



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



Partners:  UK Government



CCUS in Asia: New focus and persistent challenges

United Nations Industrial Development Organization (UNIDO)

Asia Clean Energy Forum 2026

Thursday, 11 June 2026, from 09:00 to 10:30 AM



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



Poll: In your opinion, which country in Asia and the Pacific has the highest policy readiness levels for CCUS development?



Zum Herunterladen als Bild bitte anklicken

www.menti.com

Code: 6800 5897



Carbon Capture, Utilization and Storage (CCUS): Global Overview

45

Commercial CCUS
facilities worldwide

700+

CCUS projects in **development**
across the value chain

35%

increase in announced **CO₂**
capture capacity for 2030

70%

increase in announced **CO₂**
storage capacity for 2030

435 Mt

CO₂/year

could be captured
globally by 2030

615 Mt

CO₂/year

of **storage capacity** could
be available by 2030

40%

of Net Zero 2050 capture
requirements are **currently**
covered by planned
projects

60%

of Net Zero 2050 storage
requirements are **currently**
covered by planned
projects

Carbon Capture, Utilization and Storage (CCUS): Asia-Pacific Overview

24

Existing global **CCUS**
facilities in SE Asia

60

Global **announced**
projects since 2018

12

Planned global **CCUS**
hubs

200+ Mt
CO₂/year

Required CCUS capacity in
SE Asia by 2050

40 Mt
CO₂/year

Of existing **global capture**
capacity

50+ Mt
CO₂/year

Potential hub for **capture**
capacity

UNIDO Industrial Development Report 2026: Trends in Asia-Pacific

- UNIDO is the specialized agency of the United Nations that promotes and accelerates inclusive and sustainable industrial development. Support includes through technical cooperation, capacity building, policy advice and analysis, standards, planning and implementing quality infrastructure, partnerships and investment facilitation.
- Achieving the green transition also depends on product and process innovation, including the role of CCUS and clean hydrogen to facilitate this, particularly in hard-to-abate sectors.

Case studies:

- West Asia: KSA, UAE and Oman expected to become top producers of clean hydrogen by 2030, supported by strong investment potential and their proximity to key markets.
- Southeast Asia: Indonesia, Malaysia and Singapore committed to expanding clean hydrogen production and use, and the role of CCUS as part of this.

CCUS priorities:

1. CCUS for hard-to-abate industries and achieving net-zero targets
2. CCUS part of a broader technology mix rather than a standalone solution
3. CCUS focus required on enabling adoption, especially in developing countries

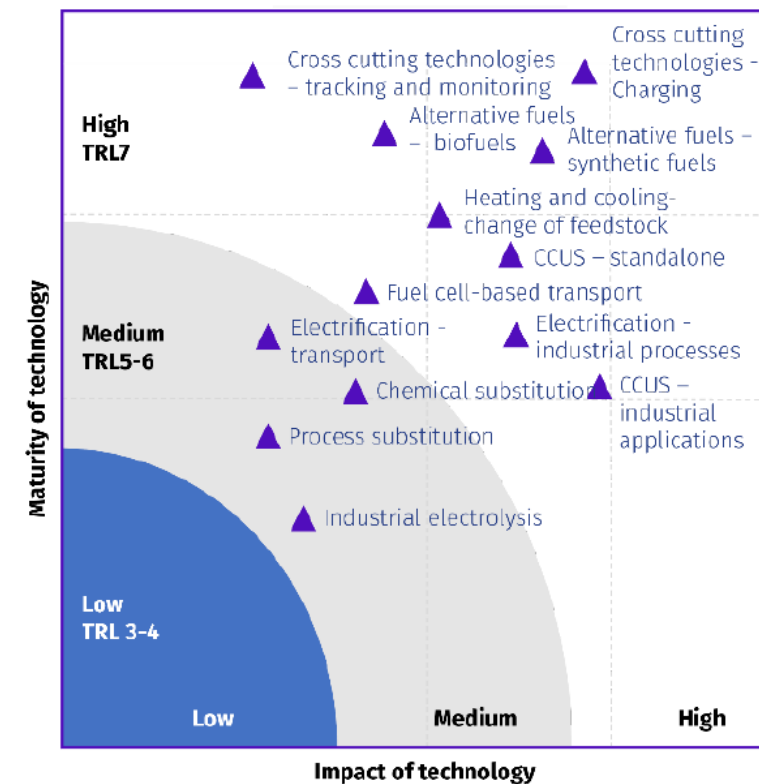
Importance of Accelerating Demonstration Projects in CCUS

- ❖ Almost **35% of emissions reductions necessary** for achieving climate targets by 2050 will come from technologies that are still in the pilot or demonstration phases (IEA).
- ❖ At least **USD 90 billion in public funding needed globally by 2026** for clean energy demonstration projects to be commercially ready by 2030 (IEA).
- ❖ Asia Pacific carbon capture and storage investment set to reach **US\$622 billion by 2050** (Wood Mackenzie, 2025).
- ❖ UNIDO's industrial decarbonization market assessment highlighted that **CCUS is one of the most researched** and strategically important low-carbon technologies for reducing emissions in hard-to-abate industries, with approximately 200 industrial decarbonization technologies identified in total and around **50% still at prototype or pilot (TRL 3–7) stage**
- ❖ While CCUS has strong potential to deliver significant greenhouse gas reductions and support climate targets and SDGs, its **large-scale deployment remains constrained by high costs, technological complexity, and reliance on government and multilateral support.**



Access the
report here

Figure i: ID technology maturity map



UNIDO Industrial Decarbonization Financing Case Study: *Accelerate-to-Demonstrate (A2D) Facility*

Objectives

The **A2D Facility** aims to accelerate the **commercialization of innovative climate solutions** in developing countries by supporting catalytic and scalable ‘lighthouse’ demonstration projects in:

- Industrial decarbonization
- Clean hydrogen
- Critical minerals
- Smart energy



Initial Funding and Timescales

- **Initial contribution of ~USD 85 million** from the UK Government
- Initially operates from **April 2023 to March 2029**
- Global (**developing country-focused**) Facility
- **Grants of USD 1-5 million** per demonstration project for ~3-year projects
- **First cohort of demonstration projects** supported through first call-for-proposals in 2024 (in Kenya, Namibia, Nigeria, Nepal and Tanzania)
- **Second cohort of demonstration projects** supported through second call-for-proposals in 2025 (in Kenya, Namibia, Nigeria and South Africa).
- **Third call-for-proposals** open from **14 April–18 June 2026**.
- Main Sustainable Development Goals (**SDGs**)-of-focus:



Activities bringing **transformational solutions** to the market at scale.

Providing grant support for implementing transformational demonstration projects with strong scalability potential, and which create and **disseminate knowledge and experiences** to foster collaboration, learning and scalability. Planning-related activities for demonstration projects are out-of-scope.

A2D Facility Third Call-for-Proposals Open

Further information and how to apply:

Please visit UNIDO's Procurement portal (RFX No. 7000008435) for detailed information on the eligibility requirements, selection criteria and submission guidelines: [UNIDO Procurement portal](#) and [United Nations Global Marketplace](#). Proposals can be submitted up until **16:00 CET on 18 June 2026.**

All enquiries on the call must only be sent to:

- Procurement Officer Ms. Ziniel (email: C.Ziniel@unido.org)
- with copy to Ms. Gavranic (email: J.Gavranic@unido.org),
- with copy to Ms. Dorner (email: E.Dorner@unido.org)
- with copy to Mr. Hemetsberger (email: M.Hemetsberger@unido.org)

A2D Facility Project Case Study: Lessons Learned from Africa for Asia-Pacific

Greener Tea: Clean Heat & Power with Biomass Residues in Kenya

Objective

To reduce emissions from tea production by 30%, linking energy use to climate and community results to create a pipeline for scaling to other factories and industries.

Technology:

An important form of CCUS – an innovative clean gasifier using waste biomass from tea fields with biochar production, which improves soil fertility, increases tea yields and sequesters carbon. Can be applied to other industries.

Impacts

Improve soil health, expand clean energy use, support green jobs and women's participation, and reduce energy and fertilizer costs.

First-year impacts (2025)

692 tCO₂e
reduced/avoided

3 jobs
created/supported

22 trained

50% women's
participation

PROJECT KEY INFORMATION

LEAD ORGANIZATION

Compact Syngas Solutions

CONSORTIUM PARTNERS

- Supivaa
- IITA

DURATION

01 Feb 2025 - 01 Mar 2028

LOCATION

Kenya





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Partners:  UK Government



Video: A2D Facility Project Case Study





A2D Facility Further Information

- **A2D Facility Website:** [Visit the website here](#)
- **A2D Facility LinkedIn Account:** [Follow the LinkedIn page here](#)
- **A2D Facility Mailing List:** [Join the mailing list here](#)
- **A2D Facility Year 1 Annual Report:** [Access the Annual Report here](#)
- **A2D Facility Year 2 Annual Report:** [Access the Annual Report here](#)
- **A2D Facility Year 3 Annual Report:** [Access the Annual Report here](#)
- **A2D Facility Market Assessments:** [Access the reports here](#)
- **A2D Facility GESI Framework:** [Access the GESI Framework here](#)
- **A2D Facility ESMF:** [Access the ESMF here](#)
- **A2D Facility third Call for Proposal:** [Procurement Portal](#) or [UNGM](#)



UNIDO Industrial Decarbonization TA Case Study: *Mobile Carbon Capture Units for Decarbonizing the Cement and Concrete Sectors in Thailand*

Objective

Pilot the feasibility of portable carbon capture systems by enabling testing under variable flue gas conditions (CO₂, O₂, SO₂ ranges), support industrial decarbonization technology validation and reduce barriers to scale-up through modular and mobile design.

Technology

Integrates a pilot-scale complete carbon capture system (absorption, thermal management, analytics and automation) into a compact and mobile skid-mounted unit. Automated monitoring and real-time validation.

Impacts

250,000 tCO₂e avoided
annually

150+ jobs created and
supported in green
cement value chain

300+ professionals
trained

40% women's
participation targeted

GOVERNMENT COORDINATING AGENCY:

- Department of Industrial Works (DIW), Ministry of Industry, Thailand
- Department of Climate Change and Environment, Ministry of Natural Resources and Environment, Canada

CONSORTIUM PARTNERS

- CETRI
- Swagelok
- Vanko Analytics
- Cole Parmer / Valerian

DURATION

01.04.2024 – 31.03.2027

LOCATION

Thailand



UNIDO Industrial Decarbonization TA Case Study: *Roadmap for Industrial Decarbonization in Vietnam*

Objective

Roadmap to support the industrial decarbonization in Vietnam, aligned with the Paris Agreement, by identifying priority technologies, policies and investment needs to reduce emissions whilst maintaining industrial growth and competitiveness.

Technology

Integrated framework that combines CCUS, industrial electrification, low-carbon fuels and feedstocks, material efficiency and alternative technologies.

Impacts

National industrial
decarbonization
pathway defined

Identification of key
technology solutions

Enabling policy, finance,
and implementation
frameworks



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PARTNERS

- Government of Vietnam
- IDDI network
- Industrial Decarbonization Accelerator
- Econoler
- PuResource Partners

PUBLISHED
January 2024

LOCATION
Vietnam

UNIDO Industrial Decarbonization TA Case Study: *Setting a Foundation for CCS in Product Life Cycle Assessment*

Objective

Establishes a methodological foundation for integrating CCS) into product-level life cycle assessments (LCAs), focusing on improving consistency, transparency and comparability of how captured and stored carbon emissions are accounted for in industrial products.

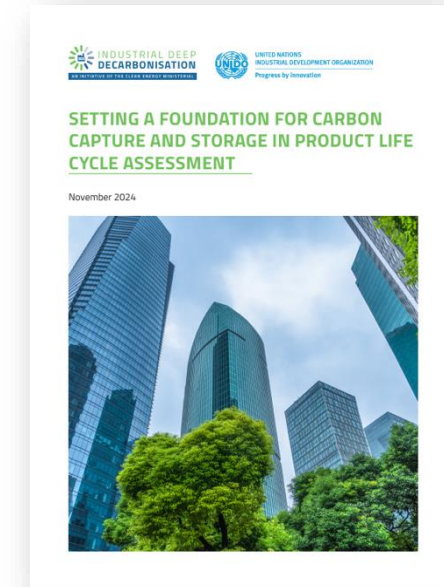
Impact

Integrating CCS into
product Life Cycle
Assessment

Establishing consistent
carbon accounting
standards

Addressing key
methodological
challenges

Supporting market
transparency and low-
carbon product demand



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November 2024

LOCATION
Global



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INDUSTRIAL DEVELOPMENT ORGANIZATION



GLOBAL PROGRAMME
HYDROGEN IN INDUSTRY



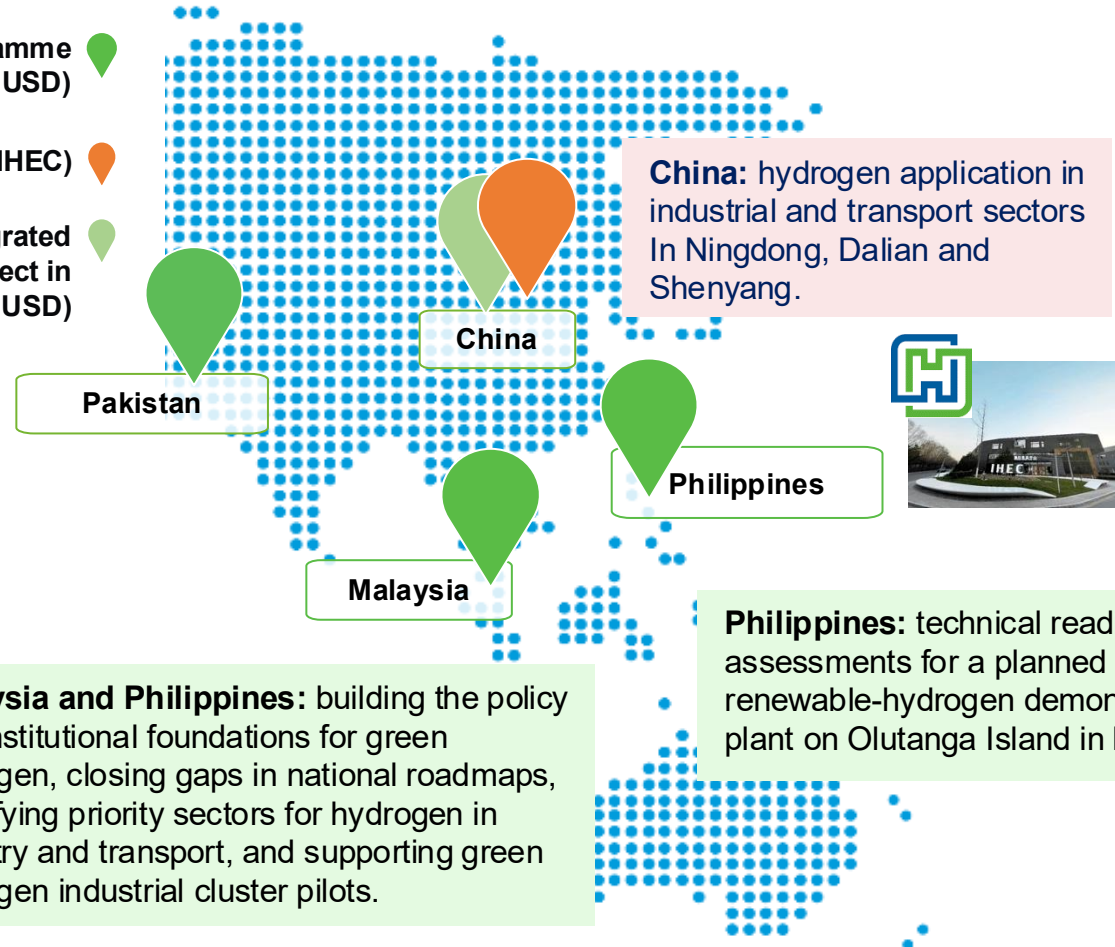
UNIDO Industrial Decarbonization TA Case Study: *Global Programme for Hydrogen in Industry*

Global Clean Hydrogen Programme
(GEF Funds - 15.8 Mio USD)

International Hydrogen Energy Centre (IHEC)

Green Hydrogen Energy Integrated
Demonstration Application Project in
China (GEF Funds - 16 Mio USD)

Programme overview: includes both country-level and regional-level support through technical cooperation projects and global partnership initiatives on clean hydrogen.



UNIDO Industrial Decarbonization TA Case Study: *Global Matchmaking Platform*

Asia-Pacific: Indonesia (on-going projects),
Cambodia (projects being matched),
Vietnam and Thailand (under discussions)

Global

Elevating the theme of low emissions industrialization



A Global spotlight on industry decarbonization

Positions the theme as a shared global priority, elevating it on international agendas and in multilateral processes.



Linking Country Needs to Global Pathways

Helps countries articulate their own industrial decarbonization needs while framing them within international commitments and global transformation pathways.

Matchmaking

Core function of enabling countries to be empowered for their requests

Overview of the GMP Process

1. Country request to the GMP
2. Request detailed and validated
3. Request circulated to the GMP Network of Delivery Partners
4. The GMP Network of Delivery Partners express interest in support one or more request
5. Country selects the preferred Delivery Partner
6. Match

Over 30 project requests from
11 countries matched

25 international partner
organizations offering technical and
financial inputs*

Platform

The place for open exchange and engagement for all stakeholders



Exchange Platform for GMP Partners and Countries

Provides an entry point for stakeholders seeking to engage with industrial decarbonization efforts.



Facilitates global knowledge sharing

Provides a space for co-creating knowledge products from partners, and enables global learning through workshops, events, and webinars.

UNIDO Industrial Decarbonization TA Case Study: *Net Zero Partnership (NZIP)*

Provides customized support to emerging and developing countries for industrial decarbonization, with a focus on steel, cement and concrete.

KEY SERVICE AREAS:

- Supporting countries in developing the **right policy environment for industrial decarbonization**
- Working with industry to **implement decarbonization solutions** and **prepare ready-for-investment projects**
- Encouraging **international collaboration** and **global knowledge exchange**

Its **NDC 3.0 Support Package** helps countries **unlock more ambitions and actionable climate plans**, attract investors and create new job and business opportunities.

The pipeline development arm of the program will transform feasible industry decarbonization technology solutions for chemicals, steel, cement and concrete industries into **bankable proposals for financing**.

Current country focus: Aasia-Pacific (Indonesia), LAC (Argentina, Brazil, Mexico), Africa (Egypt, Morocco, Kenya, South Africa)



UNIDO Industrial Decarbonization Case Study: *Industrial Deep Decarbonization Initiative (IDDI)*

A coalition of governments from developed and developing countries working with the private sector to **decarbonize heavy industries** starting with steel, cement and concrete, established by the Clean Energy Ministerial and UNIDO.

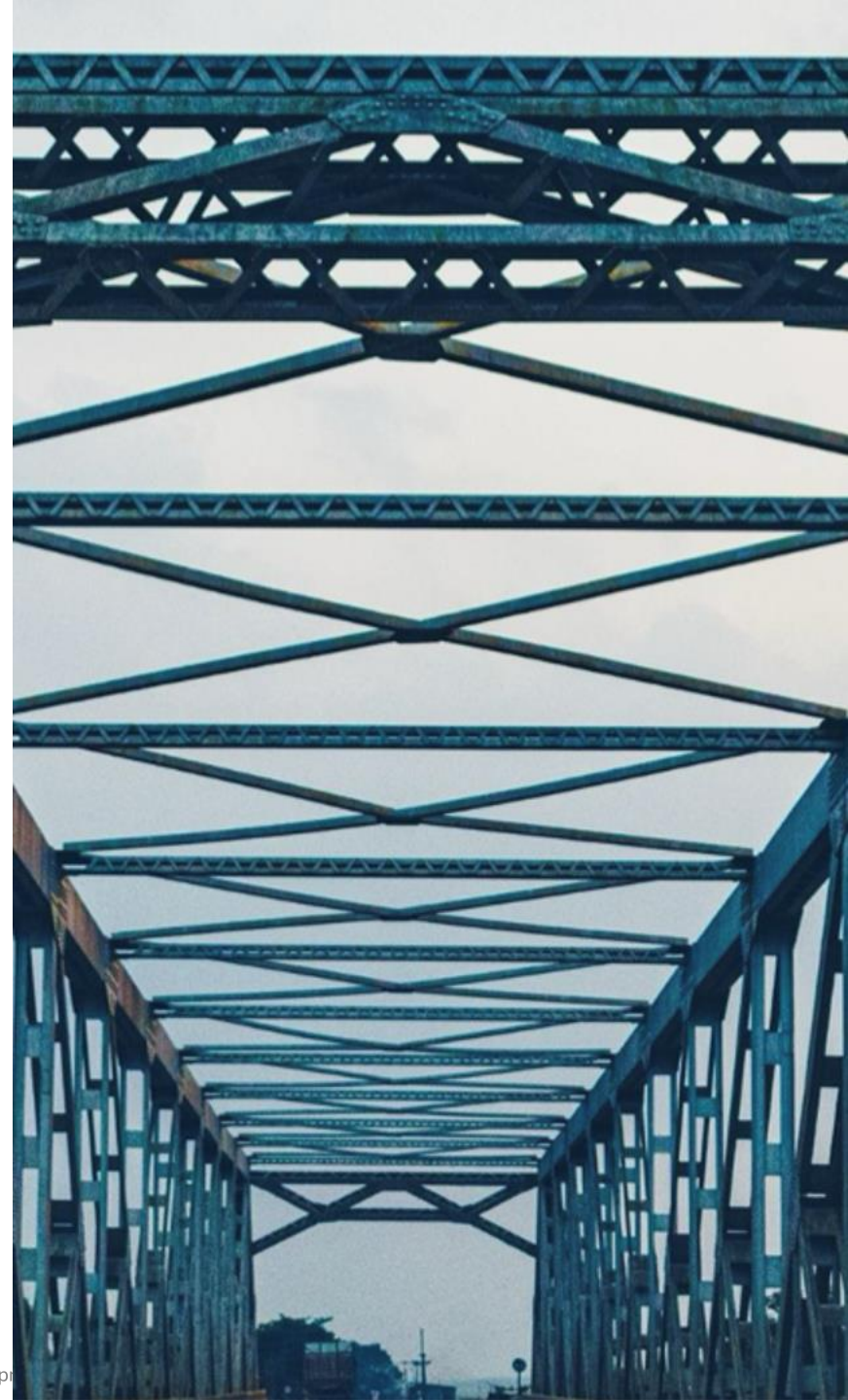
KEY SERVICE AREAS:

- Establishing an approach for collecting interoperable data to report on the procurement of **low- and near-zero-emission materials**
- Promote interoperability of standards and definitions for low- and near-zero emission products
- Setting commitments and best practices for the public procurement of these materials

The IDDI has developed a **Green Public Procurement (GPP) Pledge** and supporting guidance to assist governments in driving ambition on green public procurement policy. It is open to new members.

Current members: Brazil, Canada, Germany, India (co-lead), Japan, Saudi Arabia, Spain, Uganda, the United Arab Emirates, the United Kingdom (co-lead) and the United States.

The IDDI also brings together a coalition of over **70 related initiatives and organizations**, including:



Lessons Learned and Opportunities

- ❖ Supply-push and demand-pull: implementing CCUS in Asia-Pacific will depend on how quickly demonstration projects can be implemented (supply-push) (i.e. go beyond planning to construction and operation) and how effectively market demand can be stimulated (demand-pull) to enhance commercial viability for industrial applications (e.g. through industrial clusters and hubs).
- ❖ Coordination: requires enhanced coordinated action across policy, push and pull finance, innovation and international partnerships (e.g. A2D Facility, IDDI, NZP, GMP) to overcome barriers whilst ensuring inclusive and sustainable project development (co-benefits important).
- ❖ Country-led: context-specific approaches important (e.g. Vietnam and Thailand case studies), including greater inclusion of innovative CCUS solutions in the discussions (e.g. mobile capture, biochar, etc.).