Innovation and technology for
SYSTEMS TRANSFORMATIONS

UN environment programme

CTCN
UN Climate Technology Centre & Network

Business & Industry
FOSTERING CLEAN TRANSITIONS IN THE PRIVATE SECTOR AND HARD-TO-ABATE INDUSTRIES

CTCN works with developing countries to accelerate, develop and transfer technologies for low carbon, climate resilient development.

Climate action is transforming business

In 2019, industry accounted for 24 per cent of global GHG emissions,[1] as manufacturing processes, e.g. in the cement and steel industries, are extremely energy and emissions intensive. Business and industry are threatened by climate change with increasingly extreme weather events damaging critical infrastructure for manufacturing and logistics. Climate action in the industrial sector is required to reduce its carbon footprint and in parallel increase climate resilience of businesses and industries.

With an increasing portfolio of low-carbon and cost-competitive technology alternatives, there is a valid business case for climate action. Climate action can:

- Stimulate economic growth by boosting human capital (healthier lifestyles and better education)
- Enhance natural capital (valuation through ecosystem services)
- Boost technological change
- Increase productivity and efficiency (getting more with less)

Businesses and industries, small and medium enterprises (SMEs), and large cooperations have the capacities to:

- innovate
- Co-create low-carbon pathways
- Strengthen their economic competitiveness
- Improve climate resilience

CTCN case studies, pilot projects, RD&D, and concept notes can be leveraged/are pivotal to attract investments and funds.
CTCN collaborates with The Green Climate Fund, The Global Environmental Facility, The Adaptation Fund Climate Innovation Accelerator, and several regional and national development banks, supporting systems transformation in over 30 countries.

Decarbonization and clean transition are great opportunities for business and industry

The UN Climate Technology Centre and Network (CTCN) provides ground-up support in the transition to low-carbon industries and businesses in developing countries. It works with SMEs and businesses across industries, including building and construction, to identify technology needs and opportunities to reduce greenhouse gas (GHG) emissions and enhance resilience to the impacts of climate change.

CTCN facilitates business and industry clean transition

For over a decade, working with National Designated Entities (NDEs)[2] and over 800 Network members,[3] CTCN has provided developing countries with a range of technical assistance, capacity-building and knowledge-sharing services pertaining to the role of business and industry. By supporting governments to set the right policies and incentives, tangible changes have been made in progressing towards net-zero goals, whether by strengthening reporting requirements of GHG emissions in specific industries, identifying low-carbon pathways, or introducing climate policies. Overall, CTCN has provided the following support:

- **41** technical assistance projects totalling almost US$6 million
- **17** roadmaps, action plans, policies and frameworks developed
- **12** pilot projects prepared/conducted
- **42** developing countries supported, including 3 multi-country projects
- **28** projects on mitigation, 12 on cross-cutting themes, and 1 on adaptation

In parallel, technical assistance and interventions work to strengthen national systems of innovation[4] (NSI) and digitalization[5] as proven technology enablers.

Enabling sustainable pathways in Thailand's iron and steel industry

The iron and steel industry is a vital part of Thailand's economy, yet the sector is highly energy intensive, contributing significantly to the national GHG emissions.

The Iron and Steel Institute of Thailand (ISIT) has identified **energy efficiency measures as having a dual benefit for the industry: reducing GHG emissions and reducing energy costs to remain economically competitive**. With CTCN technical assistance, the industry has gained transparency on energy and emissions levels and received guidance on adopting energy efficiency measures.

A benchmark study of steel plants identified current energy and emissions levels, and energy reporting guidelines were introduced to maintain transparency. An energy efficiency manual with operational practices and technological upgrades, and financial models demonstrating economic viability and financing approaches of the energy efficiency options were developed.

Through energy efficiency measures, the Thai iron and steel industry has the potential to reduce 381,000 metric tons of CO_2 within a five-year time period, the equivalent of taking more than 82,800 cars off the road.

Selected examples of CTCN business and industry activities, including anticipated country impact

Examples of CTCN technical assistance	Countries	Impacts
Development of circular economy roadmaps	Brazil, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Mexico, Paraguay, Uruguay Côte d'Ivoire, Kenya, Malawi, South Africa, Zambia, Zimbabwe	• **Development of circular economy roadmaps** including recommendations for policy, technology, infrastructure, and capacity building; • Preparation of pilot projects such as digital platforms for **waste trading, decentralized integrated waste-transfer** stations of their productive activities.
Feasibility study for the setup of a biogas plant	Mauritius	• Preparation of a public-private partnership agreement for the setting-up and operation of a biogas plant • **GHG emissions reduction potential of 600 metric tons of CO_2e per year**
Technologies and industrial processes in cement producing industries	Congo, South Africa	• **Reduction potential of 122,000 to 166,000 metric tons of CO_2e per year in Congo** • **Feasibility of waste heat recovery, carbon capture and mineralization in South Africa**
SME Technology Clinics	Kenya, Tanzania	• Training of industrial SMEs in Kenya and Tanzania on environmentally sound technology opportunities • Matchmaking between industrial SMEs, technology providers and financing institutions • Increased adoption of environmentally sound technologies by industrial SMEs in Kenya and Tanzania

> "This project has enabled our iron and steel industry to see the dual benefit of energy efficiency measures in terms of financials and sustainability in clear quantitative numbers."
>
> *Surachai Sathitkunarat, Ph.D., Vice President of the Office of National Higher Education Science Research and Innovation Policy Council (NXPO) Thailand*

Business and industry that are just and inclusive

Working with various constituencies under the UNFCCC including business and industry NGOs, youth, women and indigenous communities, CTCN is addressing inequalities in sustainable development to ensure that developing countries have access to and reap the benefits of reliable, affordable climate technology.

CTCN has been creating innovation and inclusion opportunities for youth through its **Youth Climate Innovation Labs and Academy**, a series of regional innovation sprints and mentoring that targets young innovators in climate action, while building inter-generational bridges in support of transformative technology solutions.

In addition, through the **Gender Just Climate Solutions Awards**, CTCN has supported several innovation opportunities awarding grassroots and women-led organizations working on:

- Technical solutions (e.g. technologies for mitigation, adaptation, or loss and damage);
- Non-technical solutions (e.g. consumption changes, resilience, and capacity building); and
- Transformational solutions.

Investing in the clean energy transition generates an array of socio-economic benefits in the longer term, including economic growth, job creation, improved livelihoods, support for entrepreneurs and improvements to gender equality.

Next-generation business and industry

CTCN provides business and industry with innovative strategies and practical measures to support sustainable economic development, mitigate GHG emissions and enhance resilience to the impacts of climate change. This involves:

- **Developing low-carbon strategies:** businesses and industries receive support on identifying low-carbon pathways and developing targeted strategies.
- **Small- and medium-scale industries:** CTCN works with the private sector, and especially SMEs to enhance endogenous capacities of innovation by adopting as well as adapting climate technologies to local needs.
- **Focus on hard-to-abate sectors (cement, steel, ammonia etc.):** cement sector roadmap implementation, steel sector process efficiency and waste heat recovery.
- **Greening of supply chain to large producers**
- Development of strategies and visons for new sources of energy, like green hydrogen etc.

Expected outcomes and impacts

Reduced climate change impact of industries...

Enhanced resilience to climate change and increased capacity of SMEs to innovate for climate action...

Empowered women and youth taking a leading role in the transformation of business and industry...

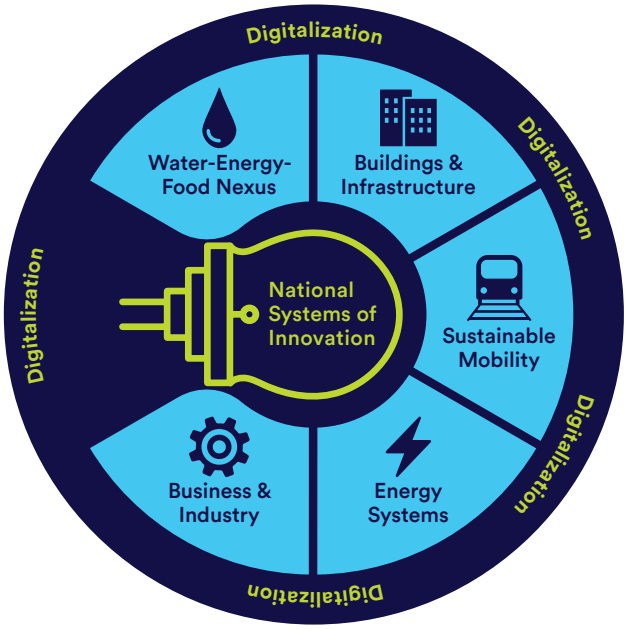
leads to

stronger, more competitive, resilient and sustainable businesses for all

About CTCN

The Climate Technology Centre and Network (the implementation arm of UNFCCC's Climate Change Technology Mechanism, mandated under the Paris Agreement) provides accelerated development and transfer of environmentally sound technologies for low carbon and climate resilient development at the request of developing countries.

CTCN provides a portfolio of technology solutions, capacity building and advice on policy, legal and regulatory frameworks tailored to the needs of individual countries by harnessing the expertise of a global network of technology companies and institutions. CTCN is hosted by the UN Environment Programme and is headquartered in Copenhagen, Denmark.



1 IPCC (2022). Climate Change 2022 Mitigation of Climate Change Working Group III Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change Summary for Policymakers

2 NDEs are technology representatives selected by each country's government representing 164 parties to the UNFCCC https://www.ctc-n.org/about-ctcn/national-designated-entities/national-designated-entities-by-country

3 CTCN's Network includes members from: National technology and regional climate technology centres, intergovernmental, international, regional or sector organization, research, financial, non- governmental, industry, SMEs, and private sector organizations.

4 National Systems of Innovation (NSI): IPCC defines NSI as: "the set of institutions to create, store and transfer the knowledge, skills and artifacts which define technological opportunities" (Metcalfe, 1995). National systems of innovation reflect a complex mixture of institutions (e.g., financial; legal; scientific and technological; educational), public policies (regarding, e.g., taxation; export/import promotion; science, technology, and innovation), and business and social relationships.

5 Digitalization: Digital technologies impact positively and negatively on GHG emissions through their own carbon footprint, technology application for mitigation, and induced larger social change. Whether the digital revolution will be an enabler or a barrier for decarbonization will ultimately depend on the governance of both digital decarbonization pathways and digitalization in general (medium evidence, high agreement). CTCN will use the approach that positive impacts of digitalization are realized for emission reductions and the creation of resilience.

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Become a CTCN member, join a community of global innovators and leaders for climate action, scan the QR code.