1 Advisory Board

In terms of governance, the CTCN must operate within its TOR and is accountable to, and under the guidance of, the COP through an Advisory Board (ibid.: Annex VII). The board provides guidance on both the CTCN's report and 'prioritization criteria' – criteria for prioritizing requests received from NDEs (UNFCCC, 2013a: Annex I) – taking into account the TEC's considerations and recommendations. In addition, it approves criteria regarding the structure of the Network, the designation of organizations as Network members, and the programme of work (e.g. business plan and annual operating plan). Other functions of the Advisory Board include endorsing the appointment of the director, the budget and the financial statement, and ensuring the application of fiduciary standards, as well as legal and ethical integrity. It should also monitor, assess, and evaluate the timeliness and appropriateness of responses. The Advisory Board meets twice a year.[6]

The CTCN, through its Advisory Board, reports directly to the COP in a joint report with the TEC.

Subsidiary bodies made recommendations to the COP on the constitution of the Advisory Board. It was agreed that the director of the CTCN would be the Advisory Board's secretary. The Advisory Board had to determine its operational modalities and rules of procedures based on the functions set out in Cancun.

To achieve a representation that is fair and balanced, the composition of the CTCN's Advisory Board is as follows:

- Sixteen government representatives, comprising equal representation from Parties included in Annex I to the Convention (Annex I Parties) and Parties not included in Annex I to the Convention (non-Annex I Parties).
- The Chair and the Vice-Chair of the TEC in their official capacity as TEC representatives.
- One of the Co-Chairs, or a member designated by the Co-Chairs, of the Green Climate Fund Board in his/her official capacity as a Green Climate Fund representative.
- The Chair or the Vice-Chair of the Adaptation Committee, or a member designated by the Chair and the Vice-Chair, in his/her official capacity as an Adaptation Committee representative.
- One of the Co-Chairs, or a member designated by the Co-Chairs, of the Standing Committee in his/her official capacity as a Standing Committee representative.
- The Director of the CTCN in his/her official capacity as the CTCN representative.
- Three representatives, with one being selected by each of the following UNFCCC observer organization constituencies, taking into account balanced geographical representation: environmental non-governmental organizations (ENGOs), business and industry non-governmental organizations (BINGOs), and research and independent non-governmental organizations (RINGOs), with relevant expertise in technology,

finance, or business. Based on specific agenda needs, the Advisory Board will also invite expert observers to attend meetings. This is done in accordance with the modalities and procedures developed by the Advisory Board during its first meeting. The director of the CTCN is also the secretary of the Advisory Board (UNFCCC, 2012b: Annex II). It has been noted that the guidance provided by the Advisory Board has assisted the CTCN with ensuring operational efficiency (UNFCCC, 2017b: 5).

The mandate of the Advisory Board is primarily to endorse operating plans and the budget, but its role has evolved beyond this and it now provides strategic guidance. The COP could revise its mandate, directing it to provide strategic guidance to the CTCN. Parties could also be encouraged to nominate Advisory Board members with relevant technical expertise (ibid.: 22).

5.2 The Climate Technology Centre

Organizational structure

The organizational structure of the Climate Technology Centre was designed to maximize the effectiveness and efficiency of its operations, and it was agreed that it would be a lean, cost-efficient structure within an existing institution, led by a director who manages a core team of professional and administrative staff. This team is appointed by and responsible to the host organization's governance structure in order to meet its responsibilities and perform its functions. To ensure the effective functioning of the CTCN, it was decided that the host organization would provide the necessary administrative and infrastructural support.

UNEP was selected as the host for an initial term of five years, which was renewed. There are two four-year renewal periods. The renewal of the agreement is subject to the host organization's fulfilling its functions and its responsiveness to the directions given. The Climate Technology Centre will operate on initial terms until 2026, at which time the COP will review its functions and decide whether to extend its term. The findings of the independent review undertaken in 2017 ('2017 Review'), found that the UNEP–UNIDO partnership was successful in delivering the CTCN's mandate, since they complement each other while using their own resources, networks, and processes to ensure the operationalization of the CTCN and its integration into the UNFCCC and COP systems (UNFCCC, 2012b: 18).

The director is approved by and accountable to the host governing body and also facilitates the timely recruitment of the Centre's staff.

One question that has been raised is what happens if the host agreement is not renewed and a new host is appointed: will it have to go through the bidding process again? What happens to the institutional memory (LDC Negotiator, 2021)?

Roles and responsibility

The Climate Technology Centre manages the process of receiving and responding to requests from developing country parties and works with the Network to act on these. Requests are received through the national designated entity (NDE) (UNFCCC, 2018b).[7] Either the Climate

Technology Centre responds to requests by developing country parties or it identifies the appropriate organizations in the Network, in consultation with the requesting country. The Centre therefore:

- Receives and assesses requests, refining and prioritizing these with the NDE to establish their feasibility.
- Responds to requests in accordance with its approved modalities and procedures.

5.3 The Network

It is the role and responsibility of network members to undertake the substantive work to address requests made to the Climate Technology Centre by developing country parties.

5.4 The TEC

The Chair of the TEC takes part in Advisory Board meetings and in other collaborative arrangements between the TEC and the CTCN.

The COP has, in several instances, encouraged the CTCN to collaborate more with the TEC (UNFCCC, 2013a, 2015, 2017a). This collaboration consists of the following: the TEC Chair and Vice-Chair take part in CTCN Advisory Board meetings, while the CTCN Advisory Board Chair and Director participate in TEC meetings and Task Forces. The TEC and the CTCN have also delivered mutual key messages in their joint annual reports to the COP. In addition, the TEC's recommendations are often submitted at Advisory Board meetings.[8]

Collaboration on the joint annual report encourages the two entities to work along common lines, and Climate Technology Centre staff say they regularly use TEC briefs in CTCN operations and activities. They also contributed to a TEC policy brief on South–South and triangular cooperation on adaptation technologies in water and agriculture.

However, interviewees of the independent report of the CTCN indicated that the link between the two TM components could be strengthened to encourage more integrated collaboration on country priorities and support Nationally Determined Contribution (NDC) implementation (UNFCCC, 2017b: 48). At its sixth meeting the Advisory Board suggested to 'establish greater coherence between TEC and CTCN meetings to track progress and establish a common narrative for the TM'[9], and at its eighth meeting the Advisory Board suggested that the CTCN should be actively engaged in the TEC's RD&D Task Force, beyond its own taskforce.

Advisory Board meetings also advance coordination with the TEC and other bilateral and multilateral collaborations, since representatives of partner institutions participate in specific discussions (UNFCCC, 2017b: 59).

Technical Needs Assessments

The TEC uses Technical Needs Assessments (TNAs) and their syntheses to prioritize activities under the TM. They are also a valuable source of information for various stakeholders, including governments and the private sector (UNFCCC, 2016c; TT:Clear TEC, n.d.).

These TNAs are analysed, with the results used to guide support for countries and enhance the effectiveness of the TNA process. The TEC has provided policy messages to the COP on TNAs and also produced specific policy briefs.

Through its three core services of technical assistance, capacity building, and knowledge sharing, the CTCN can support countries in undertaking and implementing TNAs.

5.5 Reporting

The Climate Technology Centre must provide an annual report on the activities of the CTCN in order to facilitate the preparation of the joint annual report by the CTCN and the TEC on the activities of the TM. The annual report contains all the information necessary to meet the principles of accountability and transparency required by the UNFCCC. It also includes information on requests received and activities carried out by the CTCN, on the efficiency and effectiveness in responding to these requests, and on ongoing work, as well as lessons learned and best practices gained from that work.

5.6 Monitoring and evaluation

According to various COP decisions (UNFCCC, 2011b: Annex VII; UNFCCC, 2013a: Annex I), the Advisory Board and the CTCN itself have to monitor and evaluate the activities of the CTCN, while UNEP and UNIDO's financial reporting mechanisms are responsible for its financial monitoring (UNFCCC, 2017b: 12).

6 Implementation of the Climate Technology Centre and Network's functions

6.1 Early days

During the first phase of operationalization, a large part of the CTCN's budget went to the development of the Knowledge Management System (KMS) and the empowerment of NDEs. Since 2016, the CTCN has dedicated its financial resources to delivering technical assistance projects and bolstering networking and stakeholder engagement activities. While it does not have many other expenses, funds are limited. This means that the share of the budget allocated to operations has been higher than expected (compared with the share dedicated to services) as a result of fixed costs UNFCCC, 2017b: 19).

6.2 How does the CTCN provide assistance?

Developing countries, through their NDEs, submit a request to the CTCN. There are currently 161 nationally selected technology focal points (CTCN NDE, n.d.),[10] which are usually based in national ministries of environment or energy.

For a request to be considered, it must be shown to be in alignment with national plans and NDCs, as defined in the guiding principles of the Prioritization Criteria for Technical Assistance and set out in the technical assistance request form (CTCN, 2013a). In addition, the 2017 operating plan refers to NDCs, which will be in the spotlight in terms of technical assistance and capacity-building services (UNFCCC, 2017b: 44).

Either a consortium partner or a Network member must provide the technical assistance. The technical assistance procedures (CTCN, 2015a) are as follows:

- Review: deciding on the eligibility and prioritization of the request submitted by the NDE.
- Design: forming the team and designing the response plan that will be either executed by the consortium partner or tendered to Network members.
- Implementation: selecting and contracting the implementation team, implementing the response plan.
- Learning and monitoring/completion: learning from and sharing the results after completion of the technical assistance project, and monitoring its impact (UNFCCC, 2017b: 38).

Figure 2 gives an overview of the status of requests for technical assistance from the Climate Technology Centre and Network (2014–2020) (UNFCCC, 2021a).

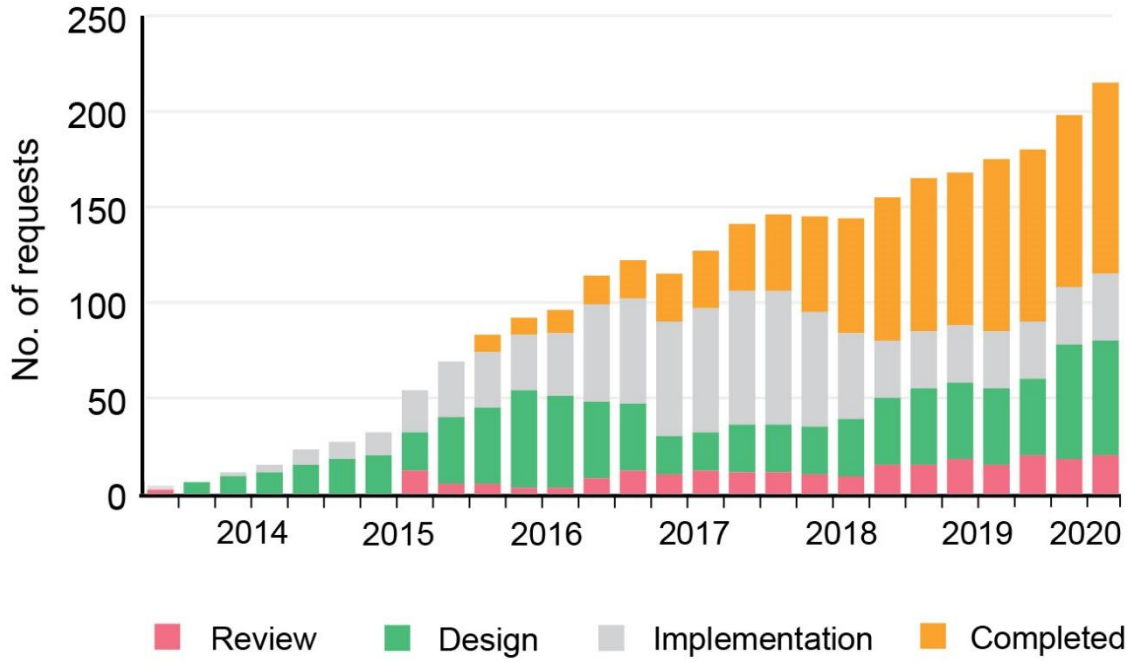

Figure 2 The status of requests for technical assistance from the CTCN (2014–2020)
Source: adapted from UNFCCC, 2021a: 16

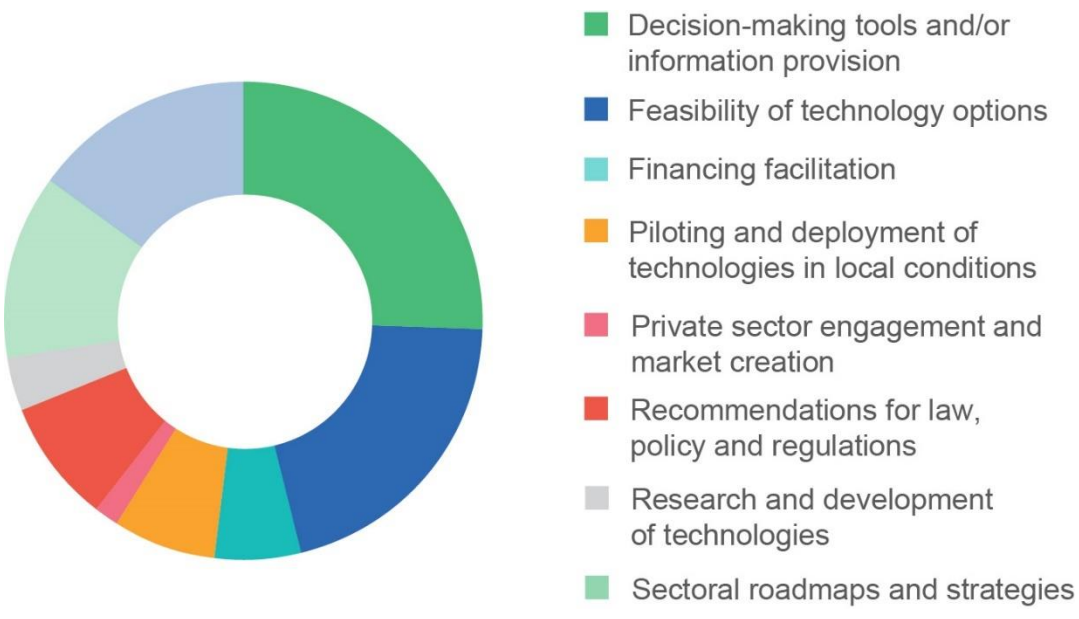

Figure 3 Types of technical assistance requested from the CTCN (2014–2020)
Source: adapted from UNFCCC, 2021a: 16

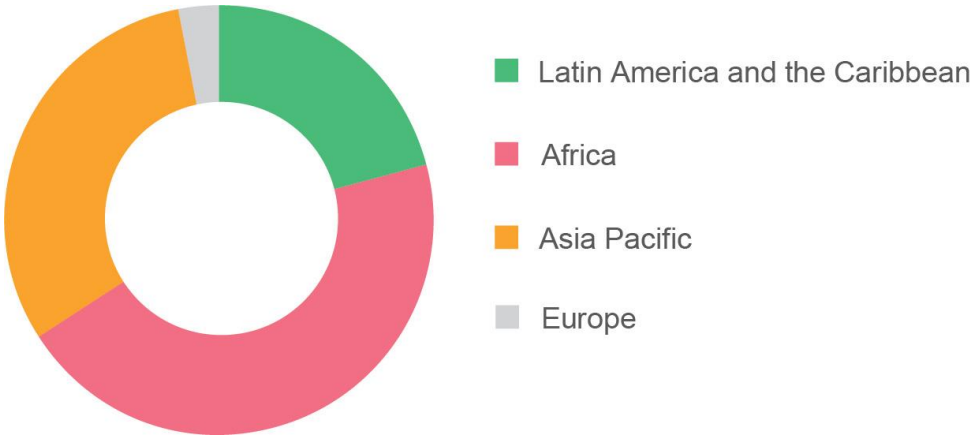

Figure 4 Regional distribution of requests for technical assistance from CTCN (2014–2020)
Source: adapted from UNFCCC, 2021a: 17

The CTCN provides customized technology solutions at a maximum of US$250,000 per request. On average, technical assistance costs $125,000 and is completed in 9–12 months. These mitigation and adaptation services are available to governments, civil society, and private sector institutions at the local, national, and regional level. To ensure this assistance is given as quickly as possible, the CTCN relies on over 500 civil society, finance, private sector, and research institutions globally.

There are various benefits to being a network member, since members deliver CTCN technical assistance and capacity development, connect with policymakers, thought leaders and other Network members, learn about new markets, and gain greater visibility through the CTCN's global communication and knowledge sharing-channels (ibid.: 4).

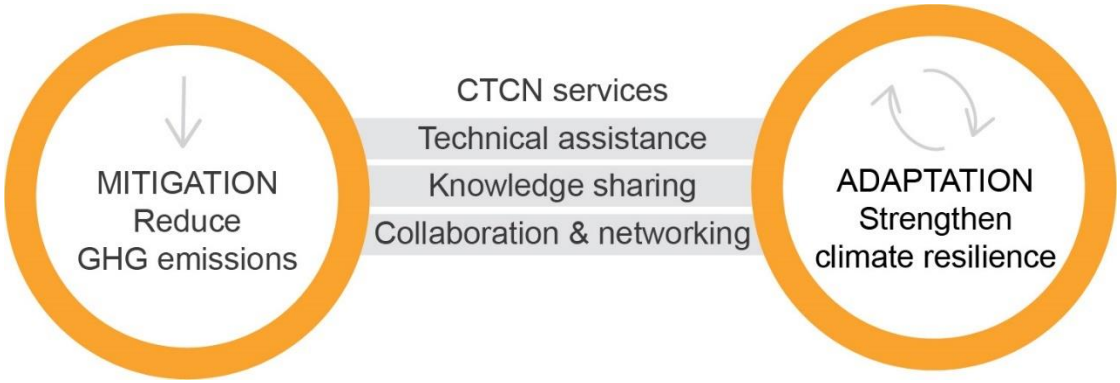

Figure 5 The CTCN services
Source: adapted from CTCN, 2019b: 51

6.3 How is the CTCN funded and how does this shape its functions?

From the outset, developing countries emphasized the need to ensure that the TM's operations had adequate and stable financial support, including for the CTCN's services. Short-term funding sources for the prompt start of the TM had to be identified, as well as long-term sources that would allow it to develop in response to parties' requirements. There were also discussions on the need for a specific funding window for technology development and transfer in 2011 (Khor, 2012: 32).

It was decided that the costs associated with the CTC as well as the mobilization of the services of the Network should be funded from various sources. Sources included the Convention's financial mechanism as well as bilateral, multilateral, and private sector channels, philanthropic sources, and financial and in-kind contributions from the host organization and participants in the Network. The GEF was also requested to support the operationalization and activities of the CTCN without prejudging any selection of the host. In addition, COP17 invited parties that were in a position to do so to support the CTCN, through the provision of either financial or other resources (UNFCCC, 2011b).

While funding for the TEC is directly provided by the UNFCCC, the contribution to the CTCN is voluntary. While it may request assistance from the UNFCCC for resources, it is essentially the responsibility of the director of the CTCN to mobilize funds.

Financing of $100 million for the first five years of operations was expected, and the CTCN's programme of work was structured accordingly (ibid.). The CTCN sought funding in accordance with the COP decision (ibid.) and secured $26.6 million by September 2014 (UNFCCC, 2014). In the next two years $4.3 million was secured (UNFCCC, 2016d), as well as $1.8 million from the GEF in June 2015. UNEP, UNIDO, and the consortium partners provided financial and in-kind contributions worth more than $5.8 million.[11] By March 2017 most of the funding secured by the CTCN ($49.6 m) was coming from bilateral donors. During COP22 the parties pledged $23 million, with $20.5 million in donor agreements concluded by March 2017. In April 2017 the CTCN was in discussion with the governments of Canada and the US for the remaining $2.5 million. Table 1 gives an overview of the financial support secured for the CTCN since 2013 as at 30 September 2020.

Table 1
Financial support secured for the CTCN since 2013 as at 30 September 2020

Donor	Total contribution
European Union	14,429,688
Japan	11,509,844
Norway	8,499,850
Denmark	7,225,293
USA	4,930,308
Canada	4,357,277
Switzerland	4,296,515
Germany	1,158,207
Republic of Korea	1,256,575
Italy	849,653
Sweden	691,555
Finland	216,640
Republic of Ireland	216,548
Spain	227,363
Subtotal	*59,865,316*
GCF	5,894,724
Adaptation Fund	4,575,000
GEF	1,971,000
UNIDO	1,247,665
NDC Partnership	649,793
Subtotal	*14,338,183*
Total	**74,203,498**

Source: UNFCCC, 2021a

During the 2017 Review of the CTCN's implementation, most interviewees stated that its voluntary-based funding model hampered the implementation of its mandate and put its operations at risk. Insufficient financial resources limited its ability to deliver on the targets outlined in the initial programme of work, especially in terms of technical assistance projects. The review found that eligible requests were not prioritized owing to the lack of funding, and that the CTCN needed additional sources of funding to continue delivering its services in the face of developing countries' growing expectations (UNFCCC, 2017b: 14). The voluntary aspect of the funding model means that the CTCN cannot predict funding over the medium or even short term, thereby limiting its capacity to plan ahead.

In addition, a significant portion (44 per cent) of the CTCN's financial resources are earmarked and out of alignment with its current priorities. Twelve per cent of its resources are dedicated to a specific area or activities (e.g. a technology library) and are not available for higher-priority activities. Thirty-two per cent of the total funds have been engaged by the CTCN under the

approved budget, as per agreements with donors, with funded activities initially planned over several years. However, the activities the CTCN considers effective may change (e.g. there may be fewer requests for technical assistance than expected, or new services may be implemented). While some activities might come in under budget and so free up additional financial resources, these resources cannot be used to finance other activities unless the donor agreements are revised (donors do allow such revision in most cases) (ibid.).

Despite the efforts of the CTCN Secretariat and the Advisory Board, the pledges made at COP22 and its collaboration with the GCF, the CTCN's funds are lower than anticipated. To increase its leverage, the CTCN has collaborated with the GCF, the GEF, and multilateral development banks (MDBs), resulting in a few technical assistance projects when scalable investment potential was identified.

> Securing sustained funding to enable the CTCN to continue to deliver on its mandate is an issue of concern. The provision of technical assistance for technology development and transfer and the building of endogenous capacities to developing countries is a core element of the Convention, the decisions agreed at COP 21 and the Paris Agreement. While the Advisory Board greatly appreciates the contributions made by Parties to the operating budget of the CTCN, it is clear that the absence of sufficient, predictable and sustained financing places the future viability of the CTCN and the technology development and transfer services it provides to developing country Parties at risk. (UNFCCC, 2016d: para. 90)

6.4 How the CTCN work aligns with its mandate

According to the 2017 Review, the CTCN's programme of work for 2013–2017 and its annual operating plans are aligned with both its mandate and relevant COP decisions.

The CTCN has indicated that, following the entry into force of the Paris Agreement, it has integrated topics such as NDCs, research, development and demonstration, and endogenous capacities into its annual operating. Also, following the sixth meeting of the Advisory Board, the CTCN has enhanced its collaboration with the TEC through Advisory Board meetings, joint annual reports, and other means (UNFCCC, 2017b).

To ensure greater cooperation with the FM's operating arms, the CTCN has entered into a partnership with the GCF whereby the CTCN's technical assistance and capacity-building activities foster the elaboration of concept notes submitted to the GCF and reinforce collaboration with GCF focal points (national designated authorities, or NDAs). This collaboration has led to additional financial resources, with technical assistance projects identified by the CTCN financed through the GCF's 'country readiness' funding (see GCF, n.d.).

GEF funds for CTCN operations come from ad hoc projects rather than sustained funding and are therefore limited ($1.8 million) (ibid.:13). The GEF has developed and finances a network of regional climate technology centres hosted by MDBs,[12] and provides similar services to the CTCN (UNFCCC, 2017b: 13). Some of these regional centres' representatives take part in NDE workshops and other CTCN meetings. There is considerable collaboration between the Asian

and American regional centres and the CTCN's NDEs and consortium partners, but there is less cooperation with European and African regional centres.

Most but not all of the activities described in the initial programme of work for 2013–2017 have been implemented (e.g. a help desk has not been developed). The CTCN also launched some unplanned activities, such as the Incubator Programme for Least Developed Countries (LDCs), secondment programmes, and webinars. These changes were endorsed by the Advisory Board and are considered relevant by stakeholders (ibid.).

6.5 How does the CTCN function as a wide-reaching network?

As of March 2020, 554 organizations from 90 countries participate in the network, and among them private sector organizations are the most numerous (48 per cent), followed by research and academic organizations (22 per cent), non-governmental organizations (11 per cent), not-for-profit organizations (7 per cent), and public sector organizations (7 per cent) (Lee and Mwebaza, 2020). While the CTCN has managed to include enough diversified partners within its Network, it has not created a real community. Most members are not active within the Network, do not contribute to the KMS or offer technical assistance, and do not take part in CTCN events (UNFCCC, 2017b). Some Network members are dissatisfied with the commercial opportunities and networking activities provided by the CTCN. During the 2017 Review, various interviewees questioned whether the Network would remain sustainable if the level of engagement was not increased. Network members had contributed to only 20 per cent of technical assistance projects by December 2016, but at the beginning of 2017 this number did increase to 50 per cent of the 29 requests for technical assistance that had entered the implementation phase. The CTCN aimed for Network members to implement 60 per cent of requests by the end of 2017 (ibid.: 18).

6.6 The role of national designated entities

Developing countries' NDEs are a vital intermediary between the CTCN and other national stakeholders and therefore play a major role in identifying and coordinating requests for technical assistance. However, because of the lack of resources and local governance issues, these NDEs are at times unable to fulfil this role, which leads to delays and inefficiencies. This can happen, for example, when submitting requests for technical assistance that require fine-tuning in collaboration with the CTCN. In addition, capacity-building activities (especially the Incubator Programme, which proved to be successful in empowering NDEs) also have to be maintained in the face of a significant turnover in personnel in NDEs. While the Climate Technology Centre has created a guide on the role and responsibilities of developing country NDEs, this is reportedly not clear enough. Without a fully functioning NDE, the CTCN cannot provide assistance or deliver any of its functions.

> The success of the CTCN greatly depends on NDEs, both from Annex I and non-Annex I countries, as they are the most influential factor in ensuring that the CTCN can effectively and efficiently help developing countries access new and existing technologies for climate change adaptation and mitigation. (CTCN, 2015b)

Countries also have varying views on the establishment of NDEs. Developing countries often view this as an additional expense and commitment. This can result in NDEs with different levels of capacity, which leads to different levels of participation. Some NDEs have a 'direct line' to the CTCN, as a result of professional relationships, while others that are less connected are further removed from it. This, in turn, affects the approval of requests. At the same time, certain developed countries have invested hugely in their NDE and use it to sell technology – thus viewing the NDE as an opportunity. This shows that technological assistance is regarded as self-serving in technology-exporting countries.

6.7 How effective is the CTCN in meeting the needs of developing country parties?

The vision of the CTCN was that developing country parties to the UNFCCC would acquire the capacity, tools, and know-how to develop and upscale technology for climate change mitigation and adaptation.

It was envisaged that the CTCN would work towards this vision by encouraging technology cooperation and ensuring the development and transfer of technologies. It would also build and strengthen the capacity of developing countries to identify their technology needs and ease the preparation and implementation of technology projects and strategies to support action on mitigation and adaptation (UNFCCC, 2017b: 19).

Effectively transferring environmentally sound technologies to LDCs is the mandate of the original UNFCCC, enshrined in Article 4.9 and re-emphasized in the Paris Agreement more than 20 years later.

However, this technical assistance process has taken longer than expected, mainly because of the CTCN's overambitious targets at first. Despite the fact that its process is shorter than that of many international organizations, some NDEs and beneficiaries still feel it takes too long, and a few reported being dissatisfied with it. The main internal reasons for these delays are the complexity of the CTCN's organization, with multiple stakeholders and decision makers (e.g. NDEs, consortium partners, Climate Technology Centre staff), and a lack of resources (for the CTCN core team, consortium partners, and NDEs). Externally, political and governance changes at the local level, among others, can also affect the process.

It seems that influencing initiatives, like NDCs and TNAs, have played a role in shaping the design of funded technology projects, at least for LDCs, rather than donor influence (Craft et al., 2017: 13–14).

While a communication strategy has been put in place, local stakeholders have limited awareness of the CTCN and its services (ibid.: 22). Regional forums and networking events have failed to reach a broad audience and communication between NDEs and external stakeholders is lacking.

Generally, LDCs encounter many challenges when engaging the CTCN, as it is not geared towards their needs. There is a perception that it is not living up to their expectations of benefitting small island developing states (SIDS) and LDCs. Instead, the countries that do

benefit from it are middle income with a bigger private market. A lot of the support and project funding is also not geared at LDCs' needs. The same dynamic has been noted around the Clean Development Mechanism (CDM). There is engagement from LDCs, but not enough to bridge the gap between what they need and what the CTCN is offering. LDCs complain that, instead of meeting them where they are, the CTCN is positioned to offer assistance only at the point where it wants them to be (LDC Advisor, 2021).

LDCs need additional capacity building to prepare proposals for funding, as well as to assist with identifying the technologies they need (Craft et al., 2017: 22). Often, LDCs retain consultants to write bids and conceptualize ideas, but do not have the capacity to push these bids through the process. As a result, assistance from the CTCN becomes unattainable. Many LDCs have also not done a Technical Needs Assessment (TNA) or a road-mapping exercise yet (ibid.); it is a time-consuming process, and their government officials do not see the point of doing it if they cannot access the CTCN.

At the same time, there is an acknowledgement that LDCs tend not to react immediately when a new institution is launched, but once they do the demand can increase exponentially.

6.8 Collaboration with other mechanisms

While there has been increased dialogue between the GCF, GEF, TEC, and CTCN, there is a need for greater cooperation between the CTCN, TEC, and the FM's operating entities (UNFCCC, 2015: para. 7). As mentioned earlier, since 2016 the CTCN has developed a partnership with the GCF wherein the CTCN's technical assistance and capacity-building activities underlie the elaboration of concept notes submitted to the GCF and reinforce collaboration with GCF focal points (NDAs). This collaboration is providing the CTCN with additional financial resources (UNFCCC, 2017b: 13).

At the COP25 in Madrid, the Adaptation Fund launched a $10 million pilot small grants programme (Adaptation Fund Climate Innovation Accelerator, or AFCIA) to foster innovation in adaptation in developing countries. UNEP and the UN Development Programme (UNDP) have been selected as implementing entities of the AFCIA. The CTCN has received $5 million to administer and aggregate 25 micro-grant projects (up to $250,000 each) over five years to help countries enhance their climate resilience and adapt to climate change. The AFCIA's main objective is to support developing countries to test, evaluate, roll out, and scale up innovative adaptation practices, products, and technologies. The AFCIA will also facilitate knowledge sharing and the exchange of best practices, strengthening South–South and triangular cooperation (CTCN Adaptation Fund, n.d.).[13]

The GCF has decided to hold annual meetings with the TEC and the CTCN (UNFCCC, 2016b: 2–4, 7–10). There has also been increased engagement between the GCF and CTCN, in particular in terms of the Readiness and Preparatory Support Programme and the Project Preparation Facility. These bodies have been invited to provide information on their linkages in their annual reports.[14]

7 Performance of the Climate Technology Centre and Network

The CTCN's performance has been mixed, displaying both positive and negative aspects, as highlighted in the 2017 Review. While its 'one-size-fits-all' approach, for example, has not gotten the hoped-for results, it has succeeded in creating synergies with various institutions, as well as UNEP and UNIDO.

7.1 The strengths and weaknesses of the CTCN

The strengths and weaknesses of the CTCN model and how it has been delivering its functions outlined here were mostly obtained from the 2017 Review (UNFCCC, 2017b: 4–5, 18, 21, 64).

STRENGTHS

To avoid redundancy and increase the leverage of its activities the CTCN has fostered synergies with financial institutions such as the GEF and GCF, as well as technical partners.

Efficient operationalization of activities is supported by the partnership between UNEP and UNIDO and the decentralized organization of consortium partners, with a good mix of core and regional expertise and global coverage.

Efficiently prioritizes its activities and is pragmatic in resource allocation.

The geographic approach adopted by the CTCN in 2018 better supports cooperation within regions, provides a single point of engagement for NDEs, and encourages the engagement of the private sector and regional organizations by building on existing relationships (CTCN Secretariat, 2018).

Local knowledge is essential. All CTCN technical assistance implemented by expert Network members is now done in conjunction with a local partner, helping to ensure that an understanding of local circumstances is applied and that capacity is both built and retained in the host country.

The CTCN is likely to contribute to non-intended positive outcomes, such as local development, environmental protection, and gender mainstreaming.

WEAKNESSES

The current funding model mainly relies on voluntary contributions from countries. The consequent limited availability of funding and lack of financial predictability prevent it from delivering services at the expected level.

Lack of human and organizational resources has negative impact on its efficiency.

The capacity of NDEs significantly affects the CTCN's ability to function at the expected level.

Delays in the provision of technical assistance projects.

Insufficient transparency in contractual engagements with donors.

No platform dedicated to ensuring reporting on transparency and accountability issues and discussions with donor.

Providing technical assistance only in response to national requests limits activities (the number of requests was lower than anticipated) as well as possibilities for replicability.

Advisory Board needs more technical expertise to continue providing adequate strategic guidance.

Considerable turnover of NDE focal points owing to political changes, with a subsequent risk of losing capacity. Of the 62 NDEs that responded to the electronic survey undertaken during the independent review, 60% had been NDE focal points of their country for less than two years.

Interviews held with various stakeholders that were part of the CTCN negotiations at the time of its inception made the following remarks about observed weaknesses of the CTCN:

- The CTCN has become a broker with one solution, trying to provide one-size-fits-all solutions to countries with different needs and capacities (CTCN Originator, 2021).
- The CTCN has become a watered-down version, with more capacity building and networks than hard technology transfer (ibid.).
- The Climate Technology Centre is dominant while the Network is basically a list of potential contractors.
- The host set-up is collaborative and is driven by the government structures of the host – if those structures are problematic they can affect the CTCN.

- It is not a given that the host of the CTCN will remain the same. The UNEP–UNIDO agreement might not be renewed (LDC Negotiator, 2021). This creates uncertainty and potential lack of continuity.

7.2 How the strengths and weaknesses of the CTCN affect its operations

Because the CTCN's funding is voluntary its operationalization took longer than anticipated (CTCN Originator, 2021). As a result of financial constraints (UNFCCC, 2017b: 17), the director of the CTCN had to spend a considerable amount of time fundraising, which gave it a slow start (CTCN Originator, 2021). Other factors that contributed to this included the start-up procedures, the operationalization of technical assistance services and the empowerment of NDEs. As a result, initially there was inadequate engagement with other stakeholders and Network members (UNFCCC, 2017b: 17). Yet, once the CTCN was operationalized, especially in its first year, there were fewer technical requests from developing countries than expected, and it provided less technical assistance than planned (ibid.: 17).

The 2017 Review found that the CTCN's outputs in terms of knowledge management, peer learning, and capacity building had reached their targets, with a focus on the empowerment of NDEs (ibid.: 15). While it failed to reach its targets in technical assistance projects and networking activities, the review noted that these might have been too ambitious to start with.

The review also highlighted areas of improvement to reduce delays in providing technical assistance projects. These delays are mainly caused by:

- The CTCN's lack of resources and local governance shortfalls, with developing country NDEs not always being able to act as efficiently as possible.
- The number of stakeholders involved in the process.
- The limited human resources of the CTCN core team and consortium partners (ibid.: 5).
- The CTCN also failed to make optimum use of its Network's resources and expertise, resulting in dissatisfaction among Network members. However, figures for the first half of 2017 and projections for the rest of the year suggested that Network members would implement a growing number of technical assistance projects (ibid.: 21).
- Since the human resources allocated to the Climate Technology Centre were not aligned with its scope of work at first, UNEP and UNIDO had to rely on the support of consortium partners. These partners have both core and regional expertise, and are familiar with UN procedures (ibid.). The Climate Technology Centre also had to mobilize Network members. Importantly, it takes time to establish a Network, and while the Network was being operationalized, the consortium was of great assistance. There are currently 653 network members (CTCN, 2021).

Figure 6 The CTC consortium
Source: UNEP and UNIDO, 2013: 12

Over time, the CTCN has been shown to deliver outputs. CTCN actions have already resulted in the design of energy policies and laws and the elaboration of road maps on the development and transfer of climate technologies. Yet, outcomes are still lower than projected, with only qualitative examples of intended macro-level impacts. The CTCN has to show the impact of its services in order to demonstrate that it plays a major role in helping developing countries to scale up and speed up their climate actions. This will prove to donors that they are receiving value for money and justify the raising of additional funds (ibid.: 22).

While the CTCN has shown that it can initiate projects that benefit from larger-scale funding through the FM or MDBs at a later date, it has failed to reach its outcome targets.

In addition, the CTCN is a relatively new player, and its activities are only the first steps in longer-term transformational changes. It has so far been difficult, therefore, to assess its impact on climate change mitigation and adaptation, given that such impacts will only be felt years after technical assistance is provided. The CTCN's monitoring and evaluation framework is also not tailored to capture these macro-level impacts (ibid.: 5).

The review found that a strong asset in supporting the establishment of the CTCN was its regionalized organization, with consortium partners acting in their area of expertise. The consortium supported CTCN communications, helped to identify and submit requests for technical assistance, and organized regional events. Consortium partners could also advise the CTC on assessing incoming requests and formulating response plans, although there were serious delays in some cases. The 'quick response intervention' process saved time normally allocated to tendering and was fairly efficient, considering the limited funds available. Beneficiaries acknowledged consortium partners' resources in terms of capacity and skills in providing technical assistance (ibid.: 18).

Once the CTCN was fully operationalized it became a reasonably efficient organization, with the support of the consortium (ibid.: 21). The CTC core team has been able to provide appropriate

support to NDEs and beneficiaries, despite some lack of expertise on adaptation and difficulties related to several positions being unoccupied following unplanned departures (ibid.: 18).

The Network has substantive regional coverage with a relatively small centre. Because the centre is a facilitating mechanism it was never intended to become too extensive. It also takes time to establish a network. For this reason the consortium was created, which in a sense was the precursor to the Network, because as soon as there is a mechanism, there is an expectation of delivery. While being part of the consortium meant access to smaller funding opportunities, it was an opportunity to bring the mechanism to life. When asked to join the consortium, partners were keen to engage, possibly with an eye to participating in the Network as it became more established. Now, with the Network more established, the consortium's role has diminished somewhat (CTCN Originator, 2021). There is a sense that at least some of the enthusiasm to join the consortium was related to the opportunity to access funding, with the expectation that Network membership – which some have described as a tender roster – would result in more substantial financial benefits (ibid.).

7.3 Lessons learned

The CTCN has a specific mandate to support development and transfer of technology on adaptation and mitigation, which is narrower in scope than that of loss and damage assistance. As a starting point, it is important to understand the lessons learned during the establishment and operationalization of the CTCN. Thereafter, these lessons learned must be applied to the broader loss and damage discussions to determine what else is required to ensure an SNLD that is fit for purpose.

Instrument of compromise

Any international instrument is the product of compromise. It is difficult, if not impossible, to find a negotiated solution that pleases all the parties involved. Any institution that is established as a result of that negotiation will always be its spin-off from the negotiation, and thus a compromise. To this end, it is crucial to ensure that whatever is negotiated is done by means of a country-driven process and that the decision operationalizes the SNLD in a manner that will deliver on the needs of all vulnerable countries.

Realistic requests

One of the key lessons learned during the CTCN negotiations was that the request had to be realistic – if not, it would create a political barrier. Within the financial mechanism of the UNFCCC there is one area of parity between donors and recipients – donors do not want to make large amounts of funds available if they have to cede all control. It is also important to bear in mind with the establishment of any new mechanism that the process will not necessarily be all that different, since the same constituents have to negotiate the governance structure. For this reason, it is important to build on the work done during the technology negotiations.

To this end, due consideration should be given to the importance of clarifying the needs of developing countries beforehand so that requests for technical assistance can be anticipated.

Connect the proposed network with the financial mechanism

The idea was for LDCs to collaborate on an equal footing and not in terms of 'donor' and 'recipient'. However, because the CTCN did not have its own funding this did become a donor–recipient relationship.

When one takes a closer look at the nature of the CTCN, as discussed, the voluntary financial contribution set-up was one of the major causes of delay. When asked what could have been done differently if the process could be renegotiated, interviewees were in agreement that any new structure should be connected directly to the financial mechanism. If this is not done, the director of the new structure essentially becomes a fundraiser, and the structure, and in this case the SNLD, will face operationalization delays.

Operationalization does not happen instantaneously

It is difficult to operationalize a new structure, since it takes time both to put in place the necessary structures and to ensure that the intended beneficiaries have the required capacity to participate.

Unintended consequences

When designing a new structure it is important to consider all relevant options and pre-empt the possible unintended consequences. Even well-intended designs might cause implementation delays. For example, it took time to establish the Network and the Climate Technology Centre needed a host, which came with its own complications. During the design of the mechanism the intention was that the Network would play a much bigger role, but the Climate Technology Centre is still the most dominant while the Network is little more than a list of potential contractors (ibid.).

The question of capacity

The CTCN is a country-driven process and therefore can only deliver upon requests from countries, via their NDEs. If these NDEs do not have the necessary capacity, such requests cannot be made. The CTCN is aimed at bolstering national-level capacity. Since NDEs are the main means of communicating with the CTCN, more capable NDEs will mean a more effective CTCN.

While the CTCN was established to move away from workshops, it transpired that it was still necessary to arrange workshops to assist with NDE capacity building. One LDC interviewee pointed out that, while various workshops were being held, capacity development remained an issue. Often NDEs submit a report after a workshop, but no further action is taken.

During a recent survey,[15] it was found that even if LDCs have the national capacity to prioritize climate technology, they may still be unable to access international support. Most respondents acknowledged that their countries had limited capacity for either (Craft et al., 2017: 10–11).

This problem can partly be attributed to the fact that technical assistance is provided by external consultants or consultancy firms. As a result, in-country capacity is not developed.

Country-driven processes require in-country capacity beyond the NDE

One of the possible 'mistakes' made by the CTCN is that most of the capacity development has gone towards training NDEs. While this is a crucial element, it cannot be the only focus. In addition, NDEs have a high staff turnover, which means that capacity is lost and the process must start from scratch.

For a mechanism or structure to truly function as a country-driven process, more national institutions must be capacitated. This will not only ensure that sufficient requests are made to the NDE but also build in-country capacity over the long run. It is important to note that similar suggestions were made during the initial operationalization stage of the CTCN (Khor, 2012: 32).

One way of overcoming this is to look at other national entities that would benefit from training and capacity-building activities. For example, most countries have ministries of disaster management which would be the contact point for loss and damage. Further modalities could be developed to build on established national structures that include existing UNFCCC focal points. This will ensure that there is a wider national platform that is familiar with loss and damage and the process to address it.

Internal coordination and communication

Internal coordination and communication between various national departments are often inadequate, as are communication and support between the NDE and higher-ranking officials. Additionally, countries have different national structures and arrangements in place. Climate change or climate technology might also be dealt with by different ministries – in some cases the ministry of environment, in others the ministry of technology or of international cooperation. During NDE training, some of the NDEs requested assistance to ensure better in-country support from various ministries.

One size does not fit all

One of the main lessons learned is that 'one size does not fit all', and there were complaints that the CTCN has become a technology umbrella. In an interview, one of the CTCN originators said he repeatedly pointed out that it was important to establish 'something different and provide something different to different countries. Countries are not alike in terms of needs and capacity'. So far the CTCN has been unable to come up with packages that provide tailor-made services to various countries (CTCN Originator, 2021).

The size of the wish list

The size of the 'wish list' does matter. Donor funding comes with its own complications – often in the form of conditions. In other instances the project is simply too big for a country to implement. When asked if it was better to implement several smaller projects, one of the LDC interviewees responded that MDBs were typically not interested in small projects (LDC Thematic Coordinator, 2021).

Risk in establishing an NDE for every single mechanism

If an NDE is established for each mechanism, there is a risk that some of them can end up being very weak. In LDCs this can become a problem. In some instances, the same person might be both the NDE and focal point, which might overburden them. To this end it is important to stress that the responsibility must not rest solely on the NDE or focal point. While the NDE should be the first point of contact, focal points, NDEs, and NDAs must be brought together to build a common understanding of the existing processes (Craft et al., 2017: 23). This way clear roles and responsibilities can be identified.

Can a mechanism transfer technology?

There is a disconnect between what the mechanism offers and the different needs of countries. Some felt that the CTCN had turned into a 'consultancy agency' that provides some useful services without being able to deliver more than that (CTCN Originator, 2021). During the negotiations, there were expectations that the CTCN would transfer 'hard' technology but, as one of the originators pointed out, 'perhaps it was our fault as negotiators at the time to think that any mechanism can transfer technology' (ibid.). In the end, a mechanism can only serve this function if requests are made by countries.

Financial mechanism and lack of ease of access

LDCs have indicated that the process for mobilizing funds is too complex and that access to funding should be simplified and made more flexible (Craft et al., 2017: 23). If access to funding is cumbersome there is a risk of developing countries entering into bilateral agreements with developed countries without using the established FM channels, which could have a negative impact on the negotiation process.

Five lessons the CTCN indicated it had learned:

1) The benefits of a geographic focus

The geographic approach adopted by the CTCN in 2018 better supports cooperation within regions, provides a single point of engagement for NDEs, and encourages the engagement of the private sector and regional organizations by building on existing relationships.

2) That local knowledge is essential

All CTCN technical assistance implemented by expert Network members is now done in conjunction with a local partner, helping to ensure that an understanding of local circumstances is applied and that capacity is both built and retained in the host country.

3) The importance of scalability

The challenge posed by climate change requires a focus on identifying and implementing solutions that are replicable and scalable to ensure the greatest impact of climate technologies across all sectors. The CTCN's work has identified approaches that can be replicated in countries with similar national circumstances, leading to a potential for multi-country requests that amplify the impact of interventions and increase the likelihood of funding from external investors.

4) That relationships matter

Actively connecting developing country NDEs to other climate change focal points (including for the GEF and GCF) in their countries and regions improves co-ordination, financing, and impact of technology transfer initiatives. It also positions them to engage more effectively with the full range of external stakeholders.

5) That measurement and communication of impact are vital to success

The CTCN's role as country-driven matchmaker of climate technology needs and expertise has been strengthened by the implementation of rigorous standards for the measurement and reporting of the impact of our interventions. Having the data to support the impact of what we do reassures recipients, donors and investors that the implementation arm of the UNFCCC Technology Mechanism is functioning as intended and delivering needed solutions to developing countries.

Source: CTCN Secretariat, 2018

8 Recommendations on operationalizing the Santiago Network for Loss and Damage

It is vital that careful consideration is given to the operationalization of the SNLD to avoid unintended long-term negative consequences. At the same time, delays in its operationalization must be avoided at all costs. For this reason it is important to have a clear understanding of the functions of the SNLD as envisaged by various parties as well as the steps already taken by the UNFCCC to operationalize the SNLD.

8.1 Functions of the SNLD

Without a common understanding of the functions of the SNLD it will be almost impossible to negotiate and operationalize the SNLD that is fit for purpose to deliver for developing country needs and people on the frontlines. Following the informal consultations held with parties on 26 April 2021 a draft summary paper was sent to parties. It included the following:

> The focus of the SNLD must be as a platform for countries to gain technical help of a practical nature. It must avoid becoming a forum purely for debate and discussion. The functions of the Network will be driven by Parties' needs and priorities. Broad areas of action will include, but not be restricted to:
>
> - information gathering and sharing, so as to increase knowledge and expertise on loss and damage;
> - brokering technical support and capacity building between Parties and organizations;
> - providing technical support with the design and implementation of projects and tools; and
> - providing assistance with accessing finance and technology.

The draft summary paper also states that: 'The SNLD should avoid duplicating existing offers and work, and instead draw these together to provide access to the greatest range of resources. This will also ensure flexibility within the Network so that it can respond to a wide range of needs, recognizing that no two countries will be in the same position. In practice this means:

> - As well as engaging with parties, the SNLD must draw in external actors and institutions, including the many organizations that are already engaged in this space.
> - The SNLD should also actively seek to collaborate with actors external to the UNFCCC, especially those in the disaster risk reduction space.
> - Any TOR should be broad enough to allow for this range of actors but could differentiate in terms of the 'standing' that different groups are given.

Furthermore, the draft notes that the 'SNLD should have regard to the Nairobi work programme and ensure information flows to the Executive Committee of the Warsaw Mechanism. The presidencies take from this that the Network's role is to coordinate offerings from existing organisations and play a matchmaking function. A key criterion of success will be the delivery of practical assistance. The form of the SN will necessarily depend on the precise

needs that come forward and how they change over time. It will be important to enable evolution in the Network. This is likely to be best served by the Network being convened by an existing organization.[16]

8.2 Steps already taken by the UNFCCC

In response to the establishment of the SNLD, the UN Climate Secretariat launched the Santiago Network Portal. The following first steps were also taken:

June Momentum for Climate Change: information event on the Warsaw International Mechanism for Loss and Damage

In June 2020, at the June Momentum for Climate Change, the SB Chairs convened a special informational event on loss and damage. The intention was to give an overview of how the established arrangements under the WIM collaborate to complement efforts aimed at amplifying the mobilization of action and support for developing countries that are particularly vulnerable to the adverse effects of climate change, and so help to avert, minimize, and address the resultant loss and damage. Practitioners across regions shared insights from current practices. During this event, presentations were made on insights from current practices undertaken and the plans in place in developing countries and sub-regions in averting, minimizing, and addressing loss and damage. Presentations were also made on perspectives from the disaster reduction community, those in the humanitarian assistance community, as well as the human mobility community and inputs regarding climate finance (see UNFCCC, 2020d).

Virtual Roundtable on Developing the Santiago Network for Loss and Damage

The COP25 Presidency (Chile) and the incoming COP26 Presidency (UK) jointly held a virtual roundtable on developing the SNLD during the Climate Dialogues on 3 December 2020. Parties and other stakeholders discussed ways in which the Network could be further developed and gave input on the need for technical assistance (see UNFCCC, 2020b).

During this event, the Group of G77 and China submitted that the SNLD's design – as a network of technical implementation support partners – should be strengthened and embedded in the institutional architecture of the UNFCCC and its Paris Agreement. This would mean that it would operate as part of the WIM, and so broaden developing countries' access to resources and facilitate support for loss and damage action (G77, and China, 2020; Yu, 2020).

The group also indicated that 'the areas of technical assistance whose provision can be facilitated through the SNLD should remain as open as possible, to cover the wide range of possible needs for assistance that Parties may have at the local, national, and regional levels. The SNLD should also cover all aspects of science relevant to loss and damage issues, so that its members can share their knowledge and experiences when dealing with loss and damage' (G77, and China, 2020).

The G77 and China group proposed that the SNLD's technical support activities that should be delivered to the Parties could include, but would not be limited to, the following (G77, and China, 2020; Yu, 2020):

- Technical support and guidance on approaches to address loss and damage.
- Technical support for accessing means of implementation to develop and implement approaches to address loss and damage.
- Information sharing, public awareness, and knowledge (e.g. linking countries to tailored information and expertise).
- Loss and damage-related policy and strategy development, review, and strengthening (e.g., support for the development of loss and damage-related policy and planning strategies and documents in response to specific loss and damage needs of developing countries).
- Loss and damage-related research preparation and sharing (e.g. loss and damage assessment, monitoring and evaluation, and quantification, scientific research, and information relevant to loss and damage-related impacts and needs and gaps of developing countries, development of scientific and grey literature among SNLD partners to improve knowledge products that inform plans and decisions at a domestic level).
- Technical support for linking loss and damage issues to UNFCCC/Paris Agreement bodies and processes (e.g. between WIM/ExCom and Loss and Damage national contact points, the provision by SNLD members of proposals for the consideration of the WIM ExCom for loss and damage-related inputs to the Global Stocktake (GST) process, or technical assistance from SNLD members for parties to report on loss and damage in their biennial transparency reports under para. 115 of the Annex to decision 18/CMA.1).
- Coordination among loss and damage stakeholders (e.g. experience sharing on national loss and damage approaches, facilitating South–South learning, coordination mechanism to share knowledge among relevant organizations, map out relevant organizations that address loss and damages by country as well as those that are willing to start working in the SNLD).

The Independent Alliance of Latin America and the Caribbean (AILAC) envisages the Santiago Network as a platform that facilitates connections between developing countries and those organizations, bodies, networks, and experts that can provide technical assistance in the implementation of approaches to avert, minimize, and address the loss and damage associated with climate change impacts at the local, national, and regional level (AILAC, 2020).

According to AILAC, the success of the Santiago Network depends on three factors:

- Its ability to mobilize the relevant organizations, bodies, networks, and experts.
- Its ability to enable contact between developing countries and the relevant organizations, bodies, networks, and experts.
- The availability of effective access to support (finance, technology, and capacity building) to deliver technical assistance in the implementation of relevant approaches (ibid.).

Survey

The UNFCCC sent a Santiago Network survey to National Focal Points, calling for inputs relating to needs for technical assistance through the Santiago Network in 2020 to begin mapping the possible demand for such technical assistance in developing countries. This data will inform the operational modalities of the Santiago Network (UN Climate Change Secretariat, 2020).[17]

A brief analysis of this survey (UNFCCC Analysis, n.d.), as well as of the party submission, is available on the Santiago Network Portal (UNFCCC, 2021a).

To date, several parties[18] have submitted information on their needs for technical assistance via the survey (available at the country profile section of the Santiago Network Portal). The survey responses show that there is widespread need for such technical assistance, and includes activities related to:

- collecting and managing data and information;
- analysing data and information;
- designing and implementing projects on loss and damage; and
- accessing financial instruments.

Eight pillars of technical assistance or areas for support emerged from countries' initial responses to the survey (see Table 2). It should be noted that this list seems to be moving away from what those impacted need and rather to what donors are pushing for.

Regional Marketplace Meeting: Africa

During the regional meeting for Africa, held on 31 March 2021, the Chile COP25 Presidency stressed that the SNLD was an instrumental step in advancing the work of loss and damage by steering a demand-driven process for developing and implementing climate solutions on the ground to build resilience.[19]

During the first session, countries shortlisted their most critical technical assistance needs to address climate risks comprehensively in the loss and damage context. Table 2 gives an overview of the country-specific technical assistance needs and related opportunities for available support/resources presented by the organizations during the dialogue.

Table 2
Overview of the country-specific technical assistance needs and related opportunities for available support/resources

Eight pillars of technical assistance	Country-specific priorities within pillars	Relevant/applicable support available from organizations
1 Development and deployment of forecast-based finance instruments	**South Africa** Designing a combination of risk finance tools applicable to country context for its vulnerable groups	**InsuResilience Global Partnership** Support for developing comprehensive disaster management strategies which include credit-based instruments, trust funds in addition to insurance ARC and WFP to partner in developing a risk pool
2 Insurance products: sovereign, national products, micro-insurance, etc.	**Nigeria** Complement ongoing work on risk-based financing and insurance	
3 Early warning systems	**Malawi** Transboundary EWS (Malawi–Mozambique), especially against flood risk	**UNDRR** Support through work on multi-hazard warning systems CREWS regional project **AfDB** Support regional centres in countries in developing EWSs to build climate resilience
4 Nature-based solutions and disaster risk reduction	**Nigeria** Assist with ongoing efforts to have disaster risk agency to incorporate NbS	**UNEP** Finance through two new funds: – Global EbA Fund launched on 25 March 2021 to design and implement NbS projects (awareness building, addressing governance and planning gaps/needs) – Climate Accelerator Fund (2 m) to foster innovation in adaptation Knowledge-sharing and bridging knowledge gaps on NbS and EbA; online course on DRR through NbS and EbA
5 Use of space technologies in disaster management		Potential partner: UN-SPIDER

Eight pillars of technical assistance	Country-specific priorities within pillars	Relevant/applicable support available from organizations
6 National trust funds / social protections	**Malawi** Establish and operationalize a climate fund **DRC** For addressing post-disaster reconstruction and displacement	**AfDB** Support for creation of country profiles for all the countries of Africa and development of national proposals for finance Africa Adaptation and Acceleration Program (in partnership with GCA) Support in line with its commitment to allocate 50% of its resources to adaptation, including for NDC revisions, development of NAPs, capacity-building, and enhancing technical knowledge
7 Capacity-development in risk-based approaches	**Nigeria** For enabling holistic action	**InsuResilience Global Partnership** Support for undertaking country-level risk analysis to understand and bridge the gaps in data, for designing comprehensive and holistic risk strategies
8 Database development: for analysis, assessment and populations at risk	**Nigeria** Complement ongoing district-level vulnerability assessments **Malawi** For developing methodologies to report on economic losses from disasters **DRC** For effective planning and decision-making in relation to disasters **South Africa** Reconstruction of historical climate data, establishing a baseline on NELs (indigenous and cultural knowledge systems) and impacts from SOEs, piloting L&D assessment/risk models to better estimate infrastructure damage and IDPs	**UNDRR** Support for the digitization of meteorological data (ongoing in West Africa) **SASSCAL** Support for collaboration among institutions in the region to collect and publish real-time data

During the second session, countries and organizations discussed practical steps to address the initial areas of technical assistance listed by countries. The organizations present at the workshop mentioned the following opportunities and resources:

African Development Bank (AfDB)

- Has committed allocating 50 per cent of its internal resources to adaptation, including support to NDC revisions, developing NAPs, capacity building, and technical knowledge.
- Ongoing work to support regional centres in countries in developing early warning systems, as well as capacity development in climate resilience. Has entered a partnership with the Global Center on Adaptation (GCA) on the Africa Adaptation and Acceleration Program that will address elements of loss and damage.
- A total of 25 country profiles contain information on climate vulnerability and adaptation. The idea is to scale this up for all African countries, which would help in developing proposals for finance.

InsuResilience Global Partnership

- Informed the group of several programmes and implementing partners that can drive work at country level. Can also engage private sector players on the ground.
- Raised the importance of predictable financing in relation to climate disasters pertaining to the question on forecast-based financing raised by Nigeria and South Africa. They are part of InsuResilience's comprehensive disaster management strategies, which include credit-based instruments, trust funds, and insurance. In Africa the African Risk Capacity (ARC) and World Food Programme (WFP) can also offer support in developing a risk pool to respond to these needs.
- Suggested making a risk analysis first to understand the specific demands of countries. All elements of risk management need to be aligned in preparing a comprehensive risk strategy that encompasses solutions.
- Committed to supporting countries to find the right partners within the InsuResilience partners. Open to having discussions at a bilateral level.

Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL)

- Offered support to increase much-needed awareness of the Santiago Network in the Southern African region.
- Advocated for cooperation and collaboration among institutions in the region, particularly in reference to challenges faced by countries to collect and publish information on real-time data.

UN Office for Disaster Risk Reduction (UNDRR)

- Offered to support countries in building databases. Capacity development on risk-based approaches is also an area it works on.
- Offered support to develop comprehensive risk approaches and strategies based on the UNDRR's risk strategies and comprehensive risk approaches that will be rolled out soon.
- Early warning systems known as multi-hazard warning systems is another area of support. In this regard, there was a mention of the Climate Risk and Early Warning Systems (CREWS) initiative, a project being implemented with the World Meteorological Organization's (WMO) support.
- Digitizing meteorological data is another ongoing project of the UNDRR in West Africa. Pointed out that the UN has the UN Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), which supports countries in implementing space technology. South Africa and Nigeria also have space technology, which they could share with other countries in the region.

UNEP

- Mentioned two new funding opportunities:
    - Global Ecosystem-based Adaptation (EbA) Fund launched on 25 March 2021 for NbS projects. It helps countries overcome barriers to design and implement NbS projects in terms of building awareness, planning and governance gaps, and seeking solutions when it comes to financing. The Federal Environment Ministry of Germany is supporting this fund with €20 million. The first call for proposals was in March and April 2021.
    - Adaptation Fund has a climate accelerator fund to foster innovation in adaptation in developing countries, including African countries.
- Offered to connect countries that are open to these opportunities.
- Mentioned UNEP's work with countries to support implementation of adaptation plans, supported by the GCF and GEF, and offered to expand this work to other countries, in addition to Malawi.
- Offered support for sharing knowledge and bridging knowledge gaps on NbS and EbA.
- Offered to connect countries with relevant partners in the GEF and UNEP.
- Mentioned an online course on disaster risk reduction that might be interesting for countries to implement strategies in NbS and EbA.

The following steps were identified by participants to further advance the work of the SNLD:[20]

- Summary: summarizing country needs prioritized during the meeting in addition to the survey questionnaire (see Table 2).
- Stock-taking: taking stock of existing structures and mechanisms that address loss and damage, identifying gaps where new action/interventions would be needed.

- Enhancing data collection: understanding how the existing data can be improved in its usability and identifying areas that need support for broader coverage of data. (UNDRR; SASSCAL for sub-region).
- Conducting risk analysis and assessment: supporting countries to undertake analysis at the national level, based on the data and applicable tools (InsuResilience Global Partnership; AfDB on country profiles).
- Develop comprehensive risk strategies: identifying solutions to address key risks and developing strategies on how to address them through practical activities that the organizations and partners could help drive forward and implement (InsuResilience Global Partnership; UNEP on NbS component; UNDRR and AfDB on early warning system-related activities).

While this meeting was meant to discuss loss and damage issues, it encouraged participants to express needs that could be matched with existing resources. However, these needs tended to be generalized, consequently the responses were also general and less focused on averting, addressing, and minimizing loss and damage.

It is important to observe that the majority of ideas listed by existing organizations are actions to support adaptation and not loss and damage.

Consultation meeting with parties and observers

On 26 April 2021 the COP25 Presidency (Chile) and the incoming COP26 Presidency (UK) jointly held a consultation with parties and observers. The purpose of this meeting was to assist with the 'formulation of a concrete plan to further operationalize the Santiago Network'. During this meeting, the UK presidency expressed its understanding that Decision 2/CMA.2 does not require a further decision to operationalize the SNLD. When looking at the steps taken by the presidencies so far and their view that a further decision is not necessary, it appears as though the presidencies are of the view that the SNLD has already been operationalized and can start to deliver. During the opening remarks, the LDC negotiator framed the situation succinctly: 'We mustn't wait but shouldn't rush'. What this means is that while it is crucial to think about how to operationalize the SNLD, it is also necessary to consider and explore the best possible means to do so.

Divergent views were expressed in terms of the need for a COP decision to fully operationalize the SNLD. Developing countries were of the view that a COP decision was needed, while developed countries did not deem it necessary. The function of the SNLD was also discussed, as well as the structure. Developing countries called for a coordinating unit or secretariat, while developed countries wanted to use existing arrangements both inside and outside the UNFCCC.

Going forward, the joint presidencies asked parties for written submissions on the functions and operationalization of the SNLD before the end of May 2021. Thereafter, they would develop a workplan with key moments to outline their plans to operationalize the SNLD.

The presidency would also produce a summary paper, reflecting the outcomes of this meeting, to be shared with parties, observers, and a selection of lead agencies that would be key members of the network. The draft summary paper was sent to parties on 14 May 2021 for comment and input.

The presidencies would use the summary from the meeting, input from technical agencies, party, and observer submissions, further results of the survey run by the Secretariat, and any further input, to produce a proposal for the operation of the SNLD for dissemination to parties at the Heads of Delegation (HoD) meeting in July 2021.

Another informal consultation would be arranged prior to the HoD meeting. The presidencies also proposed to form a 'Friends of the President' group to help the formulation of the plan for further operationalizing the SNLD.

Other

- The Santiago Network Working Group of the Loss and Damage Collaboration produced a report based on a survey across UNFCCC focal points, government officials, civil society, the private sector, and academia (Prevention Web, 2020).
- The UNFCCC has also indicated on its website that the UN Climate Secretariat will approach interested organizations, bodies, networks, and experts to provide technical assistance to developing countries. The Santiago Network will rely on this expanding network (UNFCCC, 2021b) to channel reliable technical assistance to help address loss and damage. It will also draw on organizations and experts on the Fiji Clearing House for Risk Transfer. The UNFCCC included on its website a preliminary list of organizations that are being engaged, in close consultation with country-specific needs, in the activities of the SNLD (UNFCCC, 2021d).

8.3 Recommendations on the operationalization of the SNLD

Following the analysis of the CTCN, its establishment, and operations, some of the most important elements to keep in mind when considering options to operationalize the SNLD are:

8.3.1 Fit for purpose to deliver for developing country needs and people on the frontlines

Loss and damage is unique in the sense that its impacts are associated with slow-onset events (SOEs) and/or extreme weather events. It is important always to take into account this differentiation of purpose during conversations on operationalizing the SNLD. The SNLD must be able to respond to impacts caused by both SOEs and extreme weather events. To this end, it is essential to keep the following in mind:

- The SNLD must cater for the scale of urgency of loss and damage that is already experienced by countries.

- Responding to impacts caused by SOEs will require project planning and implementation, including technology development and transfer. This could link in with the CTCN.
- Impacts caused by sudden and extreme events will need urgent and immediate responses. Countries will not have time to apply for funding etc., but will need to be able to call on assistance immediately. For this reason it is crucial to establish thresholds that will enable such responses.
- Extreme weather events are traditionally addressed within existing disaster risk management and risk reduction policy frameworks. These frameworks are more developed than frameworks to respond to SOEs.
- It is important to do an inventory of existing mechanisms, processes, and regulatory frameworks to determine what is applicable, what can be strengthened, and what should be created. This will also assist in identifying where the gaps are and where the additionalities lie – disasters are inevitable and national governments will have to respond, but how can these responses be improved? This is where the loss and damage input will make a difference.
- Map and create an up-to-date list of national stakeholders who can be invited to capacity-building initiatives.
- With more frequent and severe events, national, regional, and international agencies will be under increased strain – whatever is proposed must ensure increased capacity is built in developing countries.
- Build in-country capacity over the long term to ensure that national institutions have the necessary capacity.
- Prevent additional risk exposure for vulnerable countries by conducting loss and damage assessments in priority countries to get an indication of the scale of the emergency. This could then enable ex-ante investment in risk reduction. This process could be similar to the TNA process which informs the TEC and the TM.

Loss or damage associated with slow onset and extreme climatic processes can be partially addressed through technologies, and can be complemented by the systematic sharing of knowledge and practices across regions.

Patricia Espinosa, Executive Secretary, UNFCCC (WIM and TEC. n.d.: 6)

When operationalizing the SNLD it is also important to look at lessons learned from the CTCN, particularly in terms of the voluntary funding mechanism and the country-driven nature of the

process. It is also necessary to look at the structure of the CTCN, and its strengths and weaknesses, including the network and how it has performed.

8.3.2 Tie in with existing structures

When operationalizing the SNLD it is important to tie in with existing structures, with the knowledge that countries will have different capacities and structures, rather than establishing something new. From the outset, countries should undertake a national stocktake exercise and ultimately a gap analysis to identify structures that have already been established that could also be used to support their loss and damage needs as well as gaps.

One example could be to turn to the NDEs. When NDEs were established it was envisaged that they would expand their role beyond CTCN activities and services, and that NDEs would be 'climate technology champions' in their respective countries. This would allow for a holistic approach by mainstreaming climate technology issues in all national climate change-related plans, policies, and strategies (CTCN, 2015b: 3). But, if one looks at expanding the role of the NDEs it raises several questions, including around the mentioned lack of capacity and a high turnover. Thought should be given to how countries can build on capacity-development activities and the CTCN's Incubator Programme to improve the capacity of NDEs.

Another possibility could be to turn to the loss and damage contact points. COP22 invited interested parties to establish a loss and damage contact point through their UNFCCC national focal point. This should strengthen attempts to address country-level loss and damage (UNFCCC, 2016c: para. 4(d)). Not all countries have established loss and damage contact points (UNFCCC Loss and Damage, 2021), but those that have must coordinate and liaise with the CTCN's NDE on loss and damage matters.

There is also a strong argument to be made to encourage the establishment of a committee that functions with the NDEs. This committee could include various national stakeholders, loss and damage contact points, climate focal points, and existing emergency preparedness committees to improve national continuity, coordination, and communication, as well as requests made to the CTCN and the SNLD, once fully operationalized.

Internal coordination and communication must be streamlined to avoid any bottlenecks that could pose a serious challenge to the operational effectiveness of the SNLD.

8.3.3 Focus on the national link with the UNFCCC

One of the biggest lessons learned from the CTCN is that the mechanism is only as strong as the link between it and the country. Without an effective NDE, the CTCN cannot fulfil its functions. The CTCN has undertaken ample capacity-building activities aimed at NDEs. It is important that this momentum is not lost and that opportunities are taken to further strengthen and enhance the capacity of not only NDEs but all relevant national stakeholders. Countries could turn to the GCF's Country Readiness programme for assistance to request readiness support.

8.3.4 Ensure that financial arrangements are in place from the start

Financial arrangements, for both the coordinating entity or secretariat and activities of the SNLD, must be in place from the outset. Often this is problematic as donors tend to finance activities but not the coordinating entity. It is crucial that the finance system is designed in a manner where no one is left behind and that those most vulnerable are protected (UNFCCC, 1992: Art. 2).

From the CTCN lessons learned it is clear that voluntary-based funding negatively impacted its delivery and that the CTCN had a false start. Without the appropriate finance arrangements in place the SNLD will face the same burden. Not only will this divert the attention of the coordinating entity or secretariat, in that it will essentially become a fundraiser, the SNLD will also not be able to fulfil its mandate, which is to catalyse assistance to vulnerable countries.

As this is an evolving process, it might be prudent to have smaller initial requests, with ring-fenced amounts, to get the process going – this will send the right political signals. For example, through baseline studies, which need less funding, countries could determine what is in place, and what needs should be prioritized. Funds could also be set aside for national capacity development aimed at supporting NDEs and focal points, as well as relevant national stakeholders, to engage with the SNLD process.

As the operationalization of the SNLD gains momentum, and after baseline studies have been undertaken, bigger funding opportunities can be sought. The World Bank, for instance, has indicated that it has a strong commitment to equal financing of mitigation and adaptation.[21] These are the kinds of funding opportunities and collaborations that build a finance system to reach those most in need.

There must also be flexibility within the financial arrangements. It has been noted with the CTCN that a significant portion of its resources are earmarked and out of alignment with its priorities. Vulnerable countries that have to respond to loss and damage cannot afford to have a big chunk of available funds earmarked for something else.

- For this reason it might be better to suggest a structure that is closer to that of the COP – this will make it easier to get funding, if in smaller amounts.
- GEF funding and its proposal arrangements might be too big for countries to deliver and they might not have the capacity to deliver projects at this scale.

Due regard must be given to the technical paper by the UNFCCC, 'Elaboration of the sources of and modalities for accessing financial support for addressing loss and damage'.

8.3.5 Avoid going down the road of appointing a host for the SNLD

This analysis has shown that not only was the procedure to select a host cumbersome, it also had unintended consequences, such as the GEF withholding funding at first. Other issues include a scenario where the host agreement is not renewed. In the case of loss and damage this can have a disastrous impact, in that countries will require continuity in the operation of the SNLD. This does

not mean that the SNLD must not have a coordinating entity or a secretariat – it does, however, strike a note of caution about the design of this proposal. Alternatives are explored below.

8.3.6 Consider framework contracts on a drawdown basis

Consider entering into framework contracts between a coordinating entity and network partners on a drawdown basis, similar to what UNEP initially did with consortium partners. This way, internal processes can be followed instead of having to draw up new contracts every time for relatively small amounts. This will allow fast and flexile delivery, which is essential in operationalizing the SNLD.

8.3.7 Give careful consideration to the role of the private sector

The SNLD will need strong engagement with the private sector, for example the insurance industry and the development of regional sovereign risk pools, risk modelling companies, and predictive plans, forecasting, and scenarios, etc. To this end, it is important to learn from the CTCN model and its engagement with the private sector, in particular the vetting process.

The private sector has to work within public regulatory parameters and it is therefore important that governance structures further ownership, cooperation, transparency, equity, and accountability. An environment that promotes innovation and values diverse knowledge and public–private partnerships is crucial. For instance, the insurance sector has a grasp of the relevant risks, which can benefit both the broader public and government stakeholders' understanding (OECD, 2021).

8.3.8 Establish a programme of work

Once the functions, mandate, and governance structure are agreed upon, it will be important to establish a programme of work for the SNLD for a predetermined period. To ensure that the SNLD is responsive to needs as they unfold on the ground, the programme of work should include developing and agreeing a modality for the technical assistance to be delivered as well as the details of how assistance will be delivered and paid for. This programme of work must then be approved by parties and reviewed on a regular basis.

8.4 Proposed governance structure for the SNLD and its relative strengths, weaknesses, and feasibility

Three possible options are discussed. When discussing these options, due consideration must be given to the impacts of climate change, which include SOEs (* as referred to in 1/CP.16) and extreme weather events (**examples presented), that may result in loss and damage.

Cognisance must also be taken of the fact that many of these impacts are already covered, in one shape or another, by other international, regional, and national processes. Loss of biodiversity, for instance, is dealt with by the Convention on Biodiversity, which has the Bio-Bridge Initiative. This focuses on enabling technical and scientific cooperation among parties to the Cartagena and Nagoya protocols. It does this by linking parties that have specific technical and scientific needs with parties or institutions that can provide the necessary technical support and resources.

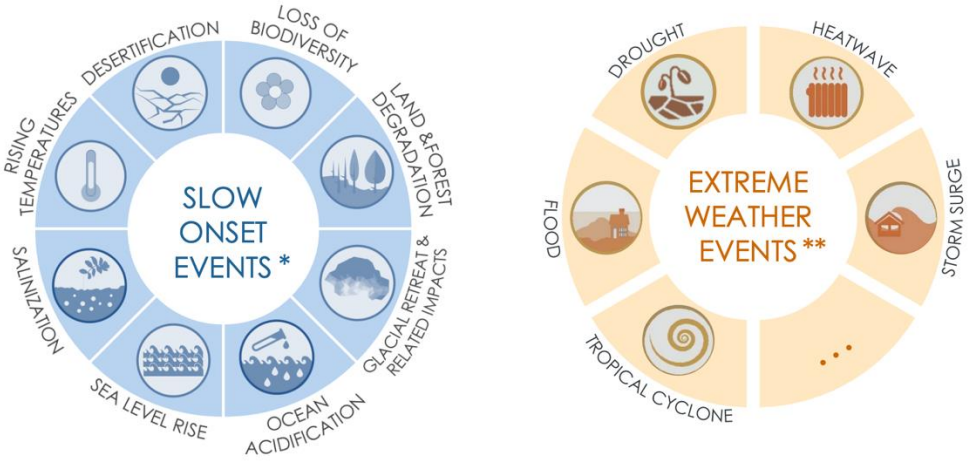

Figure 7 Slow-onset events vs extreme weather events
Source: UNFCCC, 2020a

8.4.1 Expanding the mandate of the CTCN

Having analysed the CTCN, its origin, and effectiveness, it is important to see if its mandate could be expanded to include loss and damage. It seems as though there is appetite within the UNFCCC for engagement between the TEC and the WIM. In May 2016, the Chair and Vice-Chair of the TEC had their first meeting with the Co-Chairs of the WIM ExCom during sessions of the subsidiary bodies. The TEC noted the importance of further engagement with the WIM ExCom to enhance understanding of technologies that reduce or avert loss and damage. The TEC agreed to further consider the potential for collaboration that is mutually beneficial to both bodies, taking into consideration relevant work undertaken by the TEC (UNFCCC, 2016: para. 28). The TEC and WIM ExCom also published a joint policy brief, as mentioned earlier (WIM and TEC, n.d.).

To a certain extent, the CTCN is already fulfilling some loss and damage functions. In late 2017, Hurricane Irma damaged or destroyed 95 per cent of Barbuda's buildings and infrastructure, and the entire population had to be evacuated. Antigua and Barbuda needed technical assistance to adapt infrastructure for disaster resilience and safeguard key services during and after emergencies. In response to the islands' request, UNEP and a Network member, together with the Ministry of Health and Environment, developed a comprehensive strategy to adapt public utilities to maintain structural, electrical, and water supply integrity under various disaster scenarios (CTCN Secretariat, 2018).

After a 2017 hurricane season of Category 5+ hurricanes, it is good to know that technology questions can be answered by a trusted partner like the CTCN. Partnerships like these allow our citizens to fight climate change from the comfort and safety of their own resilient homes.

H.E. Ms. Diann Black-Layne Ambassador for Climate Change; Director, Department of the Environment, Ministry of Health and the Environment, and Antigua and Barbuda NDE

By expanding the mandate of the CTCN to essentially include loss and damage, it can be suggested that the WIM ExCom is to the CTCN what the TEC is to the CTCN. The WIM ExCom would advise on loss and damage matters while the TEC would continue to advise on mitigation and adaptation. The Chair and Co-Chair of the ExCom could attend CTCN and TEC meetings as well as Advisory Board meetings. Alternatively, a loss and damage champion could be created in the Advisory Board.

The Santiago Network could initially be anchored under the Climate Technology Centre Secretariat as a cluster of network members that handle special functions pertaining to loss and damage.

While technology and technical assistance is vital to address SOEs, loss and damage goes beyond this, and due consideration must also be given to addressing extreme weather events within this proposal. Extreme weather events, often sudden in nature, will rely on both existing structures and new possibilities, which must be addressed. In addition, as seen in the case of Antigua and Barbuda, technology, and the CTCN, can play an important role in rebuilding and a more resilient future.

Parties have made various references to the CTCN and the potential to explore this route (Informal Consultation, 2021). To this end, it is also recommended to look at the similarities and differences between the mandates and actions of the TEC and the WIM ExCom.

EXPANDING THE MANDATE OF THE CTCN	
STRENGTHS	In certain instances responding to loss and damage will require the development and transfer of technology. The CTCN has a wide network that can be useful, in particular for SOE – tapping into this existing network will keep the focus on action and the possibility to engage with organizations that already exist and that can deliver. The CTCN is fully operationalized and has gone through its 'growing pains'. The CTCN has a good capacity-building base and programme, gender policy, and linkages with Adaptation Committee and Standing Committee on Finance. Network members of the CTCN could respond to matters pertaining to loss and damage that require technology-related interventions. With clear TORs – this will operationalize the work of the Santiago Network without delay. It is practical – it can build from what is already there. The CTCN TEC and WIM ExCom are already engaging in conversations and work. It is easier to strengthen an existing institution than set up a new one. Fewer administrative burdens. This will create a coordinating entity for the SNLD.
WEAKNESSES	This could overburden the network / will put extra stress on the existing system. Complexity that new COP decision will be required, willingness, and capacity of host, etc. Will require additional functioning. How to link it with the FM – because the TM is not even properly linked with the FM. Funding comes from various sources and is voluntary. The current level of funding (max: $250K and average $125K) would be limiting for loss and technical assistance and support in countries, including for loss and damage needs assessment, transfer of technology to address loss and damage. It will mostly deal with SOE that will require technical development and transfer – what about extreme events? How would these be responded to? This will be a gap because the network can only deliver on the services that they have. Further negotiations will be needed.
FEASIBILITY	Parties have expressed views in support of looking at the CTCN. TEC and WIM ExCom have already engaged in meetings.

8.4.2 SNLD hosted within the UNFCCC Secretariat

To fully understand the pros and cons of hosting the SNLD within the UNFCCC secretariat, a separate study and consultation must be undertaken. The premise of this proposal will be something similar to the Clean Development Mechanism Executive Board (CDM EB). The CDM EB supervises the Kyoto Protocol's clean development mechanism and is accountable to the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP). The

CDM EM may establish committees, panels, or working groups to assist it in the performance of its functions, and can draw on the UNFCCC roster of experts.

A similar arrangement for the SNLD could serve as a facilitating network without becoming too unmanageable.

HOST WITHIN THE UNFCCC SECRETARIAT	
STRENGTHS	Keeps it close to the COP. Funding is automatic. Will make it an agenda item. Not reinventing the wheel.
WEAKNESSES	Funding smaller. Will there be enough capacity to respond to requests? How will the network of organizations be handled? The unpredictable nature of extreme events makes it impossible to determine the amount and timing of requests.
FEASIBILITY	The CDM EB serves as an existing example – one that should be further examined.

8.4.3 SNLD as a fully fledged independent entity

A third option is the SNLD as a full-fledged independent entity. This would be similar to the CTCN and the operationalization thereof would have to go through the entire political process.

SNLD AS A FULLY FLEDGED INDEPENDENT ENTITY	
STRENGTHS	It can be autonomous. 'Clean slate'. Won't have an inherent political or organizational legacy.
WEAKNESSES	The process will be very slow – it will take a long time to establish. No momentum to build on. Will be a compromise – same parties that negotiated the CTCN for instance, will renegotiate a new instrument, will face the same burdens. Once established will have to negotiate TOR, mandate etc.
FEASIBILITY	Seems to be low appetite.

9 Conclusion

It is evident that there are divergent views regarding the operationalization of the SNLD. Some, mostly developed countries, seem to feel no need to formally operationalize the SNLD, and consider it as already having started fulfilling its functions. Developing countries, on the other hand, have clearly expressed the importance of formally operationalizing the SNLD. There are also divergent views on the function of the SNLD. During a recent informal meeting held with the presidencies,[22] the US made an intervention noting that, in their view, the decision language is clear that it is the members of the network that will provide the assistance and not the network itself, and that it is about catalysing the activities of these organizations. The LDCs followed with an intervention that placed the emphasis on the functions of the SNLD, listing these as two distinct implementation and coordination functions. The implementation function needs to focus on supporting action on the ground while the coordination function can increase efficiency in the provision of support; however, coordination will not suffice to make an effective change in vulnerable developing countries.

From reading the decision text, it is clear that the coordination function will include catalysing technical assistance while the rest of the decision makes provision for the implementation function '… for the implementation of relevant approaches at the local, national, and regional level, in developing countries that are particularly vulnerable to the adverse effects of climate change' (UNFCCC, 2020c).

It is of utmost importance that this distinction of functions is included in all work going forward; without a coordination function and an implementation function the SNLD risk being nothing more than a network with a list of potential contractors.

While the next few months will be crucial in steering this conversation, it is important to bear in mind that loss and damage is accelerating and urgent action is needed.

> **We mustn't wait but shouldn't rush.**
>
> ***LDC negotiator at consultation meeting with parties and observers on 26 April 2021***

Important next steps

- It is of the utmost importance to consider all inputs and developments of the steps being taken by the UNFCCC and the COP presidency to operationalize the SNLD.
- It is essential that a decision is reached on the operationalization of the SNLD, as this will give it a legal basis.
- Keep the discussion going on the importance of a coordinating entity or secretariat for the SNLD and what this should look like.

- The SNLD must be an agenda item at the UNFCCC negotiations.
- Reducing loss and damage can be used as an indicator of progress to meet the Paris Agreement objectives.
- Do a stocktake of national policies and structures that are already in place and determine how these can be strengthened and where there are gaps that would necessitate the creation of new policies and structures.
- Request country submissions on where countries are at currently, their loss and damage needs, and the requests made in the past, and set out the trajectory from there.
- Include, as part of the technical assessment phase of the Global Stocktake (GST), efforts to enhance understanding, action, and support related to averting, minimizing, and addressing loss and damage associated with the adverse effects of climate change loss and damage (UNFCC, 2018).
- Include loss and damage as a reporting requirement in the GST.
- What do countries have in place in terms of disaster risk reduction and disaster risk management, and how reliable are these elements?
- Countries include loss and damage in their NDCs – what has been communicated?
- Provide a synthesis of the survey.

Political and operational barriers that will need to be overcome and how they play out in the process of the negotiations to operationalize the SNLD

- Ensure that all the 'ingredients' are in place. These include:
    - Financial arrangements: it is necessary to have the financing conversation without blocking the negotiations.
    - Ensure that there is a decision to give the operationalization of the SNLD a legal basis.
    - Keep the SNLD close to the UNFCCC process.
    - Think clearly about a coordinating entity or secretariat and how this will look.
- Negotiate a mandate in a way that leaves room for further development as the function expands.

What tactics and options would progress the idea of the SNLD in the negotiations?

- When operationalizing the SNLD, avoid proposing the establishment of anything new, as this is often met with resistance. Rather look at existing structures that can be used and strengthened.
- Rely on UNFCCC decisions that encourage constituted bodies to collaborate.
- Rely on UNFCCC decisions that encourage collaboration with the WIM and its ExCom.
- Ensure that it is on the agenda of the UNFCCC negotiations.
- Make sure to negotiate to report back to the UNFCCC.

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Notes

1 The Chilean Presidency's support at COP25 for the SNLD was instrumental in its establishment, making the SNLD one of the key legacies of the Chilean COP Presidency.

2 Meeting minutes: Santiago Network Working Group: Drafting Group Call 4 February 2021.

3 The SBSTA is one of two permanent subsidiary bodies to the Convention established by the COP/CMP. It supports the work of the COP, the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP) and the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) through the provision of timely information and advice on scientific and technological matters as they relate to the Convention, its Kyoto Protocol, and the Paris Agreement. More information available at <https://unfccc.int/process/bodies/subsidiary-bodies/sbsta> [accessed 15 August 2021].

4 These modalities and procedures include the following six key elements:

1) roles and responsibilities of the Climate Technology Centre and the Network;
2) managing requests from national designated entities of developing countries and delivering responses;
3) fostering collaboration and access to information and knowledge in order to accelerate climate technology transfer;
4) strengthening networks, partnerships, and capacity building for climate technology transfer;
5) maintaining linkages with the TEC; and
6) ensuring information and knowledge-sharing.

In executing its modalities and procedures, the CTCN works with the TEC to ensure coherence and synergy within the TM, with the intention of:

1) accelerating the development and transfer of technology, taking into account gender considerations; and
2) scaling up international collaboration on the development and transfer of technology.

5 The secretariat, subject to the availability of resources, shall commission an independent review of the effective implementation of the CTCN four years after its inception. The findings of the review, including any recommendations regarding enhancing the performance of the CTCN, will be

considered by the COP. Subsequently, periodic independent reviews of the effectiveness of the CTCN will be conducted every four years.

6 Meeting minutes available at CTCN Advisory Board, n.d. <https://www.ctc-n.org/advisory-board/meetings> [accessed 15 August 2021].

7 The national entity designated for this purpose was established under UNFCCC (2018b).

8 These include: CTCN.2017. TEC Updates from TEC13 and TEC14 Meetings – AB/2017/9/6a; CTCN.2016. Update on TEC Matters – AB/2016/8/5.b; CTCN.2015. TEC 11 outcomes – AB/2015/6/4.ab; CTCN.2015. TEC 10 outcomes – AB/2015/5/4 see <https://www.ctc-n.org/advisory-board/meetings> [accessed 15 August 2021].

9 Summary of Actions as a Result of Advisory Board Meeting 6 - AB/2016/7/5.1. see <https://www.ctc-n.org/advisory-board/meetings> [accessed 15 August 2021].

10 NDE list and profiles available at CTCN NDE, n.d..

11 Since 2014, additional in-kind contributions have been provided without being monitored. UNFCCC (2013, November). FCCC/SB/2013/1: Joint annual report of the Technology Executive Committee and the Climate Technology Centre and Network for 2013 <https://unfccc.int/resource/docs/2013/sb/eng/01.pdf> [accessed 15 August 2021].

12 African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, and Inter-American Development Bank.

13 More information available at CTCN Adaptation Fund, n.d.

14 These are available at <https://unfccc.int/documents?f%5B0%5D=topic%3A545&search2=&search3=&page=%2C%2C0> [accessed 15 August 2021].

15 A questionnaire was designed to assess current LDC experiences with the Technology Mechanism, covering national capacity, technology projects, the CTCN, the TEC, and financial institutions. An analysis of the results is available at Craft et al., 2017.

16 Draft summary paper: Informal Consultations on the Santiago Network emailed to participants on 14 May 2021.

17 Information note sent to parties by the UNFCCC dated 27 August 2020 signed by the Director of the Adaptation division.

18 As of 11 May 2021: Argentina, Armenia, Belize, Bhutan, Chile, Costa Rica, Democratic Republic of Congo, Dominican Republic, Ethiopia, Indonesia, Jamaica, Namibia, Nigeria, Panama, Paraguay, Philippines, Saint Lucia, Malawi, South Africa, State of Palestine, Suriname, Thailand, Timor Leste, and Vietnam.

19 Summary of The Santiago Network of the Warsaw International Mechanism for Loss and Damage; Regional marketplace meeting: Africa virtual meeting held on 31 March 2021.

20 Summary of The Santiago Network of the Warsaw International Mechanism for Loss and Damage; Regional marketplace meeting: Africa virtual meeting held on 31 March 2021.

21 Statement made by Mr Olivier Mahul during OECD workshop on 'Approaches to reduce and manage the risks of losses and damages from climate change' held on 15 April 2021; see <https://www.oecd.org/environment/cc/oecdworkshoponapproachestoreduceandmanagetherisksoflossesanddamages.htm> [accessed 15 August 2021].

22 Available at <https://www.youtube.com/watch?v=lyHB_h7gR4Q> from 30 minutes onwards [accessed 15 August 2021].

Together we can create a world that works better for everyone.

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