

Technology Transfer at the UNFCCC

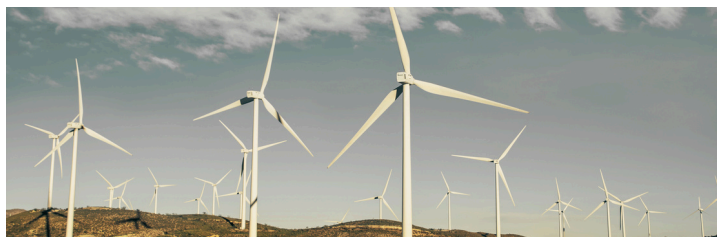
Technology has featured heavily in the negotiations at the UNFCCC since the beginning of the process. Already in 1992, **Article 4.7 of the United Nations Framework Convention on Climate Change (UNFCCC)** recognised that technology is a key means of implementation for developing countries, alongside climate finance. **The Paris Agreement** expands on the importance of discussing technology in its **Article 10**, which notes the importance of technology for the implementation of mitigation and adaptation measures, and the role technology development and transfer play in improving resilience.

Technology transfer is seen as critical under the Convention and the Paris Agreement to achieving its objectives, which include capacity building in developing countries to ensure they have the means to install and operate new technologies successfully. The **International Court of Justice's Advisory Opinion** on obligations of States in respect to climate change reiterates the importance of technology transfer and development, which it sees as one of the principal forms of co-operation under the Paris Agreement, alongside the provision of financial support (para. 262).

Legal and Institutional Framework

The Technology Mechanism was created in 2010 at COP 16 (**Decision 1/CP.16**, para. 117) to facilitate the implementation of steps for achieving enhanced action on technology development and transfer, which supports mitigation and adaptation, is nationally determined, and accelerated across all stages of the technology cycle in line with international obligations (paras. 113–115). The UNFCCC's Technology Mechanism continues to serve as the primary institutional framework for climate technology development and transfer under the Paris Agreement. The mechanism comprises two key bodies:

- ◆ The Technology Executive Committee (TEC), its 'policy arm', which, among others, analyses and provides recommendations on key issues surrounding technology transfer; and
- ◆ The Climate Technology Centre and Network (CTCN), its 'implementation arm', which supports developing countries through technology solutions, capacity building, and advice, among other initiatives, via a network of experienced stakeholders.



Article 10.3 of the Paris Agreement stipulates that **the Technology Mechanism, established under the Convention in 2010, will also serve the Agreement**. Article 10.4 established the Technology Framework, a guiding structure, which provides overarching guidance to the Technology Mechanism.

Decision 15/CMA.1 adopts the Technology Framework and, in its annex establishes five key principles:

- ◆ Coherence of technology transfer with actions undertaken by relevant institutions;
- ◆ Enabling inclusivity, and taking into account sustainable development, gender, the special circumstances of least developed countries (LDC) and small island developing States (SIDS), and indigenous peoples' capacities and endogenous technologies.
- ◆ Results-oriented approach,
- ◆ Transformational approach,
- ◆ Transparency.

Decision 15/CMA.1 also decided that the TEC and the CTCN would implement the Technology Framework and incorporate guidance from it into their respective work plans. Finally, in 2022, in Sharm el-Sheikh, Parties developed a **joint work programme** that brings together their long-term strategies and seeks to identify areas of commonality between the TEC and the CTCN from 2023 to 2027 (**Decision 18/CP.27**).

LRI's advice and explainers produced previously on the UNFCCC Technology Mechanism:

- Technology Mechanism – Functions of TEC and CTCN
- Alignment of the review of the CTCN and the assessment of the technology mechanism
- Mandate of the CTCN: data review, information and knowledge management
- Linkages between the technology and financial mechanisms

Technology Executive Committee

The TEC's key functions are to promote technology development and transfer for mitigation and adaptation, assess technological needs, and catalyse the creation and use of technology road maps or action plans at all levels. It works in collaboration with governments, international and regional bodies, the private sector, non-profits, and academic and research institutions to support practical action.

It operates with 22 technology experts representing developed and developing countries, meeting at least twice annually to address technology-related policy issues. The 22 experts are selected as follows:

- Ten members from **Annex I Parties**;
- Three members from each of the three regions of **non-Annex I Parties**, namely Africa, Asia and the Pacific, and Latin America and the Caribbean;
- One member from a SIDS;
- One member from a LDC;
- One member from non-Annex I Parties that are not represented by the 9 members from Africa, Asia and the Pacific, and Latin America and the Caribbean.

The TEC's actions are guided by a rolling workplan regularly updated for the period 2023–2027, along with the **Joint Work Programme of the UNFCCC Technology Mechanism for 2023–2027**.

The TEC reports to the COP on its performance and activities, alongside the CTCN in their **joint annual report**. Since the Sharm-el Sheikh conference (Decision 18/CP.27), the TEC must also **respond to the guidance** from the Parties in previous years' decisions.

The TEC also produces policy briefs on key climate technology issues, such as **'Gender-responsive technology and infrastructure for sustainable urban mobility'** and a **'Technology Needs Assessment Guidebook on Renewable Energy'**.

Climate Technology Centre and Network Progress

The CTCN is envisioned as a centre and network of national, regional, sectoral and international technology networks, organisations and initiatives. As the implementation arm of the Technology Mechanism, hosted by the UN Environment Programme, it facilitates the rapid transfer of environmentally sound technologies to support low-carbon and climate-resilient development in developing countries.

The CTCN operates through National Designated Entities (NDEs) in developing countries and **mobilises a global network of over 760 institutions** to deliver customised climate technology solutions, alongside an Advisory Board which determines its operational modalities and rules of procedure. The Advisory Board is constituted of 30 representatives as follows:

- 9 government representatives from Annex I Parties;
- 9 government representatives from Non-Annex I Parties;
- The Chair/Vice Chair, Co-Chair or a designated representative of the Adaptation Committee, Green Climate Fund (GCF), Global Environment Facility (GEF), Standing Committee on Finance (SCF), and TEC;
- The director of the CTCN;
- 6 representatives of observer organisations, one from each UNFCCC observer organisation constituency.

Each Party to the UNFCCC assigns an NDE, who will be responsible of managing requests made to the CTCN. The NDE will facilitate support from the CTCN for their countries by serving as the National Focal Point on CTCN activities, supporting the articulation and prioritisation of requests and proposals, and managing the national submission process of technical assistance requests to the CTCN. An **operating manual** was prepared for NDEs.

As **Decision 1/CP.16** established that technology needs must be nationally determined and based on national circumstances and priorities (para. 114), the CTCN is demand-driven. Developing country Parties, along with academic, public, NGO or private sector entities, can request support for five types of 'Technical Assistance':

technical assessments, policy and planning document support, capacity building, tools and methodologies, and implementation plans.

The **CTCN's technical assistance operates through a five-step cycle** beginning with the NDE submitting a request for support, followed by the CTCN and the NDE collaborating to develop a response plan. Following a bidding process, the Climate Technology Centre (CTC) will then select a Consortium or Network member to implement the technology solutions. The selected Consortium or Network member will then implement it, with the CTCN conducting due diligence of deliverables. Finally, the CTC will regularly reach out to the NDE and other stakeholders for monitoring and evaluation purposes.

The work of the CTCN is guided by its **Programme of Work for the period 2023–2027** in which it sets three key components

- Enhancing collaboration with the TEC;
- Demand-driven approach to meet requests from countries; and
- Adopting two enablers (National Systems of Innovation and Digitalisation) to shape five system transformations (water-energy-food nexus, sustainable mobility, buildings and infrastructure, energy systems, and business and industry).

The CTCN reports to the COP on its performance and activities, alongside the TEC in their joint annual report. In that 2024 report, the CTCN provided some key messages to the COP and the CMA, relating to the need for Parties to identify technology needs in their first biennial transparency reports (BTRs) and updated nationally determined contributions (NDCs) to ensure they receive more targeted Technical Assistance. The report also pointed out the importance of strengthening collaboration between NDEs and national focal points for the Financial Mechanism to promote effective design of CTCN Technical Assistance Projects. Finally, **the CTCN underlined a recurring issue it faces, which is a lack of resources**. (For more on the CTCN's mandate, see **LRI's pieces of advice**).

Poznan Strategic Programme

The Poznan Strategic Programme (PSP), created in 2007 as the strategic programme of the GEF, and renamed in 2008 to scale up the level of investment for technology transfer (**Decision 2/CP.14**). Through the PSP, the GEF has been able to fund technology development and transfer activities for approximately USD 50 million. However, the role of the PSP has decreased in recent years as the associated programmes have come to an end. A review is set to begin at SBI 64 (June 2026) based on a report prepared by the secretariat, guided by the TEC and in consultation with the GEF, to take stock of progress, challenges, and successes in and lessons learned from implementing the PSP (**Decision 9/CP.29**). Parties hope to use these lessons learned to inform the operationalisation of the TIP.

Technology in the Negotiations

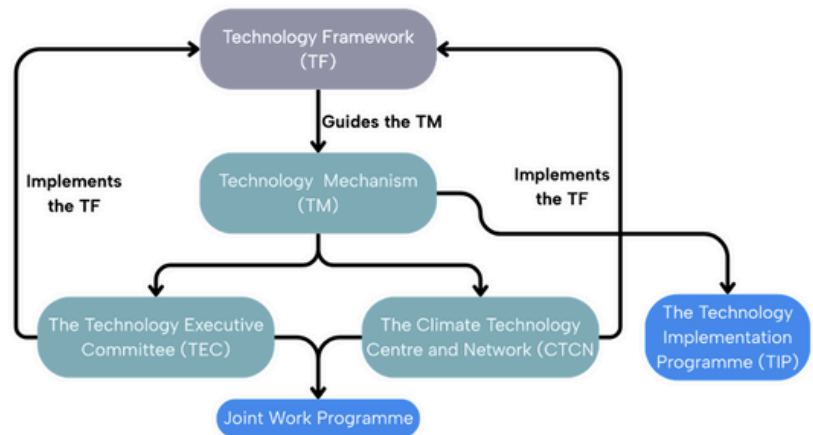
The CTCN in negotiations

After marking its 10th anniversary in 2024, having funded over 300 technical assistance projects across 112 developing countries, the Subsidiary Bodies began a review of the CTCN at SB 62. This review, mandated under **Decision 2/CP.17** and guided by **Decision 20/CMA.4** aims to assess the effectiveness, scope and operational relevance of the CTCN in delivering on its role. Parties welcomed the CTCN's role in Technical Assistance, capacity-building, project design and facilitating access to finance and cooperation. Developing countries, particularly from the African Union, stressed the need for predictable and accessible support, particularly for NDEs. Parties also agreed on the need for the CTCN to enhance its responsiveness to local and context-specific needs.

At COP 30, Parties will discuss the extension of the Climate Technology Centre and adopt its revised functions, alongside the process for selecting a new host, as UNEP's hosting period ends.

Joint Annual Report of the TEC and the CTCN

At COP 29, the COP, CMA and SBI assessed the Joint Annual Report of the TEC and the CTCN which noted that the TEC and CTCN had continued to implement the Joint Work Programme, focusing on innovation, technology transfer and policy support and that better coordination between the TEC and CTCN has enabled better alignment with the Financial Mechanism. Among other joint projects, the TEC and CTCN reported that they had finalised and begun implementing the AI for Climate Action Initiative.



Decision 10/CP.29 emphasised the need for continued collaboration to enhance the impact of technology development and transfer efforts. At COP 30, the SBSTA and SBI will again assess the **Joint Annual Report of the TEC and the CTCN**, and the COP will be invited to take action it deems appropriate on the basis of the recommendations of the Subsidiary Bodies. It will also be invited to elect members of the TEC and the Advisory Board of the CTCN.

The Technology Implementation Programme (TIP) in negotiations

The (TIP) was established in the GST decision to enhance support for technology priorities of developing countries and to address the challenges identified in the first periodic assessment of the Technology Mechanism (**Decision 1/CMA.5**, para. 110). However, that decision left the structure of the TIP to be established at CMA 6 (November 2024). There, expectations surrounding the establishment of the TIP's structure, objectives, programmes and governance were not met.

The idea of the TIP serving as a technology acceleration and transfer hub was voiced by developing countries, but opposed by developed countries, who questioned the need for additional structures in the Technology Mechanism.

Negotiations continued at SB 62 on the scope, governance, and operational modalities for the TIP, with the goal of reaching an agreement by CMA 7 in Belém (November 2025). Many countries welcomed the TIP as a bridge between identifying technology needs and their actual deployment. However, Parties fundamentally disagreed on the TIP's structure and institutional governance, with at least four institutional options being considered by Parties. Parties also disagreed on the role of the TIP, whether to prioritise specific emerging technologies or retain an open-ended mandate for nationally determined needs, the participation modalities, and the extent of integration with the FM. These discussions will feature heavily in the technology agenda item at COP 30. For more on this, read LRI's SB 62 summary of outcomes **section on technology**.

Linkages with the Financial Mechanism

The Technology Mechanism, established by the Parties in 2010, contains several linkages that have been developed over the years with the Financial Mechanism. The Financial Mechanism was established in Article 11 of the Convention and includes the GEF, GCF, Fund for responding to Loss and Damage and the Adaptation Fund. This negotiation stream was first discussed following **Decision 3/CP.17**, which created the GCF and recognised the need to collaborate and define linkages with the TEC, as well as **Decision 1/CP.18** para. 62, which agreed to further elaborate the linkages between the two Mechanisms more generally. At **COP 20**, this agenda item (9.e) figured for the time, based on the recognition that by increasing collaboration, this would, in turn, increase access to new technologies. The focus being on identifying barriers to accessing financing.

Recent discussions at COP 29 and SB 62, which will continue at COP 30, include challenges in accessing financial support for TNAs, TAPs, and Technical Assistance, and the need for streamlined processes. There is also a growing call for establishing a structured monitoring mechanism to track financial flows. However, disappointingly, this negotiation stream has seen little progress in recent years, concluding mainly through deferrals to future sessions. Importantly, there are also calls by some developed countries to conclude consideration of this topic as a standalone agenda item, and to integrate it to discussions on the Joint Annual Report of the TEC and CTCN.

Technology Needs Assessments Expansion

The concept of the Technology Needs Assessment (TNA) was developed in 2001 at COP 7, as part of the technology transfer framework (Decision 4/CP.7, **Annex**), as country-driven activities to identify and determine mitigation and adaptation technology priorities. In 2009, the Global Technology Needs Assessment project launched to support developing countries with their TNAs. Since 2009, the TNA process **has supported** over 115 countries with USD 30.2 million in GEF project financing across five phases. It has now entered its fifth phase (2024–2027), with 17 countries participating. The TNA process comprises country-driven, participatory activities aimed at identifying, selecting, and planning for climate technology implementation. The updated **TNA Step-by-Step guidebook** addresses emerging issues, including transformational change, long-term low-emission development strategies, just transition, and private sector involvement.



Technology and other negotiations

In 2015, in **Decision 1/CP.21**, Parties agreed to periodically assess the effectiveness and adequacy of support provided to the Technology Mechanism in supporting the implementation of the Agreement on matters relating to technology development and transfer (para. 69). This was integrated as part of the first **Global Stocktake**. The outcomes recognised the need for accelerated deployment and scaling up of zero and low-emission energy technologies (**Decision 1/CMA.5**, para. 28). The GST I also highlighted the persistent gaps and challenges in technology development and transfer and urged Parties to address these barriers, and as a result, Parties decided to launch the TIP (para. 110).

Under the **Enhanced Transparency Framework (ETF)**, 120 Parties were required to submit their first Biennial Transparency Reports (BTRs) by December 31, 2024, with subsequent reports due every two years (**Decision 18/CMA.1**). In these, developing countries may report on technology transfer and developed countries, as was indicated in the Modalities, Procedures and Guidelines for the ETF, must report on technology development and transfer they are expected to provide. The Early Insights from BTRs report by the Climate Change Expert Group,* revealed that Parties had referred to challenges in the enabling environment, including technology constraints, and to constraints and gaps in estimating technology transfer needs to deliver their NDCs, among others.

* Lo Re, L. et al. (2025), "Early insights from biennial transparency reports (BTRs) to enhance the next nationally determined contributions (NDCs): Focus on energy outcomes from the first global stocktake and finance", OECD/IEA Climate Change Expert Group Papers, No. 2025/02, OECD Publishing, Paris, <<https://doi.org/10.1787/d1f0986a-en>>.

Current Challenges and Opportunities

The SB 62 negotiations faced several challenges in operationalising technology mechanisms. Disagreements on the TIP's definition and scope continued to stall progress, with Parties divided on governance structures, financial mechanisms, and implementation modalities, leaving much to do to at COP 30. Additionally, with the increasingly overburdened agenda, calls for integrating the linkages agenda item into the Joint Annual Reporting of the TEC and CTCN agenda item increased. Despite these challenges, there were opportunities for progress with negotiations on the CTCN's review being surprisingly smooth, and Parties were able to forward a **draft decision** to COP 30. Looking ahead, the development of AI and digital tools offers new possibilities for supporting climate negotiations and capacity building, particularly for developing countries. The TM's decade of experience demonstrates the potential for systematic technology deployment when supported by adequate financing and institutional frameworks.

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