

Collaborative Research, Development and Demonstration Activities

27th Advisory Board Meeting
CTCN Secretariat
Agenda item 23
21 April 2026



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cRD&D Activities in 2025 Q4

CTCN Webinar: Introduction of Collaborative Research, Development and Demonstration (cRD&D)

Date: 28 October 2025

Format: The webinar was conducted online via MS Teams and offered in two sessions to accommodate different time zones: 10:00-11:30 (CET) and 16:00-17:30 (CET).

Target Audiences: NDEs and CTCN Network members

Agenda

- Welcome Remarks
- Background on TEC's Collaborative RD&D
- Introduction to the CTCN's Collaborative RD&D
- cRD&D TA Portfolios
- Q&A Session
- Closing Remarks

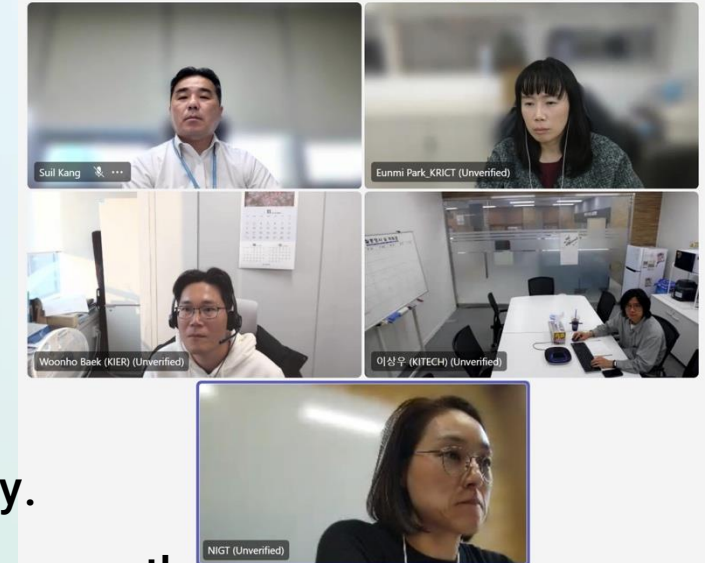


The event attracted overall 183 registrants from 66 countries representing 113 organizations, with 103 participants attending from 44 countries (56.3% attendance rate).

Sessions have been recorded and are available on our website [here](#).

Operation of the 2nd virtual Steering Group (SG) for the identification of needs from K-GRIs

- **Date : 13 November 2025**
- Participated members: CTCN PALO, KIER, KRICT, and NIGT
- The NIGT and KIER introduced the survey results on the climate technology needs and the challenges in the climate technology collaboration from NDEs operated during the Learning Visit, CRD2B2 Workshop and Asia NDE Forum, respectively.
- **Potential project from KIER (Korea Institute of Energy Research):** training on the operation and maintenance of wind power using operation management platform in Vietnam
- **Potential project from KIGAM (Korea Institute of Geoscience and Mineral Resources):** Development of a process for producing high-grade lithium concentrate and high-purity lithium compounds from Zimbabwean lithium ore



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2026 Activities

2026 Survey: NDE's Voluntary Participation

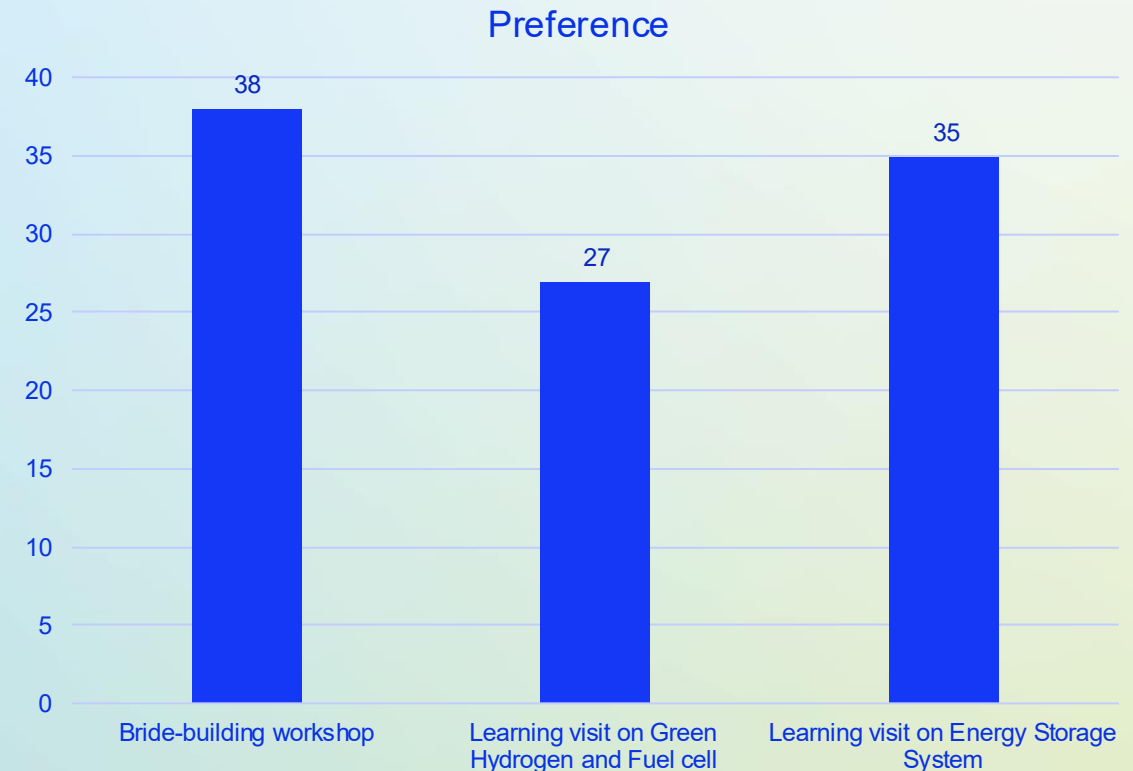
International RD&D Programmes

Duration: January – March 2026

Purpose: collection of needs for proposed activities in advance and raising awareness (n=47)

Module 3: Collaborative RD&D Programmes

- 1) Collaborative RD&D Bridge-building Workshop on Energy Storage Systems (i.e. NDEs explore emerging technologies on ESS and identify national climate experts on ESS)
- 2) Learning Visit on green hydrogen and fuel cells (i.e. NDEs support offering knowledge exchange opportunities to identified national climate experts)
- 3) Learning Visit on ESS (i.e. NDEs support offering knowledge exchange opportunities to identified national climate experts)



Collaborative RD&D 2026 Global NDE Participation Survey (AP)

	Country	ESS	GH and FC	Green Hydrogen TA
1	Afghanistan	o		
2	Bosnia and Herzegovina	o	o	
3	Cambodia	o	o	
4	Fiji	o		o
5	Israel	o		
6	Kazakhstan	o	o	
7	Kyrgyzstan	o		
8	Maldives	o	o	o
9	Marshall Islands	o		
10	Nepal	o		o
11	North Macedonia		o	
12	Palestine, State of	o		
13	Papua New Guinea	o	o	
14	Republic of Moldova	o	o	
15	Sri Lanka	o		
16	Tajikistan	o		
17	Timor - Leste	o	o	

Green hydrogen TA demand

Bhutan, Fiji, Laos, Nepal,
Maldives (under implementation)

1) ESS

Collaborative RD&D Bridge-building Workshop on Energy Storage Systems (i.e. NDEs explore emerging technologies on ESS and identify national climate experts on ESS) and Learning Visit (i.e. NDEs support offering knowledge exchange opportunities to identified national climate experts on ESS)

2) Green Hydrogen and Fuel Cell (GH and FC)

Learning Visit (i.e. NDEs support offering knowledge exchange opportunities to identified national climate experts on green hydrogen and fuel cells)

Collaborative RD&D 2026 Global NDE Participation Survey (Africa)

	Country	ESS	GH and FC	Green hydrogen TA
1	Algeria	0	0	
2	Burundi	0		
3	Chad	0		
4	Comoros	0		
5	Côte d'Ivoire	0		
6	Egypt	0	0	
7	Eswatini	0	0	
8	Gambia	0	0	0
9	Kenya	0	0	
10	Lesotho	0	0	
11	Liberia	0	0	0
12	Madagascar	0	0	
13	Namibia	0	0	
14	Republic of the Congo	0	0	
15	Senegal	0	0	
16	Sierra Leone	0	0	0
17	Somalia	0	0	
18	Tanzania	0	0	
19	Togo	0	0	0
20	Uganda	0		
21	Zambia	0		0
22	Zimbabwe	0	0	

Green hydrogen TA demand

Benin, Cameroon, DR Congo, Gambia, Ghana, Guinea (under implementation), Guinea-Bissau, Liberia, Mauritania, Mauritius, Sao Tome e Principe, Sierra Leone, Togo, Zambia

1) ESS

Collaborative RD&D Bridge-building Workshop on Energy Storage Systems (i.e. NDEs explore emerging technologies on ESS and identify national climate experts on ESS) and Learning Visit (i.e. NDEs support offering knowledge exchange opportunities to identified national climate experts on ESS)

2) Green Hydrogen and Fuel Cell (GH and FC)

Learning Visit (i.e. NDEs support offering knowledge exchange opportunities to identified national climate experts on green hydrogen and fuel cells)

Collaborative RD&D 2026 Global NDE Participation Survey (LAC)

	Country	ESS	GH and FC	Green Hydrogen TA
1	Chile	0	0	0
2	El Salvador	0	0	0
3	Haiti	0	0	
4	Paraguay		0	
5	St. Kitts and Nevis	0		
6	Venezuela	0		

Green hydrogen TA demand

Argentina, Bolivia, Brazil (Completed), Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Jamaica, Mexico, Uruguay

1) ESS

Collaborative RD&D Bridge-building Workshop on Energy Storage Systems (i.e. NDEs explore emerging technologies on ESS and identify national climate experts on ESS) and

Learning Visit (i.e. NDEs support offering knowledge exchange opportunities to identified national climate experts on ESS)

2) Green Hydrogen and Fuel Cell (GH and FC)

Learning Visit (i.e. NDEs support offering knowledge exchange opportunities to identified national climate experts on green hydrogen and fuel cells)

Lessons learned from Learning Visit on Green hydrogen production and fuel cell

- Support **NDEs with strong interest** and established national cRD&D strategies to participate in the international cRD&D programme, with a focus on aligning existing national strategies with existing and emerging climate technologies. The **international programme** should emphasize country status sharing and **technical review of ongoing cRD&D projects** to reduce fragmentation and strengthen adaptive management capacity.
- Integrate cRD&D Types 1 (Collaborative Research) and 2 (Technology Information Exchange) into national-level **TA projects for countries with limited or no prior cRD&D experience**, with indicative activities including diagnostics, **stakeholder identification, learning visits**, partnership formation, and **co-research pipeline** development.



Selection of participants for Learning Visit on Green hydrogen production and Fuel cell

For the invitation to Learning Visit on Green hydrogen production and Fuel cell, Countries expressed the preference will be considered.

Additional considerations

- 1) Countries have the needs for CTCN TAs
- 2) Considering the lessons learned, countries have strong R&D activities in green hydrogen will be prioritized.

For example, in the LAC region, Chile, Colombia, Uruguay, and Brazil are actively integrating green hydrogen technology into their national energy policies and greenhouse gas emissions reduction objectives.

In the Africa region, Egypt, Kenya, Mauritania, Morocco, Namibia and South Africa have formed the Africa Green Hydrogen Alliance to intensify collaboration and supercharge the development of green hydrogen projects on the African continent, and five additional countries, Algeria, Angola, Djibouti, Ethiopia and Nigeria, have recently joined the Alliance with ambitions to become green hydrogen leaders in the region.

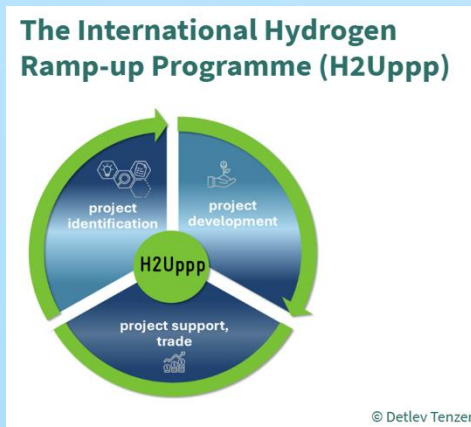
In Asia and the Pacific, India, Indonesia and Malaysia may be considered.

Selection of participants for Learning Visit on Green hydrogen production and Fuel cell

Additional considerations

3) Global Initiatives will be also considered

- The International Hydrogen Ramp-up Programme (H2Uppp)
- [H2Uppp - PtX Hub](#)



- India, Indonesia, Southeast Asia, Thailand, and Vietnam
- Türkiye and Ukraine
- Algeria, Egypt, Morocco, Namibia, and South Africa
- Argentina, Brazil, Chile, Colombia, and Mexico

- H2LAC: A collaborative platform dedicated to promoting the development of green hydrogen and its derivatives in Latin America and the Caribbean.

Funded by the European Union's Euroclima Program, the GIZ, the World Bank and the Economic Commission for Latin America and the Caribbean (ECLAC)

- [H2LAC](#)

- Argentina, Bolivia, Brazil, Colombia, Costa Rica, El Salvador, Mexico, Panama, Peru, Paraguay, and Uruguay

Collaborative RD&D: Learning Visit on Green hydrogen production and Fuel cell

14-16 July 2026 in Seoul (KIST) and Daejeon (KIER and KRICT)

Thirteen participants: Researchers, 3 from Asia and the Pacific, 5 from Africa and 5 from LAC

AP (3): Indonesia, Malaysia, Nepal

Africa (5): Egypt, Guinea, Kenya, Namibia, South Africa (5)

(2027 candidates: Algeria, Nigeria, Ethiopia, Mauritania, Morocco, TBD)

LAC (5): Argentina, Brazil, Chile, Colombia, Paraguay (5)

(2027 candidates: Mexico, Peru. Costa Rica. Uruguay, TBD)

Lectures and Facility Visiting: the Korea Institute of Science and Technology (KIST), Korea Institute of Energy Research (KIER), Korea Research Institute of Chemical Technology (KRICT)

Technologies: green hydrogen production and fuel cell, hydrogen storage, hydrogen charging

Expected outputs:

Submission of CTCN TA request proposal on green hydrogen and fuel cell

International joint R&D collaboration development

Selection of participants for CRD2B2 Workshop and Learning Visit on ESS

For the invitation to CRD2B2 Workshop and Learning Visit on ESS, Countries expressed the preference to Module 3 (Collaborative RD&D Programme) will be considered.

Additional considerations

- 1) CTCN PALO will prioritize the countries that include energy storage in their NDCs, such as Mauritius from Africa, Viet Nam (explicitly lists energy storage batteries, mechanical energy storage and heat storage), Sri Lanka (calls out BESS/ grid-scale batteries/pumped storage as options) and Singapore from Asia, Bolivia, Jamaica and the Bahamas from LAC.
- 2) For the scale-up of PNG CTCN TA, PNG will be considered.

Collaborative RD&D: CRD2B2 Workshop and Learning Visit on Energy Storage System (ESS)

1 - 4 September, Juju, Korea in collaboration with KIER Juju Global Research Center and UNITAR Jeju Training Center and Songdo (PALO), Incheon, ROK

Participants: 32 participants, in principle 1 NDE and 1 researcher from 4 Small Island Developing States (SIDS), Asia, Latam, and Africa region.

Objective: Foster Global South-South, North-South, and Triangular partnerships on collaborative RD&D

Expected Outputs

- Understanding ESS relevant challenges at a policy and technical levels
- Capacity Building in Policy framework and financing schemes
- Network and cooperation development with potential co-research group
- Development of CTCN TA request proposals on ESS

Collection of global cRD&D information and data on global collaborative RD&D groups

Objective

Collect information and construct data on global collaborative RD&D research groups in

5 system transformation including academic societies with NDEs' contribution

Disseminate and share them with the relevant stakeholders to promote global CRD&D

Expected period: End of September 2026

Application

Develop the CTCN programme to support R&D researchers and professors from developing countries to participate in global conferences of academic societies with the NDEs' nomination to promote cRD&D collaboration among researchers and professors from 2027

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Piloting cRD&D TA Projects

Collaborative RD&D: Technical Assistance Projects

1. CTCN TA support for pre-feasibility for small-scale demonstration:

1-1. Papua New Guinea: Pre-feasibility study on ocean energy focusing on salinity gradient energy technology and electrochemical ocean thermal energy conversion

Implementing partner: Korea Institute of Energy Research (KIER)

Duration: Sep 2024 – May 2026

Budget: USD 246,500

Objective: to conduct a pre-feasibility study on ocean energy, specifically focusing on **Salinity Gradient Energy Technology and e-OTEC, including Blue Battery (water-based ESS) Technology**.

Progress to date

- Technical analysis and stakeholder consultations have been conducted with key national counterparts.
- The TA reached an important milestone through the final workshop held in Jeju and Seoul in March 2026, which helped validate findings and discuss practical follow-up pathways.

Emerging Outcomes

- Priority technology options and implementation considerations were discussed with national stakeholders.
- The TA has helped build a stronger basis for translating cRD&D results into more concrete pilot or investment-oriented next steps.
- KIER will design a scale-up project concept and submit an application for MSIT's demonstration funding window



Collaborative RD&D: Technical Assistance Projects

1. CTCN TA support for pre-feasibility for small-scale demonstration:

1-2. Uzbekistan: Pre-feasibility study for groundwater desalination and resource recovery in Uzbekistan

Implementing partner: Korea Institute of Industrial Technology (KITECH)

Duration: Nov 2025 – Apr 2027

Budget: USD 249,914

Objective: Contribute to addressing water scarcity and strengthen Uzbekistan's capacity for efficient resource utilization through the design of a pilot system and feasibility assessment based on groundwater desalination and resource recovery technologies.

Expected outcome: This technical assistance aims to strengthen Uzbekistan's capacity for climate-resilient and sustainable groundwater use by identifying viable technologies for desalination and resource recovery. The pre-feasibility study will inform future pilot design and support long-term water security and low-emission development strategies.

Progress to date:

- KITECH is currently identifying potential water sources in Uzbekistan, prioritizing those with suitable characteristics.
- To collect information and samples from various water sources to perform component analysis, desalination tests, and resource recovery tests using the brine (wastewater) generated during the desalination process.



2. CTCN TA support for feasibility towards RD&D:

2-1. Bangladesh: Feasibility research of **Solar Electric-Based Cold Warehouse equipped with Low-temperature Latent Heat Material for Fruit Storage** in Bangladesh Climate Conditions

Implementing partner: KITECH	Duration: Mar 2025 – Aug 2026	Budget: USD 249,584
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Objective: To introduce **Solar Electric-Based Cold Warehouse equipped with Low-temperature Latent Heat Material for Fruit Storage** in Bangladesh Climate Conditions.

Expected outcome: Bangladesh has an important need for accessible, affordable, and sustainable refrigerated storage solutions. The introduction of refrigerated storage devices using solar energy is a strategic intervention to address technological, logistical, and environmental challenges facing the agricultural sector, with the **potential to significantly reduce post-harvest losses** and contribute to the country's broader development goals.

Progress to date

- A series of consultations held with key stakeholders including the NDE, project proponent and other ministries
- Field survey was conducted to determine the types of fruits and vegetables products on local farms, the power situation and solar cold storage facilities in Bangladesh
- Designing, manufacturing and set up of 20-ft. cold warehouse for agricultural product by solar power system

2. CTCN TA support for feasibility towards RD&D:

2-2. Côte d'Ivoire: Development of Sustainable Biochar Production and Application for Climate Mitigation and Adaptation in Côte d'Ivoire

Implementing partner: KIER & ENVELOPS	Duration: December 2025 – November 2027	Budget: USD 250,000
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Objective: to support Côte d'Ivoire in establishing a sustainable biochar production system using agricultural residues and to enhance the country's capacity to mitigate and adapt to climate change by reducing deforestation, improving waste management, and providing a sustainable energy source.

Expected outcome: Strengthened national capacity to develop, operate, and expand sustainable biochar production, thereby promoting the adoption of climate-resilient waste management and agricultural practices. This includes the in-depth training of 2 experts from Côte d'Ivoire in South Korea, as well as the development and deployment of a test-scale biochar reactor in Côte d'Ivoire.

Progress to date

- Internal kick-off meeting held on 14 April 2026

Explore the opportunities of scale-up of CTCN Collaborative RD&D TAs through GCF funding modalities, MDBs and other funding organizations, focusing on Collaborative RD&D

Objective

CTCN PALO will explore the opportunities to scale up two CTCN Collaborative RD&D (CRD&D) TAs in Papua New Guinea (PNG) and Bangladesh through GCF Funding modalities, MDBs and other Korean funding organizations (KEITI GCF grant, overseas demonstration projects by KEA, KIND, and KOICA).

Actions

PNG TA: Project Steering Committee, KIER (implementing partner), Korean consulting company (ECOSIAN), and CTCN Secretariat are developing GCF Concept Note for the PNG government approval and communicating with potential AEs and GCF Secretariat. The expected submission to the GCF will be end of 2027.

Bangladesh TA: The implementing partner (KITECH) are communicating with regional private sector and Korean funding organizations for the scale-up of cold value chain business in Bangladesh within 2027.

To make the scale-up opportunity within 2026 from other funding organizations, CTCN Secretariat and implementing partners (KIER and KITECH) are having and planning bilateral meetings with funding organizations.



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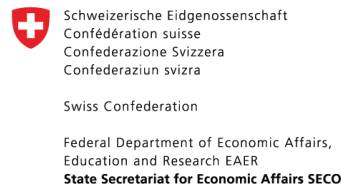
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