

Item 9 (a) of the TEC Agenda

Item 4.2 of the CTCN AB Agenda

Update on the work of the CTCN and reflections on synergies between the TEC and CTCN

20 September 2024

Fred Onduri, CTCN Advisory Board Chair

Highlights from 2024

Highlights from 2024

Technical Assistance

410 Technical Assistance requests received since the inception of the CTCN

28 TAs completed between Oct 23 – Sept 24 (JAR reporting period)

Flagship Programmes:

- **Adaptation Fund Climate Innovation Accelerator phase I & II** funding 25 & 60 TAs respectively
- **Climate Technology for Communities at Risk of Climate-Induced Conflicts** funding 10 TAs
- **Innovative Climate Solutions Programme** funding 7 TAs

Capacity Building

15 global capacity building activities conducted in 2023, including:

- Webinars on collaborative Research Development & Deployment (RD&D) in key system transformation areas
- Capacity building for NDEs on Green Hydrogen technologies
- Capacity building for NDEs on Artificial Intelligence
- Launch of the Second Edition of the Youth Climate Innovation Labs

Knowledge Sharing

Digital Readiness Index: Assessment of the Digital Capacity of Developing Countries for Transforming Their Energy Infrastructure

Two editions of the “Voluntary Technology Talks” initiative: foster collaboration between NDE, Network members and Technology providers through facilitating technology matchmaking, visits to climate technology exhibitions, and opportunities for project ideation.

Bridge Building Workshops for climate technology RD&D & **Learning Visits** of national experts on innovative climate technologies (i.e green hydrogen)

Green Hydrogen Technologies for Systems Transformation: Building a compilation of national strategies, plans and projects – Knowledge Brief

2014–2024 SNAPSHOT

500+

requests for technical assistance received



370+

technical assistance projects implemented



1.5

billion of anticipated funding leveraged**

** Calculated considering a yearly operational budget of USD 10 million.



110+

developing countries benefiting from CTCN technical assistance, of which 38% are Least Developed Countries (LDCs) and 16% are Small Island Developing States (SIDS)



4,600+

trained individuals



3–4

capacity building initiatives per month on average



200+

million anticipated beneficiaries



10–15

million - expected tonnes of CO₂e reduced per year*

* Average annual GHG emission potential based on the full implementation of the technology solutions proposed.



840+

Network members



Celebrating its 10 Year Anniversary



SCAN ME

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Common Areas of Work between the TEC & CTCN

National Systems of Innovation

Technical Assistance

A total of 21 NSI-related technical assistances were completed.*

By strengthening the national innovation system of developing countries, CTCN has enabled stronger innovation capacities for climate mitigation and adaptation amongst the public and private sector, as well as youth in particular.

While NSI is one of the CTCN’s two key enablers of system transformation, several TA requests also specifically focus on NSI, addressing topics such as:

- Developing frameworks and roadmaps for NSI
- Incubation programme for innovative companies

The CTCN has begun implementing or received interest in technical assistance projects to **implement effective National Systems that foster low-carbon and climate resilient economic development through endogenous innovation**, through a programmatic approach (Zambia, Mozambique, DRC)

System Transformation area	Country	Title of the TA completed in 2024 with a focus on the National System of Innovation as an enabler
Business and Industry	Costa Rica	Supporting the transition to a circular economy in Costa Rica
Water-Energy-Food Nexus	Ghana	Promoting and upscaling appropriate solar irrigation technology options for smallholder farmers in Ghana
Building & Resilient Infrastructure	Vietnam	Localization of water resources management technology to adapt to climate change in Hong-Thai Binh river basin
Energy Systems	Mongolia	Feasibility study of a combined heat and power supply using green hydrogen
Sustainable Mobility	Laos	Technical Capacity Enhancement for Planning an Urban Public Transport System in Vientiane, Lao PDR or received

*see Annex II of 2024 JAR

National Systems of Innovation

Reflections pertinent to TEC work

Typical challenges highlighted in the CTCN TAs related to considering a National System of Innovation include:

- Limited Financial Resources
- Lack of Technical Expertise
- Lack of Infrastructure, and technology gaps
- Weak Institutional Capacity

The CTCN could leverage findings and lessons from the TEC's work to inform TA response plans and design, and share relevant publications with TA requestors, including:

- [Good practices and lessons learned on the set-up and implementation of NSIs – country case studies \(2023\)](#)
- Survey on Climate technology RD&D needs (2023)
- [Compilation of Good Practices – RD&D \(2021\)](#)

Water-Energy-Food Systems

Technical Assistance

6 TAs relating to WEF systems completed*

Topics of received TAs include:

- Feasibility of technology options (Rainwater harvesting, Agrovoltaic technology)
- Piloting and deployment of technologies in local conditions (water pumping, pay as you use, syneoculture, etc)
- Research and development of technologies (Solar Dryer for Food security)

The CTCN has started implementing or received interest for technical assistance projects on **agrivoltaics feasibility studies** in Togo, DRC, Senegal, and Guinea, using a programmatic approach.

Country	Title of TA completed in 2024
Ghana	Promoting and upscaling appropriate solar irrigation technology options for smallholder farmers in Ghana through innovative climate adaptation financing mechanisms, a conducive policy framework for technology regulation and tailored training modules (AFCIA)
Indonesia	Identification of technical practices for climate-smart agriculture (CSA) in Indonesia
Liberia	Upscaling lowland rice production to improve food security through improved solar powered irrigation practices (AFCIA)
Mozambique	Solar based irrigation for women's empowerment - "pay as you irrigate" as a means of water management and food security in Mozambique (AFCIA)
Seychelles	Formulation of a Pre-Concept Proposal to the Innovation Facility of the Adaptation Fund, for a holistic watershed management approach including wetland creation for water supply (FTA)
Tunisia	Smart drinking water network in Tunisia: first phase in Sousse and Monastir

*see Annex II of 2024 JAR

Water-Energy-Food Systems

Reflections pertinent to TEC work

Typical challenges highlighted in the CTCN TAs related to WEF include:

- **Inadequate or aging infrastructure** for water, energy, and food storage, leading to resource inefficiency and food losses.
- **Low adoption of technologies** like drip irrigation and solar-powered systems due to high costs, lack of awareness, and limited technical capacity.
- **Limited access to finance** for smallholder farmers, with high upfront investment costs and credit barriers, leading to prioritization of immediate needs over technology adoption.
- **Need for increased capacity building** and enforcement of value chains, including provider engagement and high-capacity maintenance.

The CTCN could leverage findings and lessons from the TEC's work to inform TA response plans and design, and share relevant publications with TA requestors, including:

- Policy paper on Climate Technologies for Agrifood Systems Transformation (2024-2025)
- [South-South Cooperation in Technologies for Adaptation for Water & Agriculture](#) (2017)
- Technologies for Adaptation in the [Water](#) and [Agriculture](#) Sector (2014)

Energy Systems

Technical Assistance

4 TAs relating to Energy systems completed*

Topics of received TAs include:

- Energy efficiency for industrial applications and certifications
- Investigation of emerging technologies and policies affecting energy supply and demand
- Decarbonization initiatives exploring technology options, energy and material flows, life-cycle emissions, costs, and policies

The CTCN has begun implementing or received interest in technical assistance projects on:

1. **Developing net metering policies** to integrate renewable energy into the electricity grid (Comoros, Timor Leste, Senegal, Botswana, Algeria).
2. Creating frameworks and conditions to **support a national green hydrogen economy** (16 countries in Africa, 11 in Asia & the Pacific, 15 in Latin America & the Caribbean).
3. **Phasing out SF6** from grid infrastructure through strategies, governance frameworks, capacity building, and piloting SF6-free technologies (11 countries in Africa, 4 in Asia & Pacific, 2 in LAC).

*see Annex II of 2024 JAR

Country	Title of TA completed in 2024
Dominica	Technical and economic feasibility of solar units and water storage on public buildings in Dominica
Mongolia	Feasibility study of a combined heat and power supply using green hydrogen
South Africa	Capacity Development for the Deployment of Demand Response (DR) in South Africa to Mitigate against Carbon Emissions and Electricity Supply Shortages
Thailand	Development of a national hydrogen strategy and action plan for accelerating Thailand’s net-zero target

Energy Systems

Reflections pertinent to TEC work

Typical challenges and barriers highlighted in the CTCN TAs related to Energy Systems include:

- **Net Metering and Grid Codes:** Regulatory frameworks, bi-directional metering technology and infrastructure, metering and billing arrangements, and utility cooperation.
- **Green Hydrogen Projects:** Absence of supportive policy and regulatory environments, limited access to technology and expertise, inadequate infrastructure, high initial investment costs, and low market and consumer awareness.
- **SF6 Projects:** Limited information on decarbonization options, lack of standards and incentives, insufficient governance and regulatory frameworks, and high upfront costs.

The CTCN could leverage findings and lessons from the TEC's work to inform TA response plans and design, and share relevant publications with TA requestors, including:

- TEC work on RD&D for energy storage (2024-2025)
- TNA energy sector guidebook (2024-2025)
- [Industrial Energy Efficiency and Material Substitution in Carbon Intensive Sectors \(2017\)](#)
- [Emerging technologies in the energy supply sector](#)

Buildings and Resilient Infrastructure

Technical Assistance

10 TAs relating to Buildings & Resilient Infrastructure completed*

Topics of received TAs include:

- Development of green building standards
- Energy Efficiency in Buildings
- Climate impact monitoring and adaptation technologies (e.g., coastal areas, groundwater).
- Flood and drought forecasting, early warning systems, and disaster risk management
- Strengthening community-based climate adaptation and resilience systems

The CTCN has begun implementing or received interest in technical assistance projects on conducting **feasibility studies of semi-closed/protected environment-based aquaponic facilities**, using a programmatic approach (1 Africa; 3 LAC)

**see Annex II of 2024 JAR*

Country	Title of TA completed in 2024
Bangladesh	Technology for Monitoring & Assessment of Climate Change Impact on Geomorphology in the Coastal Areas of Bangladesh
Belize	Groundwater monitoring for mapping aquifers in Belize as a tool for climate change adaptation planning
Honduras	Designing nature-based solutions with an ethnic and gender-equity approach, to increase the resilience of rural mountain communities in protected natural areas affected by extreme weather events in Honduras (AFCIA)
Mexico	Analysis of the current situation of the construction and demolition sector in respect of the Circular Economy in Mexico City
Nepal	Customized weather and climate information system for climate-resilient agriculture in Nepal (AFCIA)
Pakistan	Adoption of green buildings in Pakistan to achieve Pakistan’s Nationally Determined Contributions
Peru	Monitoring system of adaptation measures in the water sector, analysis of barriers and financial sustainability for its implementation
Samoa	Developing a Framework and methodology to carbon sinks from the forestry sector using Earth Observation in Samoa
Togo	Development of a methodology to create climate-smart municipalities in Togo and the preparation of action plans for adaptation and mitigation to climate change for 4 of these municipalities (Co-financed by UNDP)
Vietnam	Localization of water resources management technology to adapt to climate change in Hong-Thai Binh river basin (AFCIA)

Buildings and Resilient Infrastructure

Reflections pertinent to TEC work

Typical challenges and barriers highlighted in the CTCN TAs related to Buildings and Resilient Infrastructure include:

- **Lack of Building Energy Codes** and capacities for their implementation/enforcement
- **Lack of technologies and capacities** for efficient cooling/thermal comfort (passive design and efficient cooling systems)
- **Settlements largely self-built and vulnerable** – how to address adaptation and mitigation in this context

The CTCN could leverage findings and lessons from the TEC's work to inform TA response plans and design, and share relevant publications with TA requestors, including:

- Knowledge product on climate technologies in the buildings sector (2024-2025)
- Technical Expert Meetings on Climate Smart Cooling Solutions for Sustainable Buildings (2020)

Business and Industry

Technical Assistance

3 TAs relating to Business & Industry completed*

Topics of received TAs include:

- Feasibility for waste-to-energy projects and technology upgradation in SMEs.
- Development of circular economy roadmaps.
- Incubation of climate technology innovations
- Decarbonization roadmaps for the cement sector and scaling up low-carbon businesses.
- Strengthening MSME financing for circular economy initiatives.

The CTCN has begun implementing or received interest in technical assistance projects on **developing national deep decarbonization roadmaps for the cement sector**, using a programmatic approach (12 Africa; 2 Asia Pacific)

Country	Title of TA completed in 2024
Cambodia	Market assessment in the application of climate technologies in the agricultural sector for rural development in Cambodia
Costa Rica	Supporting the transition to a circular economy in Costa Rica
Mexico	Analysis of the current situation of the construction and demolition sector in respect of the Circular Economy in Mexico City

**see Annex II of 2024 JAR*

Business and Industry

Reflections pertinent to TEC work

Typical challenges and barriers highlighted in the CTCN TAs related to Business and Industry include:

- Limited awareness on decarbonization options
- Lack of standards and incentives
- Missing governance and regulatory framework
- Lack of private sector engagement

The CTCN could leverage findings and lessons from the TEC's work to inform TA response plans and design, and share relevant publications with TA requestors, including:

- Ongoing work on Transformative Industry in Hard-to-Abate Sectors (steep, cements, chemicals), including mapping of initiatives in hard to abate sectors of industry & a policy brief on integrating hard-to-abate industry sectors in NDCs
- [Energizing Entrepreneurs to Tackle Climate Change \(2018\)](#)
- [Industrial Energy Efficiency & Material Substitution in Carbon-Intensive Sectors \(2017\)](#)

Technology Needs Assessment

3 TNAs were completed during the reporting period (Oct 23 – Sept 23):

Country	Description	Outputs & Outcomes	
Chile (funded through the CTCN)	First TNA in 2023. Two TNA processes in 2018 focusing on cement and steel industries. TNA included in NDC since 2015.	• 4 TAPS for energy, waste, water resources, and forestry/agriculture. • 12 project ideas (3 per sector). • National Consultation Workshop with 33 institutions and 51 participants to enhance national ownership. • capacity-building workshop with participants from private, public, and academic sectors, focusing on climate technology implementation and financing. • Developed a Concept Note for a complete early warning system in Ñuble–Biobío.	The results from the TNA are being integrated into the 17 sectoral plans that make up Chile's Climate Change Law (<i>source: NDE survey</i>) The Government of Chile is exploring options such as with the GCF and national option from the private sector: Production Development Corporation, CORFO
Georgia (funded through GCF Readiness)	Update of Georgia's second TNA from 2012.	• Climate Change Council established the Climate Technology Coordination Group • Developed 4 TAPS and a Financial Mobilization Strategy, including a 2-day training workshop with GCF Accredited Entities. • Held 4 national partnership workshops and 3 capacity-building workshops on key climate topics. • Created 3 market use cases and policy briefs. • Produced 4 GCF concept notes	One of Georgia's concept notes is in the process of accessing GCF funds (<i>source: NDE survey</i>)
Kyrgyzstan (funded through GCF Readiness)	First TNA for Kyrgyzstan	• Completed a barrier analysis report and TAP report. • Developed a roadmap for integrating technologies into the private sector. • Provided recommendations on financial and incubator mechanisms to support local startups in climate innovation. • Created an open-access technology portal. • Developed training packages and "train-the-trainer" programme. • Produced 3 Concept Notes for the energy, waste, & agricultural sectors.	Project included a Kyrgyz delegation visit to several Danish water companies, and one Danish water technology provider made a reciprocal visit to Kyrgyzstan to explore the potential for a partnership bringing Danish expertise on leakage management solutions to Kyrgyzstan's water network.

Technology Needs Assessment

2 TAs completed in 2024 were directly informed by earlier TNAs:

- **Tunisia: TNA (2017) led to a TA project on a pilot smart metering drinking water network (GCF readiness):** “The proposed project activities will directly address the above-identified national targets and technology priorities relating to water-use efficiency outlined in TNA and TAP documents, the NDC targets for reduced energy intensity, as well as SONEDE’s own strategic goals for implementation of smart water networks.”
- **Belize: TNA (2017) led to a TA project on drought monitoring system :** “Following the foreseen adaptation actions in the NDC and the TNA for Adaptation for the water sector, the National Climate Change Office of the Ministry of Sustainable Development, Climate Change, and Disaster Risk Management, and the National Hydrological Service (NHS) started conversations to develop a proposal for a Groundwater Monitoring System.”



Technology Needs Assessment

The CTCN has started implementing or received interest for technical assistance projects on TNAs, using a programmatic approach.

Objective: to carry out and coordinate the assessment of technology needs within a specific country to advance the implementation of climate technologies in adaptation and mitigation to strengthen the fulfilment of the technology component of the country's NDC.

Countries that have expressed interest in a CTCN TA on TNAs		
Africa	Asia and the Pacific	Latin America & the Caribbean
Madagascar	Laos	Bolivia
Namibia	Cambodia	Colombia
South Africa		Costa Rica
		Dominican Republic
		Ecuador
		El Salvador
		Honduras
		Panama

Technology Needs Assessment

Reflections pertinent to TEC work

Typical challenges and barriers identified in the CTCN TAs related to TNAs and the transfer of climate technologies include:

- Insufficient specialized skills
- Limited innovation and knowledge
- Low market awareness
- Limited research and development in green technologies
- Absence of enabling environments

In 2025, the CTCN will develop a knowledge product/analysis of its TNA portfolio. This could feed into the TEC's work on TNA/TAP implementation success stories and lessons learned.

The CTCN could leverage findings and lessons from the TEC's work to inform TA response plans and design, and share relevant publications with TA requestors, including:

- Updated TNA Step-by-Step Guidebook (2024-2025)
- TNA energy sector guidebook (2024-2025)

2024 CTCN NDE Forum

Collaboration with the TEC

Way Forward:

- **Ongoing Effort:** The TEC's active involvement in the NDE Forums organized by the CTCN has been a continuous effort, with intensified collaboration and engagement starting in 2023.
- **Feedback:** This collaboration was well-received by the NDEs and is recommended for continuation in 2025, contingent on available funding.

Suggestions from NDEs to the TEC

- Some NDEs noted they were unfamiliar with the knowledge products of the TEC and suggested that the TEC **develop an effective communication strategy** to enhance its outreach.
- Additionally, some NDEs commented that while the TEC reports are informative, they can be difficult to absorb due to their length.



CTCN Engagement in TEC Activity Groups

CTCN Engagement in TEC Activity Groups

TEC Activity Group	Detail	CTCN Inputs
A.4.1. TEC Activity Group on Digital Technologies	The CTCN participated in a TEC Activity Group online meeting.	The CTCN indicated that there is potential for cross-fertilization between the AI Grand Challenge and the upcoming Youth Climate Innovation Programme of the CTCN in order to support entrepreneurial skills.
B.1.1 TEC Activity Group on TNA	The CTCN received the zero draft of the TAP success stories analysis for input.	The CTCN shared two TNA case studies. The CTCN plans to carry out a TNA portfolio analysis in 2025. It will also start the Post-TA impact assessment in 2025. Both could inform the TEC's work.
C.3.1. TEC Activity Group on Transformative Industry	The CTCN received the draft policy brief on hard-to-abate industries in updated NDCs and was invited to provide input.	The CTCN provided comments on the Policy Brief.
D.1.1 TEC Activity Group on Inputs to the SCF on the draft guidance to the Operating Entities of the FM	The CTCN was invited to provide input and join the TEC Activity Group virtual consultation.	The CTCN Advisory Board Chairs and the CTCN Secretariat submitted written inputs. The CTCN joined the virtual consultation on 13 August.
D.4.1 TEC Activity Group on Gender Mainstreaming	The CTCN received the draft brief on gender-responsive urban mobility and was invited to comment.	The CTCN reviewed the brief but did not provide any comments.
TEC Ad-hoc Activity Group on Linkages between the Technology Mechanism and Financial Mechanism to be held at SBI 60	The CTCN received and was invited to review the draft report from the SBI 60 workshop.	The CTCN Advisory Board and the CTCN Secretariat submitted inputs.

Use of TEC products to inform CTCN TAs

TA Title*	TEC Knowledge Products Used In the Implementation of Technical Assistance
TNA and TAP for Chile`s NDC Implementation	• The Climate Technology progress report – annual reports • Deep Decarbonization Technologies for Sustainable Road Mobility • Emerging Climate Technologies in the Energy Supply Sector • TEC Brief #5 – Technologies for adaptation in the water sector • TEC Brief #4 – Technologies for adaptation in the agriculture sector
Analysis of the current situation of the construction and demolition sector in respect of the Circular Economy in Mexico City	Industrial Energy and Material Efficiency in Emission Intensive Sector
Technical guidance and support to conduct a TNA and a TAP for Paraguay	For the purposes of the TNA and PAT, we reviewed different final country TNA and TAP reports from Honduras, Uruguay, and Argentina, and further we also reviewed Policy Briefs from a variety of countries. Available at: https://unfccc.int/ttclear/tna/reports.html Further, the TNA step by step guidebook was used throughout the process.
Capacity building in Timor-Leste's renewable energy sector	Technology and nationally determined contributions.

**TAs completed in the period Oct 2023 – Sept. 2024*



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