CTCN

UN Climate Technology Centre & Network



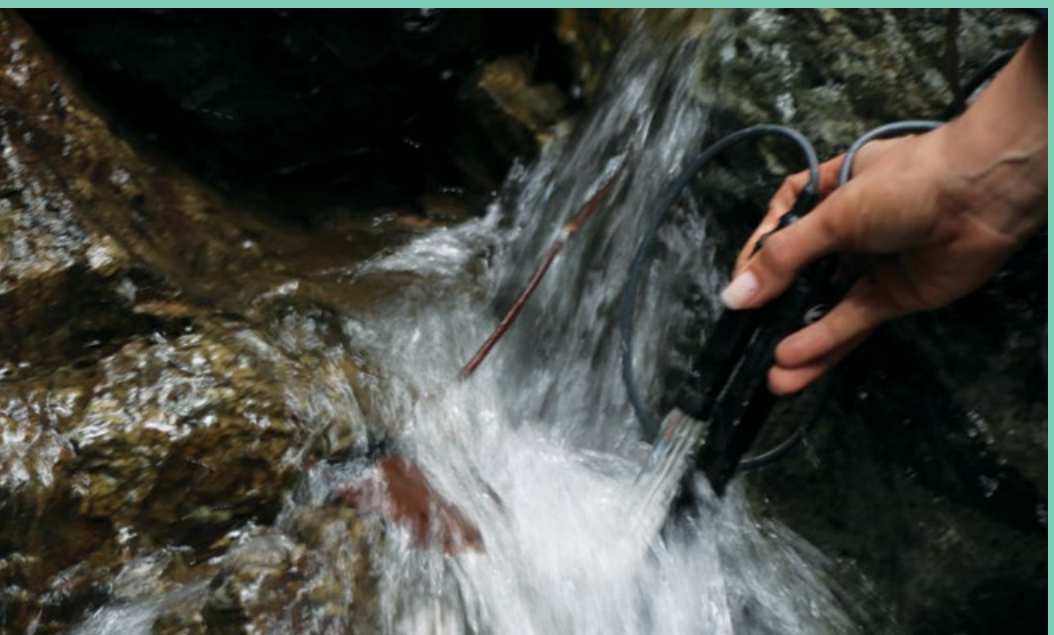
Technology Mechanism

2021 Progress Report

Scaling up our impact.



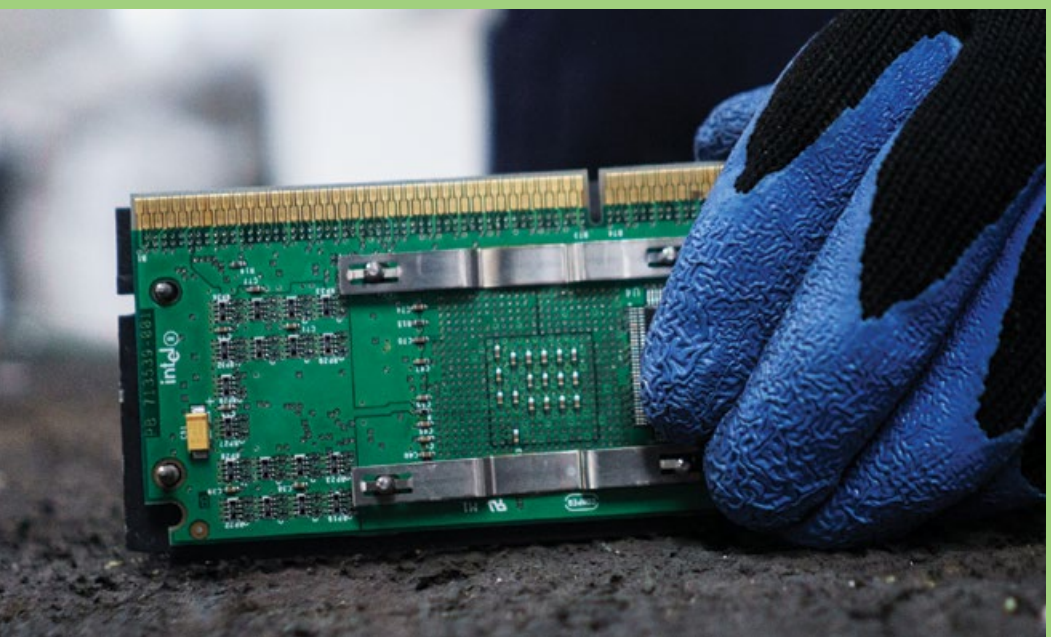
The impacts of climate change in 2021 have spared no one. Fires are more destructive, flooding events are rampant, and unprecedented heat waves have impacted every part of the globe.







Limiting global warming to 1.5 degrees by the end of the century is still possible, but our success will require transformational change.





Now.





Countries are ramping up their ambitions and aspirations for the future, and are ready to embrace technologies that can revolutionize the way we power the world and enhance resilience.

At the CTCN, we know how to deliver proven solutions to the places they are needed most. As countries ramp up their ambitions – and commitments – to meet climate needs, we have helped over 100 countries to progress on their climate and sustainable development agendas.

Technology is a crucial factor in reversing some of the worst impacts of climate change, and a critical enabler in achieving net-zero emissions. From water, food, energy, and urban systems to digitalization and nature-based solutions, we have the tools and practices to implement real change. And the reach to take them global.

Our growing innovation, deployment and upscaling are instrumental in making net-zero a reality. At the CTCN, we are optimistic, enthusiastic, and stand ready to lead and support countries in achieving their goals.

CTCN
At a glance

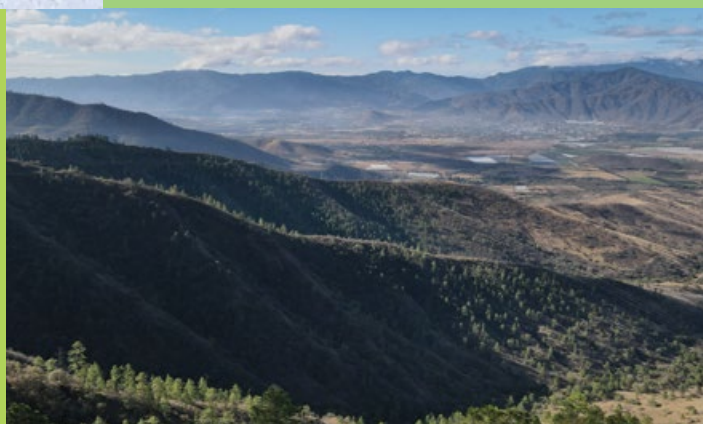
106
developing countries served





320
climate technology transfers implemented

12.9 million
expected tonnes of CO_2eq reductions per year

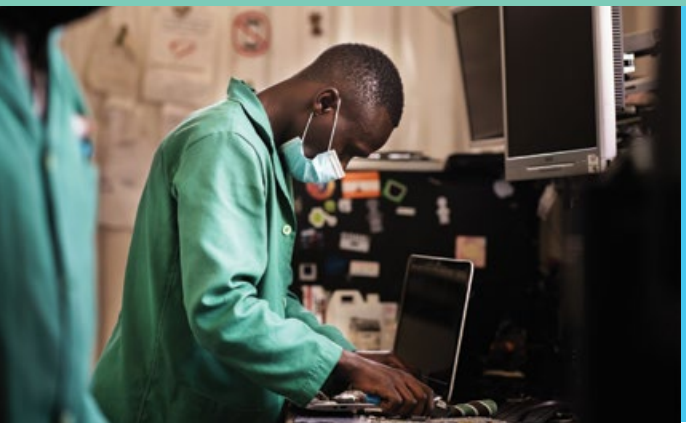




100 million
anticipated beneficiaries

1,24 billion USD
anticipated funding leveraged for developing countries





experts from **650** technology companies and institutions around the world

Connecting through the CTCN

To help developing countries meet their climate change goals and deliver on all 17 SDGs, especially:





CONTENTS

10 FOREWORD

12 DIRECTOR'S OVERVIEW

14 TECHNOLOGY FRAMEWORK
16 Innovation
22 Implementation
28 Enabling
36 Collaboration
42 Support

48 TECHNOLOGY TRENDS
52 Digitalization
58 Food Systems
64 Energy Systems
70 Water Systems
74 Nature-based Solutions
80 Urban Systems

92 ABOUT THE CTCN

93 ADVISORY BOARD

94 FACTS & FIGURES



This past year, we were reminded by the IPCC, and the impacts of climate itself via countless extreme weather events and disasters, of the urgent need to address the climate crisis using both new innovations and solutions we already have at our fingertips. We also find ourselves at a crucial moment wherein countries are striving to make their energy transformations a reality.

Renewable energy is at the centre of the transition to a resilient, low-emission, sustainable energy system. The International Energy Agency outlines the implications of aiming for net-zero emissions in the energy sector, including the ensuing transformation of the global economy, scale-up of renewable-based electricity, those who will benefit greatly from universal access to electricity and clean cooking by 2030, and the critical action needed from governments, including the innovation that can be fostered through their cooperation.[1] The energy transition will lay the foundation for achieving net-zero emissions goals, and for creating the basis upon which countries can then decarbonize other sectors—including transport, agriculture, industry, and infrastructure—more effectively.

2021 was also the third year of operationalization of the Technology Framework, which has provided a structure through which to align the mandates and activities of the UNFCCC Technology Mechanism with the objectives of the Paris Agreement. Over the past year, the Advisory Board has actively supported the CTCN as it enhanced its collaboration with the constituted bodies of the UNFCCC, including the Technology Executive Committee and the Financial Mechanism, such as the Green Climate Fund, the Adaptation Fund, and the Global Environmental Facility.

The second independent review of the effective implementation of the Climate Technology Centre and Network, conducted by Ernst & Young, was completed in 2021.[2] The report presents findings on the CTCN's relevance, effectiveness, efficiency, impacts and sustainability, and provides conclusions and recommendations. The positive findings indicate that the CTCN has demonstrated its added value as a demand-driven mechanism with strong sectoral expertise, agility, and responsiveness. Additionally, the report confirms the CTCN's continuous improvement in its programmes of work, including in its communication and outreach services, and its strategic collaboration with the Advisory Board, operating entities of the Financial Mechanism, and the TEC. The review also found that:

- The Centre is considered to be cost effective given the type of services it provides.
- The CTCN's new regional organization is perceived by stakeholders as more effective and efficient.
- Its contribution to transformational change is likely to be sustainable.
- Positive impacts are expected on adaptation and mitigation, and stakeholders have observed or anticipate socioeconomic co-benefits, particularly in terms of economic well-being, gender equality and human rights.

In addition, the evaluation provides some insightful recommendations for the future, such as conducting ex-post impact evaluations of technical assistance, and further enriching synergies among Network members.

The technology work of the CTCN is important now, as ever, to assist countries in meeting their enhanced ambitions toward climate commitments, and the Advisory Board remains committed to supporting the CTCN in this process.

Moa Forstorp
CTCN Advisory Board Chair



The reality, as confirmed by the IPCC Sixth Assessment Report, is stark and clear. We are at the tipping point on climate change. Technology will be a critical factor in reversing some of the worst impacts of climate change going forward, as well as a critical enabler in achieving net-zero emissions goals.

Net-zero emission goals are indeed important to reach the long-term temperature goal of the Paris Agreement. The recent increase in net-zero commitments by both countries and non-state actors is encouraging. However, these commitments and their associated targets must be robust and rigorous, consider all greenhouse gases, and build on a foundation of ambitious shorter-term targets. Importantly, they must not preclude ambitious immediate mitigation action. Fortunately, technology is our ally in this battle, as it will help to foster the shifts that are needed.

In this Progress Report, we would like to share with you the trends in climate technology demand that we witnessed in 2021 and the outcomes of our efforts to implement the five themes of the Technology Framework under the Paris Agreement. This year, the Climate Technology Centre & Network served over 50 countries, providing support for implementation of Nationally Determined Contributions, Technology Needs Assessments, Technology Action Plans, and other diverse technical assistance requests on water, agriculture, circular economy, early warning systems and vulnerability assessments, e-mobility, sustainable cities, waste management, energy efficiency and renewable energy.

Our versatility enables our support to countries across a spectrum of assistance types, ranging from decision-making tools and feasibility assessments to financing facilitation, research and development, piloting and deployment of technologies, sectoral roadmaps and strategies, and recommendations for law, policy, and regulations.

This year, we have facilitated a wide range of innovations and fruitful collaborations, including providing training to our NDEs on blockchain technologies; continuing our important work on gender and technology with the UNFCCC Women and Gender Constituency, fostering endogenous technology development through the Youth Climate Innovation Labs, and by helping countries to prepare Green Climate Fund (GCF) technology readiness proposals.

I am pleased to report positive trends in our donor engagement, our growing network, and the successful implementation of technical assistance. In the climate community, there is always a great focus on finance—and rightfully so, as it is crucial to the work we do for member states. We must remember, though, that for financing to be transformational, it must support massive technology deployment and acceleration, underpinned by the enabling environments that make meaningful change possible.

The countries we serve continue to face significant challenges, and we must meet the moment, serving their ambition and empowering them to overcome the ever-increasing impacts of climate change that surround us. The CTCN is ready to provide leadership during these precarious times, and we remain confident that technology holds the key to solutions on all levels.

I am pleased to share the CTCN's 2021 annual Progress Report, presenting the CTCN's contribution to global climate action over the last year while giving us a glimpse at the direction we are headed for the next year and beyond.

Dr. Rose Mwebaza
CTCN Director


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TECHNOLOGY FRAMEWORK

Article 10 of the Paris Agreement established a technology framework to provide overarching guidance to the work of the Technology Mechanism in supporting implementation of the Agreement. The CTCN's Programme of Work and annual operating plans are fully aligned with the five key themes of the Technology Framework, each of which represents an important element of technology development, transfer and/or uptake. This has enabled the CTCN to focus our efforts on the areas that are recognized to be most impactful in order to ensure that we directly empower countries to meet their individual climate commitments and goals.

INNOVATION

We rely on technological innovation to deliver efficient, cost-effective climate solutions that meet multiple needs and provide a diverse set of benefits. Longer-term solutions to climate change, as well as the achievement of sustainable development and net-zero emissions goals, require innovation to enable the scale-up of technologies to meet global demands. The CTCN supports all facets of technology innovation through technical assistance, capacity building and knowledge sharing. This year, the CTCN supported several events and initiatives targeting innovation across sectors and stakeholder groups.



The **CTCN's Youth Climate Innovation Labs and Academy** offered youth-centered workshops to co-create endogenous climate technology solutions by using tools such as design thinking principles. Following the completion of the two Labs in Africa and Asia, selected groups participated in a Youth Innovation Academy, a two-month intensive incubator designed to help idea-stage start-ups transform ideas into viable projects. Eleven of the newly developed and promising start-ups pitched their technology solutions for enhanced climate action to investors, partners, and experts in the industry. A third lab was launched in Latin America in July 2021, with the Academy scheduled to take place in the fall. In total, the CTCN received over 1,300 applications from young innovators from across 74 countries. 97 mentors guided participants throughout the lab and academy. With over 4,3 million impressions on social media, the CTCN estimates that over 33 million people were engaged on the topic of youth and technology innovation in online media.

ADAPTATION FUND
Climate Innovation Accelerator
SMALL GRANTS. BIG IMPACT.
UN environment programme
CTCN

The CTCN launched the **Adaptation Fund's 5 million USD Climate Innovation Accelerator (AFCIA)** in November 2020. The Centre, which was selected to manage the AFCIA programme, received over 200 requests from more than 60 countries in response to its first two calls for proposals. The CTCN is now providing technical assistance to test, evaluate, roll out and scale up innovative adaptation practices, products, and technologies. Key sectors include agriculture, food security, water management, rural development, disaster risk reduction and human health.

The CTCN also organized three regional webinars to share early lessons learned following the first call for applications for the AFCIA programme. Findings point to challenges faced by countries in articulating their adaptation technology needs, particularly for LDCs and SIDS, and the need for additional initiatives to improve their capacities to identify and assess innovative adaptation practices, products, and technologies.





A new guidebook highlights a path to resiliency following the COVID-19 pandemic

In support of COVID-19 recovery efforts, the CTCN developed a practical guidebook[3] to inform the development of national roadmaps and highlight best practice cases for developing countries to quickly get back on their feet and build back economies with sustainability in greater focus. The rise in technical assistance requests received by the CTCN to promote circular economy approaches highlights an increasing interest from countries to set a new development direction towards resilient recovery with a circular, low-carbon economy.

The CTCN delivers innovative technical assistance

The CTCN consistently provides technical assistance for innovative low carbon technology solutions and support to national ambitions on innovation and technology development and transfer. For example, the CTCN supported Jamaica in identifying a national climate change research agenda that includes collaboration with academia. Other technology solutions supported by the CTCN include unmanned aerial vehicle (UAV) remote sensing technology in Eswatini and solar milling technologies for women-led agri-food SMEs in Senegal.

Ocean thermal energy conversion in Nauru



The Republic of Nauru was an early innovator in ocean thermal energy conversion (OTEC), collaborating with the Tokyo Electric Power Company in 1981 to set up the world's first OTEC pilot plant there. It was the highest power OTEC plant ever operational, as well as the first and last to feed power to an operating commercial grid. Since then, significant improvements have been made to OTEC technology, while construction techniques have also improved and been climate proofed. The Pacific Island countries are promising locations for ocean technologies due to the costs of oil, limited freshwater sources and the potential of aquaculture. Nauru has been deemed an ideal location due to a rapid drop-off beyond the reef.

In addition, Nauru has almost reached its target of obtaining 50% of grid electricity from renewable sources and is ready to identify renewable sources beyond solar-based solutions, as the country is constrained in installing more solar PV due to its limited land space. Ocean energy therefore presents attractive opportunities as a supplementary energy source.

The CTCN is supporting Nauru with technical resources and facilitating access to funding and expertise in conducting a pre-feasibility study assessing OTEC's potential compared to other ocean energy solutions. A special focus is being given to OTEC technology since it is expected to be the most cost-effective option for Nauru. The pre-feasibility study is collecting data to identify the most suitable site for different ocean energies (wave, tidal or thermal), and then suggesting the most appropriate technology to provide both electricity and water security to the island. This study is providing critical input to a more detailed feasibility study on implementing pilot projects under the GCF. The CTCN will support the development of a GCF draft concept note based on the most suitable technology identified for the island, which could ideally serve as an example for other countries in the region.

This technology assistance advances:

Nauru's Nationally Determined Contribution

To replace a substantial portion of electricity generation with large-scale solar PV systems, and to develop alternative renewable energy sources.

Sustainable Development Goals







IMPLEMENTATION

Since its inception, the CTCN has collaborated with 106 developing countries to implement technology development and transfer assistance. The Centre has received a total of 321 requests for technical assistance, including 14 multi-country requests. Almost half of the requests received have been fully implemented and completed (143), while 64 are currently under implementation, 90 are in the response plan design phase and 24 are being assessed.



Trends in countries' technology demand

In Africa, recent requests focus on **natural resource management** (e.g., aquifers, forest monitoring through drones, water basin management); **circular economy** (e.g., anaerobic digestion, circular economy roadmaps) and **sustainable cities** (e.g., urban resilience, green infrastructure).

In Asia-Pacific, demand has focused on **water- related adaptation measures** (e.g., nature-based solutions and integrated water resource management, gravity driven membrane technology, gallery infiltration systems, monitoring system design, agro-met DSS); **local climate information systems and early warning systems** (e.g., impact-based forecasting, coastal risk mapping, multi-hazard platforms, wave modelling); **energy efficiency** (e-mobility, efficient water supply, energy efficiency in buildings, smart cities); and **new and emerging technologies** (ocean thermal energy conversion, power to gas, green hydrogen, carbon capture).

In Latin America, requests have prioritised the **water sector** (groundwater monitoring, drought risks modelling, M&E systems); **coastal zones** (vulnerability assessment and risks management); the **energy sector** (adaptation plan for energy generation sector, geothermal energy, and grid stability study); **circular economy** at a national level (national roadmaps and strategies); and **sectoral approaches** (milk production value chain, waste sector).

FROM REQUEST TO IMPLEMENTATION: HOW CTCN TECHNICAL ASSISTANCE WORKS

1 Interested parties in developing countries contact their national focal point (National Designated Entity (NDE)) to request climate technology assistance.

2 The NDE confirms the alignment of the request with its national climate priorities and passes it along to the CTCN.

3 The CTCN collaborates with the NDE and applicants to develop a tailored technology transfer plan.

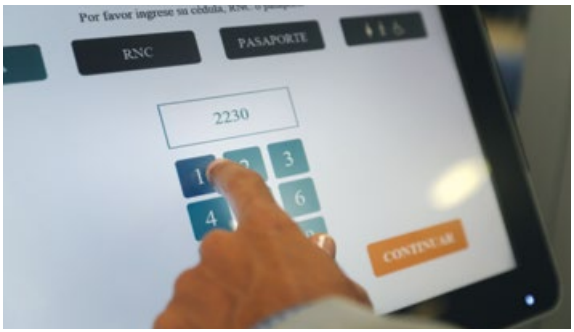
4 The Climate Technology Centre selects a Consortium or Network member to implement the technology solution.



Regional implementation

Building on its experience in over 160 developing countries, the CTCN is well placed to adopt a regional approach, whether via multi-country implementation or through programmatic approaches. Multi-country projects promote capacity building, analysis and research at a regional level that infuses direct support at country level and presents several efficiency gains such as lower transactional costs and the harmonization of policies and regulations across a region. The CTCN's programmatic approach often revolves around a standard methodology or thematic focus across several countries and may be established to facilitate the replication of a project type that has been effective in supporting transformational change.

In Africa, for example, the CTCN is identifying options for economical industrial conversion of forest waste for fifteen member countries of the Commission of Central African Forests. In Asia-Pacific, the CTCN is delivering technical assistance on circular economy and e-mobility using a unified methodology across several countries, while providing a tailored focus in alignment with individual countries' needs.





Technology Needs Assessments and Technology Action Plans

Eight countries (Botswana, Chile, Cook Islands, DRC, Georgia, Kyrgyzstan, Paraguay, and Syria) received CTCN support to conduct TNAs and TAPs. In addition, the CTCN shared its experience supporting countries in the TNA process during several workshops, including one organized by the NDE of Malaysia in March 2021 and with UNEP-DTU Partnership in December 2020 and June 2021 as part of the Global TNA Project.

Gender mainstreaming

Guided by its Gender Policy and Action Plan (2019-2022),[4] the CTCN built on its existing efforts to implement gender mainstreaming in its activities and operations, including technical assistance, capacity building and knowledge sharing. Particular focus was given to integrating gender considerations throughout the technical assistance process.

Updated closure report forms require implementors to report on several gender-responsive indicators. Gender-specific considerations highlighted in recent closure reports include gender-sensitive stakeholder mapping and engagement; gender mainstreaming in project consultation, validation, and decision-making process; gender-sensitive and sex-disaggregated data collection; and developing gender-responsive recommendations for action.

Developing circular economy roadmaps to limit GHG emissions from the waste sector in Zimbabwe

The concept of circular economy has gained traction in recent years, and Africa has embraced this model, with a growing number of countries embarking upon their own circular economy transitions. The circular economy is a system that moves away from the traditional 'take-make-waste' linear model of production and consumption to one in which economic growth is decoupled from the extraction and ultimate disposal of natural resources. This can be achieved through the expanded use of renewable energy and the minimisation or reuse of material waste and pollution, including greenhouse gases.

Zimbabwe's key industries are mining, steel, cement, and agriculture, which have created an economy based on resource extraction, ultimately resulting in a host of detrimental environmental impacts. In addition, the country's urban waste situation has been growing. Seizing on the opportunity to fix its urban waste management challenges, Zimbabwe first implemented public/private policies and initiatives toward an integrated waste management program through the promotion of recycling, recovery, and reuse. However, barriers that hindered further advancement of these policies, such as coordination challenges, highlighted the need for a cohesive national strategy with defined objectives and clear goals, and opportunities for pilot projects. The CTCN has supported several circular economy initiatives across all regions and responded to the Zimbabwean government's request by developing a waste stream-specific road map for circular economy, including an assessment of the key institutions and stakeholders, a circularity analysis of one prioritized waste stream, and the identification of a pilot project.

This technology assistance advances:

Zimbabwe's Nationally Determined Contribution

To prioritize waste as a key mitigation sector and to target integrated waste management measures.

Sustainable Development Goals





ENABLING ENVIRONMENT AND CAPACITY-BUILDING

The CTCN provides support to establish and enhance enabling environments, which encompass institutional arrangements, stakeholder engagement, and appropriate policies and regulatory mechanisms. A mixture of capacity building activities and trainings, facilitation of private sector involvement and information-sharing on climate technology development and transfer is delivered at global, regional, and national levels.



Facilitating endogenous and gender-responsive technologies

Since 2018, the CTCN has collaborated with the UNFCCC Women and Gender Constituency (WGC) to provide capacity development and mentoring support to the winners of the Gender-Just Climate Solutions Awards programme hosted by the WGC. This included four Training of Trainer workshops on gender-responsive climate finance over the past year. Online mentoring and South-South knowledge sharing meetings were conducted frequently throughout the year for programme participants from 14 countries in Africa, Asia, and Latin America.

The 2021 Gender Just Climate Solutions Award was launched in June 2021, calling for applications from leading gender-responsive climate initiatives that foster women's empowerment. Winners receive a small grant, participation at the Awards Ceremony held at COP26, the opportunity to describe their work at numerous COP events, and access to an intensive Upscaling Workshop on advocacy, finance, and technology as well as a year-long mentoring programme to up-scale and replicate their projects.

A recent impact review of the programme found that 70% of the participants were able to access new funding after programme participation, and all were able to replicate or upscale their projects. Overall, the review suggests that including gender as a vital aspect of climate action lays the foundation for multiple transformative benefits.



Developing policies for enabling environments that incentivize investment and technology deployment

Many countries seek policy, legal and regulatory guidance from the CTCN to foster favourable conditions for investment, new markets and scaled up technology deployment. The CTCN recently supported the Governments of Belize and Kenya to develop an integrated and comprehensive agro-forestry policy and build the technical capacity of farmers and relevant institutions on agroforestry practices in order to improve agroforestry management and accelerate the adoption of proven practices to ensure enhanced sustainability.

In addition, the Climate Technology Centre & Network developed minimum energy performance standards, labelling for refrigerators, and procurement specifications for distribution transformers in nine southern African countries. The CTCN also created a financial and market-based mechanism proposal. This policy and regulatory guidance will lay the foundations for increased market stimulation and the uptake of energy efficient appliances.

Finally, the National Circular Economy Roadmaps developed by the CTCN were adopted by the Governments of Brazil, Chile, Mexico, and Uruguay. This collaboration also resulted in the 2021 launch of the Regional Coalition on Circular Economy for Latin America and the Caribbean, composed of several Latin American countries and eight strategic partners. It is the first regional programme in the Americas to coordinate a government-level intervention in the field of circular economy.



Fostering private sector involvement in climate technologies

The CTCN collaborates with to provide technical assistance and capacity development. Approximately 50% of Climate Technology Network members represent the private sector, comprised mostly of small and medium-sized enterprises. These companies benefit not only from the opportunity to be contracted to deliver technical assistance and capacity development by the CTCN, but also from connecting with national decision makers, thought leaders and other Network members to expand partnership possibilities, learn about new markets, and gain greater visibility through the Centre's global communication and knowledge sharing channels.

In 2019, the CTCN launched its technology clinic programme for SMEs to generate awareness of the green technologies available to businesses and the new markets that can be established through their use. In 2021, the Centre successfully launched a technology clinic for agro-food SMEs in Thailand.

The CTCN also shared its experience engaging with the private sector on climate change adaptation in two workshops organized by the Japanese Ministry of Economy, Trade and Industry in Bangladesh and Vietnam.

In March, a new CTCN article entitled "Public-private partnerships for climate technology transfer and innovation: Lessons from the Climate Technology Centre and Network," was published in the journal *Sustainability* to discuss the role of public-private partnerships for climate technology transfer and innovation. The article provides recommendations on enhancing private sector participation in facilitating technology transfer in technical assistance.

17,000
information resources

6
UN languages

35 million
media and social media impressions

Facilitating information-sharing on technology development and transfer

The CTCN web portal, www.ctc-n.org, contains close to 17,000 information resources and can be viewed in six UN languages. Visitors can access climate technology case studies, descriptions, national planning documents, publications, tools, and webinars. The number of visitors to the CTCN website has increased by 58% over the same period in 2020. The most visited web pages included the Adaptation Fund Climate Innovation Accelerator page, technical assistance descriptions, and technology descriptions.

Among the top 50 countries who spend the most time on the web portal, over 40% are LDCs and one-third are small island developing states (SIDS). Africa represents half of users spending the most time on the site, followed by Latin America & the Caribbean and then Asia-Pacific.

Enhancing public awareness on climate technology development and transfer

The CTCN earned more than 35 million media and social media impressions and appeared 826 times in the national and global press. Forty-two newsletters were shared with over 20,000 subscribers.

The CTCN collaborated with its knowledge partner, UNEP-DHI, on a regional technology brief that provides technical information and insights for policymakers on technologies for nature-based solutions targeting water management in the Asia Pacific region. The CTCN also contributed to a publication by the World Economic Forum[5] that proposes an integrated approach for cities to raise ambition and progress towards becoming net zero carbon emitters.

The CTCN was invited to share its experience on the development and transfer of climate technologies at several global events throughout the year, including the Internet Governance Forum,[6] the 7th Asia-Pacific Adaptation Forum (APAN), the Vienna Energy Forum[7] and Green Days Africa 2021. These engagements constitute opportunities to further engage with NDEs or Network Members who are also invited to share their experiences. The CTCN was represented in high-level dialogues on environmentally sound technologies at events organised by the World Economic Forum, the World Intellectual Property Organization, the UN Conference on Trade and Development (UNCTAD) and the World Trade Organization.



Enhancing the capacities of climate technology stakeholders

The CTCN facilitates the provision of information, training, and support to build and strengthen the capacity of developing countries to identify technology options, make choices, and operate, maintain, and adapt technology. As part of this effort, the CTCN strives to support the identification and development of analytical tools, policies, and best practices for country-driven planning to support the dissemination of environmentally sound technologies. It does this through NDE training, webinars and in-person workshops.

Webinars targeting a variety of technology sectors related to adaptation and mitigation strategies are offered throughout the year, often in partnership with Network members. Over the last year, webinars included a focus on financing mechanisms and business models for energy-efficient technologies, and findings and recommendations from technical assistance cases, such as the launch of Jamaica's multidisciplinary research and technological development agenda.

Since 2018, the CTCN's Vision to Concept capacity building module has sought to fast-track countries' NDC implementation by enhancing the skills of project proponents in preparing GCF concept notes and transforming national priorities into concrete project ideas. In 2021, the Vision to Concept module was rolled out in Sudan in collaboration with the NDC Partnership and UDP.

Capacity-building activities are also integral components of technical assistance. For example, a South-South exchange was organized for Belize and Costa Rica, which facilitated collaboration with regional policymakers involved in developing agroforestry policies who are currently responsible for their implementation.

Supporting the transition to a circular economy in Costa Rica

Circular economy frameworks reduce GHG emissions from the production, extraction, and distribution of resources, and promote more sustainable consumption patterns. Costa Rica's GHG inventory states that solid waste accounts for 4.4.% of the country's total GHG emissions, placing it above the global average of 3.6%. Additionally, only 24% of the methane generated from solid waste in landfills is recovered.

The Climate Technology Centre and Network supported Costa Rican local governments to incorporate a circular economy approach in their policy and financial planning tools to develop a more integrated waste management system. The CTCN gathered key information on relevant technologies, regulatory and economic instruments, and developed a guide to facilitate the incorporation of the circular economy concept. A case study was also conducted to highlight the municipality of Turrialba's efforts to reduce GHG emissions from municipal waste.

Starting this year, the CTCN is also supporting Costa Rica in the development of a national circular economy strategy and preliminary indicators. Several enabling policies, regulations and instruments can be further enhanced and streamlined to facilitate progress. An outreach and training strategy is being provided among the capacity building activities, including a 'training of trainers' organised for local governments on the use of the *Step-by-Step Guide to Facilitating Local Government Transition to a Circular Economy.*

This technology assistance advances:

Costa Rica's Nationally Determined Contribution

To develop an integrated waste management system based on avoiding, reducing, reusing, treating, and disposing of waste properly. The NDC states that during the first two years of the implementation period, Costa Rica will launch its public policy instrument to promote the circular economy, corresponding to a National Circular Economy Strategy. This strategy will be strengthened by contributions in the sectors of mobility and transport, energy, infrastructure, industry, trade and services, and agriculture and livestock.

Sustainable Development Goals




Programa de ecoeficiencia y cultura 3R
Reciclaje de residuos plásticos
Programa de ecoeficiencia y cultura 3R
Solo plástico

COLLABORATION AND STAKEHOLDER ENGAGEMENT

Collaboration among a diverse array of stakeholders is instrumental to successful technology planning and implementation. The CTCN's collaborations with NDEs, Network members, the private sector, women, men, youth, indigenous people, and local communities are fundamental to its success.



72
new members

663
total number of Network Members

Engagement with National Designated Entities

To support the work of the NDEs, the CTCN organizes regional forums that bring together diverse stakeholders from across the region as part of the UNFCCC Regional Climate Weeks. The LAC NDE forum was held in May, followed by the Asia Pacific forum in July. The open forums were followed by closed NDE sessions from the region. These closed sessions allow for more in-depth discussions among NDEs, including experience sharing on priority climate technology needs and areas where CTCN technical assistance can accelerate countries' climate action.

Due to restrictions imposed by COVID-19, both forums were held as virtual events which attracted 455 participants (203 male; 195 female). The Africa NDE forum is taking place on the margins of the Africa Climate Week.

To raise awareness about CTCN services across the Latin American and Caribbean regions, dedicated webinars were held in February 2021 in collaboration with UNFCCC-Regional Collaboration Centres in St. George and Panama and addressed how to request technical assistance from the CTCN.

Enhanced engagement with Network members, including the private sector

Between September 2020 and August 2021, the CTCN welcomed 72 new members (of which 50 were from developing countries), bringing the total number of Network Members to 663. Application numbers continue to grow steadily.

Private sector organizations represent half of members (50%), followed by research and academic institutions (20%) and non-governmental organizations (7%). Fifty-four percent of network members come from non-Annex 1 country Parties, compared to 46% from Annex 1 country Parties. Their largest sectoral areas of expertise include the following: renewable energy, energy efficiency, water, industry, infrastructure and urban planning, waste management and early warning and environmental assessment. Network members co-developed eight webinars and trainings with the CTCN, attracting over 850 participants.



Gender-responsive engagement

The CTCN strives to generate greater awareness of the important relationship between gender, climate change and technology among the broader climate change community. Implementers of CTCN technical assistance and capacity building are required to address gender dimensions, including considerations for women's specific needs and their active participation in the design of proposed activities.

A dedicated gender and technology library[8] can be accessed on the CTCN website for gender-related publications, partners, CTCN technical assistance, technologies, and other information for exploring the topic of gender and climate change solutions further.

The CTCN, led by its Gender Focal Point, continues to engage with the WGC and other relevant organisations to ensure the representation of women's voices, experiences, needs and capacities throughout CTCN activities.



Collaboration with youth

The CTCN has increasingly engaged young people in its technology work over the last few years, with the dual goals of offering technology services to youth and providing young people with a platform from which to share their insights and experience in climate change technology development and use. The CTCN has continued to engage with the UNFCCC youth constituency, YOUNGO, on enhanced collaboration through participation at CTCN Advisory Board meetings, hosting of joint events, learning workshops and webinars with a focus on youth, climate, and innovation.

This year, in partnership with YOUNGO, the CTCN launched a Youth Knowledge Exchange programme. Through an open call for applications, two young people from Colombia and Germany were selected to collaborate with the CTCN over a four-month period to conduct research, analysis, and implementation at the nexus of technology, gender, and youth.



Collaboration with other stakeholders

The CTCN is working in collaboration with the West African Development Bank (BOAD) on the development of a GCF concept note on enhancing climate information, knowledge services and climate resilient infrastructure to build resilient livelihoods amongst agricultural communities in 5-6 countries in the Sahel region.

The CTCN also expanded its partnership with UNDP to collaborate at country level on technical assistance implementation. The CTCN met with several UNDP Africa Resident Representatives to discuss opportunities for collaboration. One result is the agreement to jointly develop the second edition of the Africa Innovates Magazine, showcasing 50 stories on the use of technology for climate solutions with a focus on African climate champions.

While many technical assistance cases are still ongoing, in Latin America, the National Circular Economy Roadmaps developed by the CTCN have now been adopted by the Governments of Brazil, Chile, Mexico and Uruguay. In addition, the collaboration resulted in the launch of the Regional Coalition on Circular Economy for Latin America and the Caribbean at the XXII Meeting of the Forum of Ministers of Environment of the region in February 2021. The new Coalition, composed of several Latin American countries and eight strategic partners (CTCN, UNIDO, the Ellen MacArthur Foundation, the Inter-American Development Bank, the Konrad Adenauer Foundation, the Platform for Accelerating the Circular Economy Coalition, the World Economic Forum and UNEP) was launched in February 2021 and aims to implement a circular economy approach through collaborative work between governments, businesses, and society as a whole. It will also support access to financing by governments and the private sector with a particular emphasis on SMEs.

Promoting greater private sector participation in NDC implementation in the Dominican Republic

The private sector plays an important role in supporting the implementation of NDCs, by creating sustainable supply chains, driving investment in low-carbon, climate-resilient infrastructure, and developing clean technologies. The Dominican Republic is therefore promoting greater private sector participation in climate action, and more specifically in GHG emissions reduction initiatives, but persistent barriers include a continued lack of incentives and the absence of enabling conditions, such as capacity and strong supporting institutions.

The CTCN is helping to map the GHG reduction targets and adaptation needs of the private, academic, non-governmental and financial sectors, and to define the challenges and barriers to seizing opportunities for cooperation and synergies between stakeholders, as identified through consultations with banks, companies, corporate groups and producer associations. The deliverables include concept notes on both mitigation and adaptation for projects in priority sectors. It is envisioned that all targeted stakeholders will be more actively involved in climate-action initiatives and increase their contributions on innovation, science, and technology.

This technology assistance advances: The Dominican Republic's Nationally Determined Contribution

This technical assistance is aligned with the provisions of the NDC and the guidelines used for development of the NDC Action Plan, specifically regarding the private sector's contributions to reducing GHG emissions and developing annual GHG emissions reports. The NDC set a target of reducing emissions by 25% below 2010 levels in 2030, which is conditional upon support from various sectors, viable climate funding mechanisms, and the corrections of existing market failures. Therefore, the participation of the private sector is crucial for attainment of this target.

Sustainable Development Goals





SUPPORT

Finance is an essential element of technology development, transfer, and deployment. As the TEC points out, involving all relevant stakeholders is crucial to bridge finance gaps, mitigate investment risks, enable government-led collaboration with international funding agencies, and promote the active participation of key ministries in national planning processes. A majority of developing countries continue to communicate their funding needs to the CTCN as part of their technical assistance requests.



Enhancing the collaboration of the Technology Mechanism with the Financial Mechanism

Since 2017, countries have increasingly sought CTCN support to develop and implement technical assistance projects utilizing their GCF Readiness and Preparatory Support Programme allocation. As reported by the GCF, the CTCN is now the largest provider of GCF readiness support for technology, implementing 75% of the GCF technology related readiness grants. To date, twenty-nine GCF readiness projects implemented by the CTCN have been approved, totalling almost 10 million USD.

Fruitful discussions have been held this year between the CTCN and GCF on advancing collaboration, including through developing a programmatic approach with emphasis on adaptation and climate technology, and strengthening engagement with Direct Access Entities to develop funding proposals with robust adaptation technology elements.

The CTCN has collaborated with the Adaptation Fund to foster innovation in climate change adaptation in developing countries through the Adaptation Fund Climate Innovation Accelerator, or AFCIA. Coordination meetings have taken place regularly between the Adaptation Fund and project implementers UNEP/CTCN and UNDP to exchange information on the implementation of AFCIA and other relevant adaptation matters.

Since 2019, the CTCN has collaborated with the NDC Partnership to serve country requests submitted to the Partnership through CTCN technical assistance. To date, five countries have received support under this partnership, with co-funding provided by the NDC Partnership totalling just over half a million USD. Furthermore, the CTCN's support to update and review Belize's NDC is expected to serve as a starting point for activities under the Climate Action Enhancement Package, thanks to the identification of a range of sectors and actions that could be undertaken to implement the mitigation and adaptation components of the country's NDC.

378,000 USD
pro-bono support secured

570,000 USD
to pilot a priority technology in the waste sector

Mobilizing pro bono and in-kind support

The CTCN mobilizes pro bono and in-kind contributions to support delivery of services to developing countries. Pro-bono support secured was 378,000 USD over the last year, including support received from the Republic of Korea and from Japan's Ministry of Environment. Furthermore, with co-funding from UNDP Togo, the CTCN is supporting the government of Togo to develop a conceptual framework for climate smart communes.

Facilitating access to financing through technical assistance

The CTCN often includes specific deliverables in its technical assistance to equip beneficiaries with the skills and information needed to mobilise finance for further technology implementation.

In Sri Lanka, for example, a project concept paper was developed as part of the CTCN's support to the city of Kurunegala. As a result, the concept note was approved for funding from the Korean International Cooperation Agency for 570,000 USD to pilot a priority technology in the waste sector. In Lao PDR, the CTCN's support successfully leveraged 10 million USD from the GCF to build the resilience of its urban population through ecosystem-based solutions.



Monitoring and evaluation

The year 2021 marks the Centre's third year of operationalization of the Paris Agreement's Technology Framework and the second year of implementation of the CTCN's updated monitoring and evaluation system. Impact data was recorded for all completed capacity building and technical assistance activities through aggregated output, outcome, and impact indicators. This data and evidence will help the CTCN achieve measurably better outcomes by providing an evidence base upon which to make improvements in the future.

The CTCN continues to make data on its service delivery publicly available. The CTCN publishes all core technical assistance information, including TA requests, response plans and project deliverables on the CTCN information portal, www.ctc-n.org.

A review of the CTCN's M&E system was conducted in the second quarter of 2021 to assess the extent of its operationalization and assess changes needed to simplify the system. Emphasis was placed on fostering an 'M&E culture' among CTCN staff and stakeholders to promote the quality and uptake of M&E results, and internal trainings were provided on how to collect and manage M&E information.

Scaling up investments to achieve NDC energy efficiency goals in Thailand's building sector

The CTCN and its Consortium partners, the National Renewable Energy Laboratory (NREL) and The Energy and Resources Institute (TERI), prepared a GCF Readiness proposal to facilitate the achievement of national targets for the building sector as defined in Thailand's 2015 Energy Efficiency Plan and its NDC. According to Thailand's NDC Road Map, 113 million of the 116 million tonnes of GHG emission reductions to be reduced by 2030 should be achieved through energy efficiency and renewable energy.

Achieving emissions reductions in the building sector is imperative to meeting these national targets. The national Building Energy Code (BEC) from 2009 mandated minimum energy standards for new buildings, but authorities had been unable to compel the construction industry, project developers and investors to adopt these standards due to a lack of guidance on relevant cost-efficient technologies. The readiness proposal determined the share of buildings included in the total mitigation potential toward the NDC, developed a financial methodology to assess the implementation potential of technologies to enhance energy efficiency, conducted an institutional assessment of current enforcement mechanisms, and mapped the responsible government agencies.

The readiness proposal was approved in 2019 with the CTCN as the delivery partner. The International Institute for Energy Conservation is the implementing partner leading on the development of energy consumption benchmarks for selected building types under the BEC and proposing a techno-financial assessment of building technologies that reduce emissions and meet energy efficiency targets. These results can be shared with developers, architects, and investors to help inform investment decisions in the building sector, laying the foundation to support market transformation, workforce development, and sustainable development in Thailand.

This technology assistance advances:

Thailand's Nationally Determined Contribution

To reduce GHG emissions by 20% from BAU by 2030 in line with the Energy Efficiency Plan, which aims to reduce the country's energy intensity by 30% below the 2010 level in 2036. This will require a 7% emissions reduction from the energy and transport sectors by 2020 relative to the 2005 baseline, a substantial share of which is expected to come from energy efficiency measures in the building energy sector.

Sustainable Development Goals






LIGHT
MOIST
WET
ACID
MOIST
pH
LIGHT

TECHNOLOGY TRENDS

Throughout the last year, countries reviewed and updated their Nationally Determined Contributions in order to enhance ambition and fast-track their implementation by strengthening in-country technical expertise and capacity building. They have also sought CTCN assistance to fulfil the implementation of their NDCs, including the development of technology roadmaps intended to serve as pathways for developing the policies, regulations, incentives, and skills necessary to achieving climate change goals in high-impact sectors.

In addition to the Technology Mechanism's joint work on technology and NDCs to stimulate the uptake of technologies, the CTCN collaborated with its Network member, the University of Michigan, to conduct an in-depth analysis of technology needs identified in updated NDC submissions. As part of the collaboration, an interactive online tool was developed to demonstrate stated technology needs by country and region.

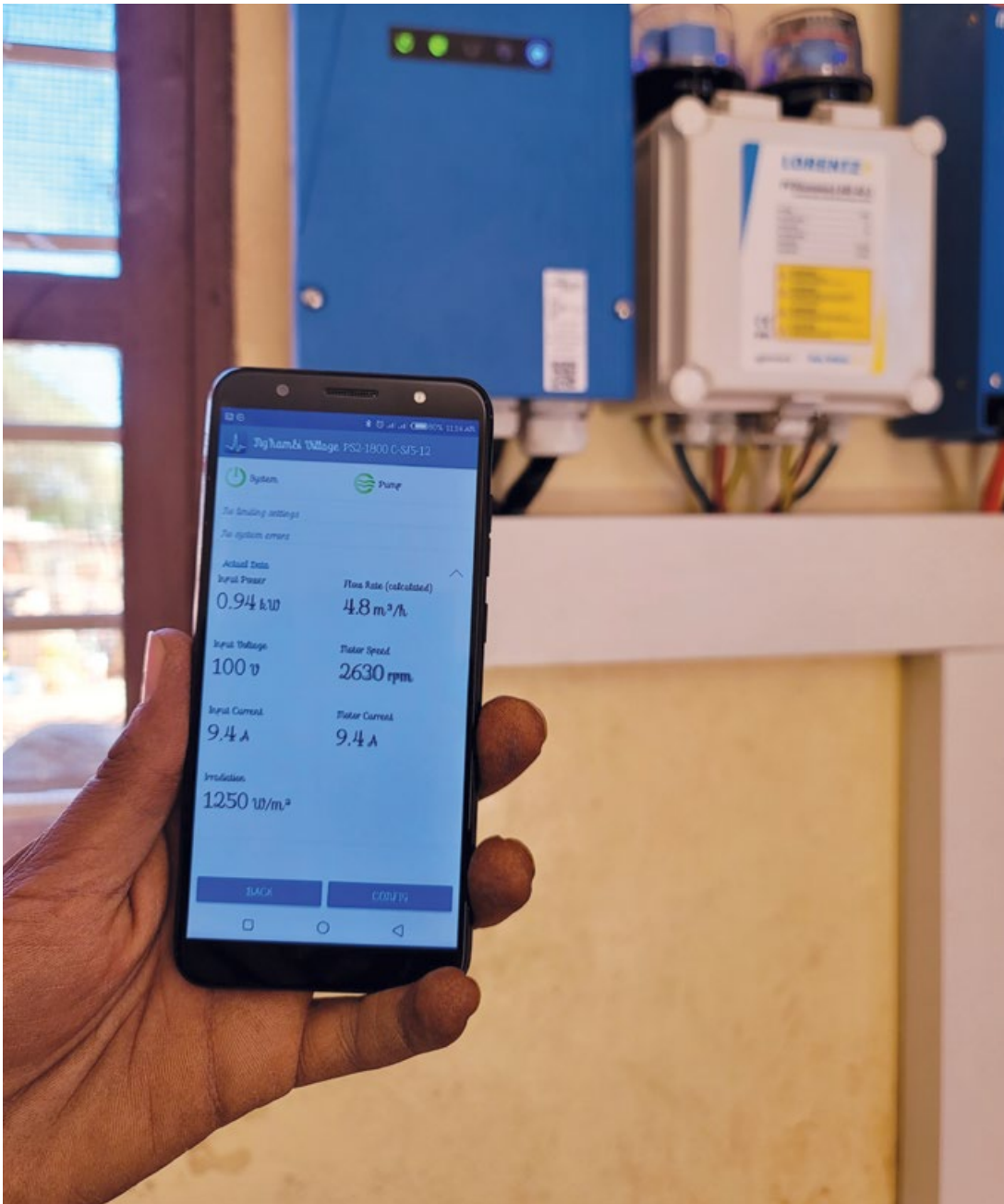
Since the adoption of the Paris Agreement in 2015, countries' technical assistance requests to the CTCN have aligned strongly with the goals and technologies reflected in NDCs. Priority areas for both include agriculture, energy-efficiency, water, climate observation and early warning, infrastructure, urban planning, and renewable energy.

Technical assistance requests are increasingly cross-sectoral in nature, revealing an interesting focus on technologies such as solar-powered irrigation for agriculture, which bestows a multitude of benefits, including reduced GHG emissions, increased resilience for agriculture, and food security in the wake of climate-induced water scarcity, while also providing benefits to women.

This year, developing countries demonstrated an increased demand for nature-based solutions related to water and agriculture, alongside a steady drive to accelerate the energy transition with renewable energy, circular economy strategies, and sustainable cities. Interest in digital transformation is also picking up steam, permeating all sectors and creating opportunities to revolutionize how we address climate change.



DIGITALIZATION



The COVID-19 pandemic has accelerated the shift to a digital economy, transforming the way we work and forcing us to adapt to a digital environment faster than we would have otherwise. These rapid changes to the ways we work, live, and do business have gained traction and become more permanent fixtures in our everyday lives. We now have an opportunity to harness these changes to drive a more efficient transition to low-carbon economies.

Climate change and the imperative to reach net-zero require that we use all the tools at our disposal, including and especially digital technologies, to adapt infrastructure and buildings, transport, energy systems and industry. Digital systems will of course play an important role in changing methods of energy generation, distribution, and consumption. But they will also be important in sectors like agriculture, which is leveraging the digital transformation to increase the resilience of food systems as well. As the World Bank points out, the digital agriculture revolution is different than earlier revolutions because it is starting from multiple entry points along the food chain simultaneously, generating large amounts of data and fuelling the emergence of digital platforms disrupting business models in the agri-food system.[9]

Big data analytics have rapidly developed in recent years, providing ever-increasing capacity to collect and analyse immense amounts of data. The emergence of cloud computing, the Internet of Things, and other tools are increasingly being used in climate science and technology. Several digital tools are game changers, enabling the development of innovative solutions for some highly complex problems. For example, in the agriculture sector, mobile technologies, remote-sensing, e-commerce, live broadcast and mobile banking practices are improving smallholder access to information and markets and can increase productivity while reducing costs. ICTs are helping to reduce food insecurity, protect the environment, and achieve the SDGs.[10]

Digitalization and agriculture

Developing agrometeorological information tools for Mali's agricultural sector

Agriculture is the main economic driver in Mali, employing roughly 75% of the population and accounting for 50% of the GDP. However, the landlocked country situated in the Sahara and semi-arid Sahel is exposed to recurrent extreme events such as severe droughts and catastrophic floods, rendering only 14% of the land suitable for agriculture. Over the past couple of decades, the country has developed some agrometeorological tools that have enabled data collection on the ground and contributed to an increase in both agricultural production and economic benefits. However, these initiatives cover just a few areas—and need to be strengthened and scaled up throughout the country.

At the request of L'Agence National de la Météorologie, the CTCN is identifying state of the art technologies, methods, and services for data collection to improve data availability, climate forecasting, early warning, adaptation planning and decision-making in the agricultural sector. It is also providing guidance to refine and improve existing methods for the collection and dissemination of agrometeorological information. Finally, the CTCN will develop the capacity of key stakeholders to use agrometeorological information to improve decision-making. The technical assistance will enhance in particular the use of data on crop conditions, and climate and soil moisture information will be improved through the use of automated download and processing methods of satellite and other relevant data.

This technology assistance advances:

Mali's Nationally Determined Contribution

It prioritizes smart agriculture to build resilience to climate change and ensure food security. These objectives would benefit from the use of agrometeorological data to increase the resilience of agricultural systems.

Sustainable Development Goals





"One of the major questions I often asked myself was how to substantially improve the current agrometeorological monitoring of crops, pastures, and water sources, as well as the food situation, in order to reduce or avoid direct and indirect economic and human losses in my country. The TAP and TNA published by the Republic of Mali in 2021 respond to this major concern by prioritizing "the use of agrometeorological information for decision making in the agricultural sector." The technical assistance provided by the CTCN will help to define, select and develop an innovative and useful system to disseminate meteorological and climatic information in order to support decision-making for rural Malians—farmers, livestock breeders, fishermen and forester—in the agricultural, livestock, fisheries and forestry sectors. We have an obligation to start living with climate variability and climate change on the one hand, while we also recognize the need to innovate, intervene and adapt is even more imperative in the medium and long term. This technical assistance will improve food security in Mali while saving many human lives."

— Fanta Tandia
L'Agence Nationale de la Météorologie





FOOD SYSTEMS



Climate change threatens food security, livelihoods, nutrition, biodiversity, and natural ecosystems. Meanwhile, new research asserts that the overall food system, accounting for energy use in food supply chains, produced roughly one-third of global emissions in 2018. Three quarters of these emissions were generated within the farm gate, or in pre-and post-production activities, while the remainder were generated through land use change induced largely by the conversion of natural ecosystems to agricultural land.[11]

According to FAO,[12] several major drivers have recently derailed progress to end world hunger and malnutrition in all its forms by 2030. The COVID-19 pandemic created formidable challenges, prompting additional reflection on how we can more effectively improve our food systems and address food security. Conflict, violence, and escalating climate-related disasters have also perpetuated unacceptably high levels of inequality, and wreaked havoc among small-scale producers in developing countries, while exposing and exacerbating vulnerabilities in our food systems.

Agriculture inhabits a unique position as a contributor to climate change, as well as a sector that needs to build resilience to the effects of climate change. Agriculture is also seen as part of the solution, given the role it can play in enhancing carbon sequestration in soil and biomass. This sets the sector apart in its ability to contribute to both mitigation and adaptation goals and capitalize on measures that create synergies and deliver a myriad of benefits to a diverse group of stakeholders.

The transformation of our food systems is integral to a sustainable future and dependent on successful technological innovation, transfer, and digitalization to improve agricultural production, bolster resilience, address food insecurity, provide healthy diets for all, and meet SDG 2 on zero hunger. In collaboration with stakeholders, the CTCN supports the agriculture sector through the development of methodologies for monitoring climate's impacts on agriculture, national agroforestry plans, knowledge management systems, technology adaptation programs, climate-smart agriculture manuals, waste management systems for livestock, and rural community-based livelihood improvement systems that support resilient agricultural practices.

Assessment of Applicable Climate Technologies for Establishing Baseline GHG Emissions from Cattle Farming in Cuba

Cuba's extensive use of livestock farming and conventional agronomic practices have resulted in low productivity and extensive environmental damage, including soil degradation, deforestation, and biodiversity loss. The country is aiming to transform the current traditional production model into one incorporating low-emissions livestock farming that can reduce GHG emissions while adapting to climate variability.

The CTCN, with partners Viresco Solutions, Inc. and Anthesis Lovola, supported the development of an initial baseline estimate of Cuba's livestock emissions and the GHG reduction potential of implementing more sustainable practices. The partners also identified the potential adaptation co-benefits of adopting climate-smart livestock management practices and are supporting the dissemination of lessons learned to local stakeholders, including researchers and local leaders, while supporting communications strategies to boost the further implementation of climate-smart management. Finally, a concept note for support from the GCF was developed for a project focused on improved climate-smart production in Cuba.

This technology assistance advances:

Cuba's Nationally Determined Contribution

Cuba's updated NDC (2020) prioritizes agriculture and energy for GHG emissions reductions. As the technical assistance is being used to provide an initial baseline estimate of emissions from the livestock sector, it can also be used to estimate Cuba's GHG emissions more accurately for inclusion in further NDC updates.

Sustainable Development Goals





"The project developed a first approximation of GHG emissions from cattle ranching and climate change resilient practices, and led to the modeling of three scenarios with a low net contribution in emissions. These results will be included in the mitigation actions in policies, strategies and plans of the climate change program (NAMA, NDC, commitments to conventions) that the country will carry out in the coming years, for the benefit of public and private producers. We are very satisfied with the results generated within the framework of this project and are interested in continuing to work with the CTCN on any other collaboration that may arise from it."

—Dr. Armando Rodriguez
Vice Minister, Ministry of Science, Technology and Environment, Cuba





ENERGY SYSTEMS



During the COVID-19 crisis, global CO_2 emissions decreased by 5.8%, which was the largest decline since emissions levels have been recorded—and almost five times greater than the 2009 drop following the global financial crisis. However, despite this decline in 2020, global energy-related CO_2 emissions remained steady, which contributed to the highest ever average annual CO_2 concentration in the atmosphere of 412.5 parts per million.[13]

Global emissions are on their way back up, recovering along with the economy. In 2021, during the early aftermath of the pandemic, global energy-related CO_2 emissions grew by 4.8% as demand for coal, oil and gas rebounded, with overall emissions in 2021 so far amounting to roughly 400 Mt CO_2, or 1.2%, below the 2019 peak. It's clear that we need technological innovation more than ever to reverse the trajectory. The CTCN has supported several countries in transforming their energy systems with renewable energy technologies, ranging from biomass briquettes and solar PV cells to geothermal resources and combined cycle power plants. It is poised to deliver support on cutting edge technologies as we move into the future.

Green hydrogen

Green hydrogen has recently acquired new momentum. A recent IEA report on the future of hydrogen concludes that technology scale-up is needed to lower costs and enable hydrogen to be more widely used. Demand for hydrogen has grown more than threefold since 1975 and continues to rise. It is light, reactive, and storable, with high energy content per unit mass, and can be easily produced at industrial scale. The current growing enthusiasm for the broad use of hydrogen for clean energy systems is based on two additional benefits: it creates no direct emissions of air pollutants or GHGs, and it can be made from a wide range of low-carbon energy sources. Thus, green hydrogen can be used as an alternative to fossil fuels in a wide range of new capacities, or to complement a greater use of electricity. It can be used in applications accustomed to using chemical fuels, it can be supplied over long distances, and it can be stored to bridge the gap between supply and demand.

Following the CTCN's support to Brazil in 2018 to internationalize its hydrogen energy research and development network, the Brazilian government joined forces with Chile and Mexico to submit a multi-country request for support on the commercialisation of green hydrogen. The multi-country collaboration allows for engagement in a regional approach to hydrogen that stimulates cooperation among projects and experts and starts a regional dialogue to ensure that regulations are harmonised, and energy markets converge.

Developing a power to gas masterplan in Lao PDR

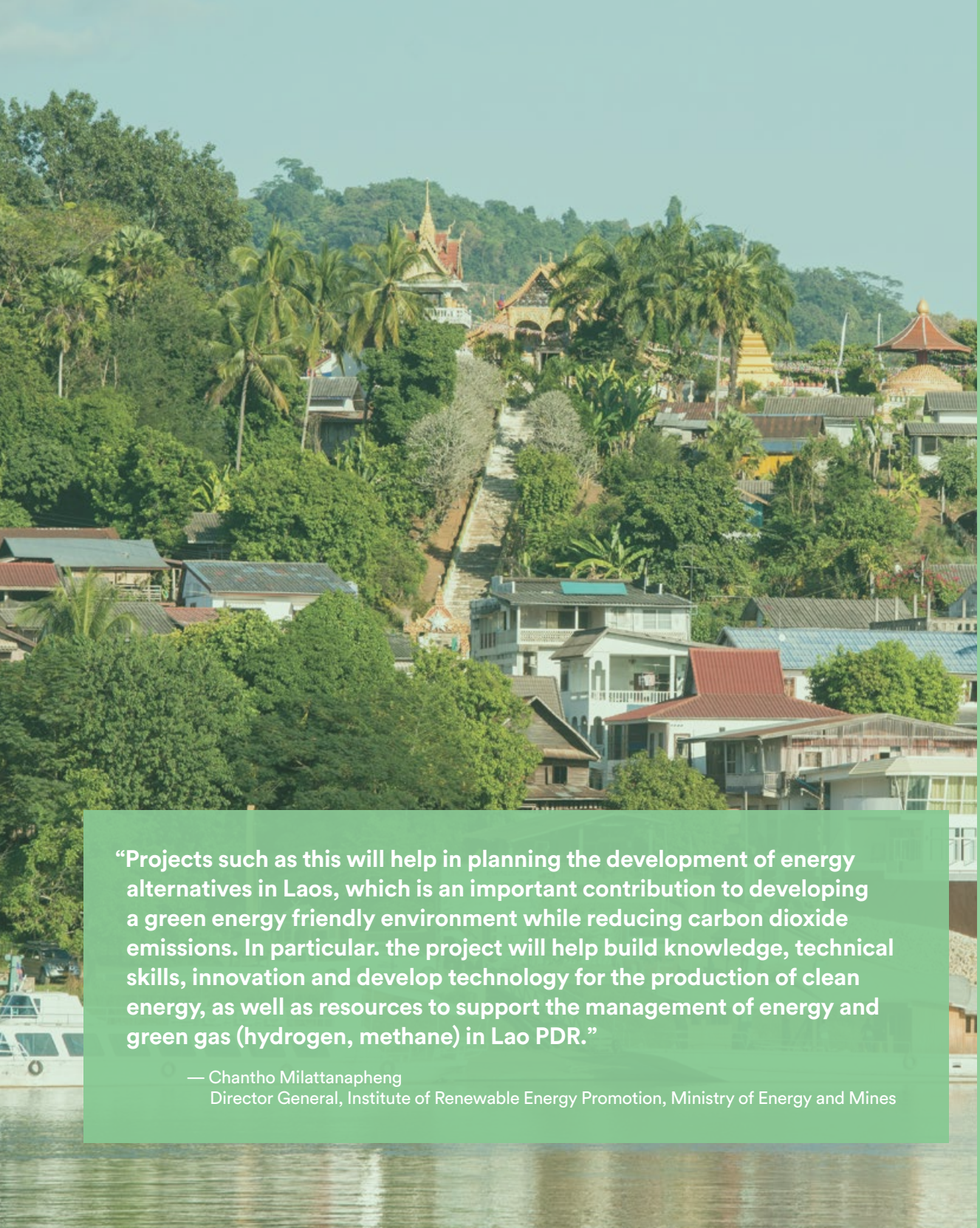
Lao PDR's high annual rainfall and geographical proximity to the Mekong River have enabled the country to produce most of its electricity using hydroelectric generation. However, it has also experienced increasing demand for imported fossil fuels to support burgeoning transport and industry sectors. This demand has led to growing GHG emissions that are expected to rise to 526,000 tonnes per year by 2030. Thus, in its efforts to increase the share of renewable energy, as illustrated in its NDC (2015) and the Renewable Energy Development Strategy in Lao PDR (2011), various ministries are exploring the feasibility of power-to-gas technology to produce hydrogen and methane fuels. However, Lao PDR lacks gas-related laws, regulations, and infrastructure to enable commercial use of these via power-to-gas processes.

The CTCN is developing a masterplan which includes strategies and roadmaps to create regulations and other policy measures for the use of green gases produced via the power-to-gas technology, including its deployment on a commercial basis. This is an important step to help stakeholders understand how to operationalize this technology on a commercial level in the future.

This technology assistance advances:
Lao PDR's Nationally Determined Contribution
To increase the share of renewable energy to 30% of energy consumption by 2025 and expand the use of large-scale hydroelectricity by adding 20,000 MW of hydroelectric capacity planned for construction after 2020 (having installed 5,500 MW of hydropower plants by 2020). The study is important for the country to evaluate how power-to-gas can contribute to NDC targets, including the transport target, which aims to increase the share of biofuels to meet 10% of the demand for transport fuels by 2025.

Sustainable Development Goals





“Projects such as this will help in planning the development of energy alternatives in Laos, which is an important contribution to developing a green energy friendly environment while reducing carbon dioxide emissions. In particular. the project will help build knowledge, technical skills, innovation and develop technology for the production of clean energy, as well as resources to support the management of energy and green gas (hydrogen, methane) in Lao PDR.”

— Chantho Milattanapheng
Director General, Institute of Renewable Energy Promotion, Ministry of Energy and Mines





WATER SYSTEMS



Water underpins all ecosystem functions and is the lifeblood of our existence. Water is connected with almost everything, and its continued availability is crucial for the sustainability of the planet. Due to its status as a finite resource, water scarcity is the primary way by which many of us are made acutely aware of climate change. Water resources are becoming increasingly scarce and less predictable. In some areas, drought has been exacerbated by higher temperatures affecting the availability and distribution of precipitation, whereas in other areas floods, tsunamis, storms, and waterborne disease outbreaks are becoming more frequent and intense. Water is critical to sustaining agricultural production and its shortage has potentially profound impacts on food security, while water quality is deteriorating in many locations, posing health threats to vulnerable populations.

Important statistics regarding this vital resource:

- Global water demand is projected to increase by 20 to 30% per year by 2050. (UNESCO, 2018)
- 72% of all water withdrawals are used by agriculture, 16% by municipalities for households and services, and 12% by industries. (UN-Water 2021)
- 2.3 billion people live in water-stressed countries, of which 733 million live in high and critically water-stressed countries. (UN-Water 2021)
- When a territory withdraws 25% or more of its renewable freshwater resources it is said to be 'water-stressed'. Five out of 11 regions have water stress values above 25%, including two regions with high water stress and one with extreme water stress. (UN-Water 2021)
- Water-harvesting and water conservation techniques could boost rainfed kilocalorie production by up to 24% and, if combined with irrigation expansion, by more than 40%. (FAO 2020)

Importantly, **the water-food-energy nexus** is fundamental to sustainable development, as demand for all three has been driven by rising populations, evolving diets, development, and rapid urbanization.[14] These three sectors are each 'hubs' of potential transformation in their own right, and when approached jointly, present an opportunity to maximize transformational outcomes.

The energy and agriculture sectors' reliance on water and the **linkages between these three domains have prompted an increased number of multi-pronged strategies for more sustainable water management**. In recent years, requests to the CTCN for technical assistance related to water have increased substantially, comprising a significant portion during the last year. Since its inception, the CTCN has been working to increase countries' resilience to the impacts of climate change on water resources, and together with Network partners, provides innovative climate adaptation technologies using GIS, capacity building to strengthen vulnerability assessments, increased use of solar PV for irrigation, gravity-driven membrane technology, and rainwater harvesting and groundwater technologies for water storage.

Water Recycling Technologies in Namibia

There is growing concern regarding the sustainability of Namibia's water resources for a growing population. Indeed, in the face of climate change, countries like Namibia are experiencing greater difficulty in providing adequate water due to its high cost, fluctuating patterns of availability driven by increased drought, and limited number of water recycling technologies.

Water recycling technologies build resilience to drought and help bolster agricultural production under worsening weather conditions. Recycling and storage can provide short-term security against periods of low rainfall and the failure or degradation of other water resources. In Namibia, however, water availability has been determined by rainfall harvested in dams as locally applicable technologies have been scarce. The city of Windhoek's Goreangab wastewater treatment plant, constructed in 1968, had been considered a pioneering facility in water reclamation. The plant treats wastewater and recycles it as well. However, it could no longer meet the rising demand, and the government ultimately requested assistance in identifying technologies for mass water harvesting.

The CTCN, the Council for Scientific and Industrial Research, UNEP DTU Partnership and Carbon Trust are conducting a detailed feasibility assessment of water recycling technologies, and developing a technology roadmap and action plan.

To support implementation of the plan, the CTCN is also creating financing and business models, as well as a proposal for a financial mechanism to boost technological deployment in households. Importantly, the technical assistance will benefit women and girls, as they usually bear the burden and increased risk of traveling long distances to collect water.

This technology assistance advances:

Namibia's Nationally Determined Contribution

In its updated NDC, Namibia emphasizes adaptation action, prioritizes water resources, and more specifically outlines priority measures that include providing "full support for integrated water resources management." Its NDC states that to ensure sustainable long-term access to water and effectively manage and conserve the country's water resources with the uncertainty of climate change, the following adaptation options are pertinent: promotion of efficient water harvesting techniques, recycling, and re-use of water, use of desalination technologies to increase water supply, and the promotion of integrated water resources management.

Sustainable Development Goals




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KOREA
TANZANIA

NATURE-BASED SOLUTIONS



According to the IPCC, we have less than 10 years to reverse course on climate change. There are no 'silver bullets' or quick fixes to solve this problem or remedy damage we have inflicted in the form of land degradation, which has undermined agricultural and ecological productivity, and threatened food security, water resources and biodiversity. **However, we do have nature at our doorstep.** The natural world embodies an "immense restorative power"[15] and offers a multitude of synergistic and cost-effective solutions. Indeed, without tapping into the power of nature, we are not likely to achieve net-zero emissions by 2050, the Paris Agreement targets or the SDGs.

According to UNEP, we must invest efforts in the conservation and restoration of biodiversity and ecosystems, enacting dramatic changes in our interactions with nature to "unlock its full potential." We must invest in what are now called nature-based solutions. IUCN defines nature-based solutions (NbS) as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits."[16]

NbS can be considered as an umbrella concept that actually covers a diverse array of ecosystem-related approaches encompassing five main categories: *ecosystem restoration, issue-specific ecosystem-related, infrastructure-related, ecosystem-based management, and ecosystem protection approaches.*

The CTCN assists countries with implementing NbS that demonstrate their effectiveness in cross-cutting areas, including disaster risk reduction, water resource management, biodiversity, and climate resilience. It has been emphasized strongly since the pandemic that technologies and practices for nature-based resilience can contribute to building back for a better society and can continue this trend if we harness their potential and facilitate the engagement of stakeholders, including the private sector.

For example, the CTCN helped a wide range of stakeholders assess the costs and benefits of various mitigation options, suitable technologies, and policies for Vietnam's rice sector, which represented a unique opportunity to scale up a nature-based solution in response to the crop's methane emissions. In collaboration with UNEP-DHI, the CTCN helped the Government of Lao PDR design ecosystem-based adaptation (EbA) solution options for building urban resilience in 6 cities, including reforestation and forest conservation, wetland restoration or conservation, water harvesting, flood bypasses, green roofs/spaces, and permeable pavements. And the CTCN is currently supporting the development of tailored coastal modelling tools (bathymetric and wave models) for Palau, Republic of the Marshall Islands, Solomon Islands and Kiribati that will enable a more accurate outline of high hazard areas, contribute to improved coastal zone risk management and planning, and facilitate more effective climate change adaptation responses.

This year, the CTCN collaborated with knowledge partner UNEP-DHI to prepare a regional technology brief focusing on NbS solutions to emerging water management challenges in the Asia-Pacific region. This publication sought to highlight the potential of NbS in the region, showcasing a diverse set of case studies, from urban greening projects and coastal protection initiatives to local wastewater treatment and community eco-engineering projects. The publication provides a myriad of examples and lessons learned, confirming that NbS is a critical mechanism to build climate change resilience within the water sector and that it contributes to the achievement of numerous SDGs.

Formulation of Kenya's ten-year national agroforestry strategy (2020–2030)

Climate projections indicate that temperatures in Kenya will increase 1.5 to 3.0°C by 2050. According to Kenya's National Adaptation Plan (2015 -2030), more than half of its counties are susceptible to flooding or drought, rendering the country's agriculture sectors extremely vulnerable. Livelihoods are at stake, given that the agriculture sector directly contributes about 25% of Kenya's GDP, while 27% of GDP is provided indirectly through linkages to agro-based industries and the service sector.

Kenya has identified agroforestry as a solution that enhances adaptation while delivering mitigation co-benefits. A multitude of national plans and strategies acknowledge the potential for agroforestry, including the National Climate Change Framework Policy of 2015, the Kenya Agriculture sector growth and transformation strategy (2017-2027), Kenya Framework for Sustainable Land Management (2016-2026), Kenya's Climate smart Agriculture Strategy (2017-2027) and the ongoing development of a strategy for achieving and maintaining 10% tree cover by 2022. However, successful implementation of agroforestry measures requires effective collaboration and partnerships between a myriad of sectoral actors, programs and strategies, and the country has been without a specific national strategic framework to facilitate this coordination.

The CTCN developed Kenya's National Agroforestry Strategy through analysis and review of current policies and strategies, the undertaking of a baseline study, regional stakeholder consultations, and support on the official launch of the national strategy. The strategy supports Kenya's goal to maintain 10% tree cover at the farm-forestry level and its implementation has the potential to contribute to 50% of Kenya's goal of abating 4.2MtCO_2e by 2030. It will also improve food security by promoting agroforestry products as dietary substitutes for nutritional benefit. In the long term, the implementation of the strategy will result in both cleaner air and water, richer soil biodiversity, water retention, reduced soil erosion and a more stable food supply.

This technology assistance advances:

Kenya's Nationally Determined Contribution

Kenya's NDC is rooted in Kenya's Vision 2030, which is a roadmap of economic growth, social inclusion and sustainable development that highlights mitigation activities such as reaching tree cover of at least 10% of the land area. The NDC is aligned with the country's continued commitment to the issue of climate change as reflected in the National Climate Change Policy as well as national policies on agriculture, power, energy, energy efficiency and water, among other sectors.

Sustainable Development Goals





"Kenya's agricultural sector is highly dependent on the natural resource capital which is impacted by climate change and land degradation. The twin challenges increase the vulnerability of farmers, the majority of whom are smallholder producers making them less adaptable to shocks. Agroforestry has been demonstrated to increase farmers' adaptive capacity by diversifying the enterprise base for smallholders while regulating the flow of ecosystem services that are necessary for sustained productivity. While a policy framework that creates an institutional home for agroforestry through inter-ministerial collaboration is the ultimate goal, this strategy aims to begin that journey by outlining actions that will strengthen investments in agroforestry by the ministry of agriculture. Intergovernmental coordination will therein support farmer advisory and other investments across the agroforestry value chains, including at the county level. The strategy is timed for implementation during the UN Decade on Ecosystem Restoration 2021-2030 which will place Kenya ahead in the agenda of "Preventing, halting and reversing the degradation of ecosystems."

— Jonathan Muriuki
Associate Scientist and Kenya Country Representative, World Agroforestry Center





URBAN SYSTEMS



The world is urbanizing rapidly. Since 2007, more than half of the global population has been living in cities. This figure is predicted to rise to 60% by 2030.[17] Cities are hubs of vital energy and opportunity and drivers of economic growth, but also create strains on infrastructure, contribute to air pollution, increase urban sprawl and account for about 70% of global GHG emissions. Rising inequalities, which were also exacerbated by COVID-19, have been most profound in densely populated urban areas, increasing the already dire need to build urban resilience to the impacts of climate-related disasters and combat social and economic losses.

Key statistics on cities and climate change:[18]

- The world's cities occupy just 3% of the Earth's land, but account for 60-80% of energy consumption and 70% of carbon emissions.
- 95% of urban expansion in the next decades will take place in developing world.
- 90% of urban growth is forecasted to happen in Asia and Africa in the next 30 years.
- Rapid urbanization is exerting pressure on fresh water supplies, sewage, the living environment, and public health.

Technology and innovation are needed to address the myriad of considerations that go into planning for more sustainable cities.

INSIDE OUR CITIES

Energy efficiency in buildings

Buildings are an integral part of the urban infrastructure. According to the OECD, however, buildings account for 28% of global emissions, and an even larger share of emissions in large cities. During the 2000-2017 period, global energy-related emissions from the building sector increased by 25%.[19] Improving energy efficiency in buildings can substantially reduce energy consumption and emissions while lowering household energy costs and creating jobs. The CTCN has worked extensively with countries to develop climate resilient infrastructure and green buildings for low-carbon societies. It collaborates with industries, organizations, and research institutions to generate and implement energy efficiency technology solutions, including the formulation of national electricity grid codes, rehabilitation of district heating systems and other technology solutions on national, industry and community levels.

Developing building code guidelines and identifying technologies to improve building energy efficiency in the Kyrgyz Republic

The building sector in the Kyrgyz Republic comprises more than 70% of the country's total energy consumption. Most public buildings were outdated, constructed between 35-75 years ago during the Soviet period, lacking retrofits and requiring a high energy demand of 250 kWh per m2 with poor insulation. Between 70-90% of energy was used for space heating, rendering buildings vulnerable to frequent electricity outages, and creating critical heating issues in schools, hospitals, and other community buildings.

The CTCN, in collaboration with state agencies, is tackling this major national challenge through the update of existing national building codes with improved energy parameters, specifically addressing the building codes for boiler installations, heating, ventilation and air conditioning (HVAC), and multicompartment residential buildings. The revised building codes will set mandatory energy performance requirements designed to regulate energy use in all new and existing public and residential buildings. The technical assistance is also providing an analysis of international best practices and gaps in the national policy and regulatory framework, identification of clean energy technologies and building materials, a technical training programme for stakeholders, and the identification of potential funding sources for technology implementation.

The efficiency improvements are expected to reduce energy consumption by 50-60% or 500 GWh/year, while also providing social and economic benefits such as reduced healthcare, operation and maintenance costs, and the improved productivity of public services, including for the most vulnerable.

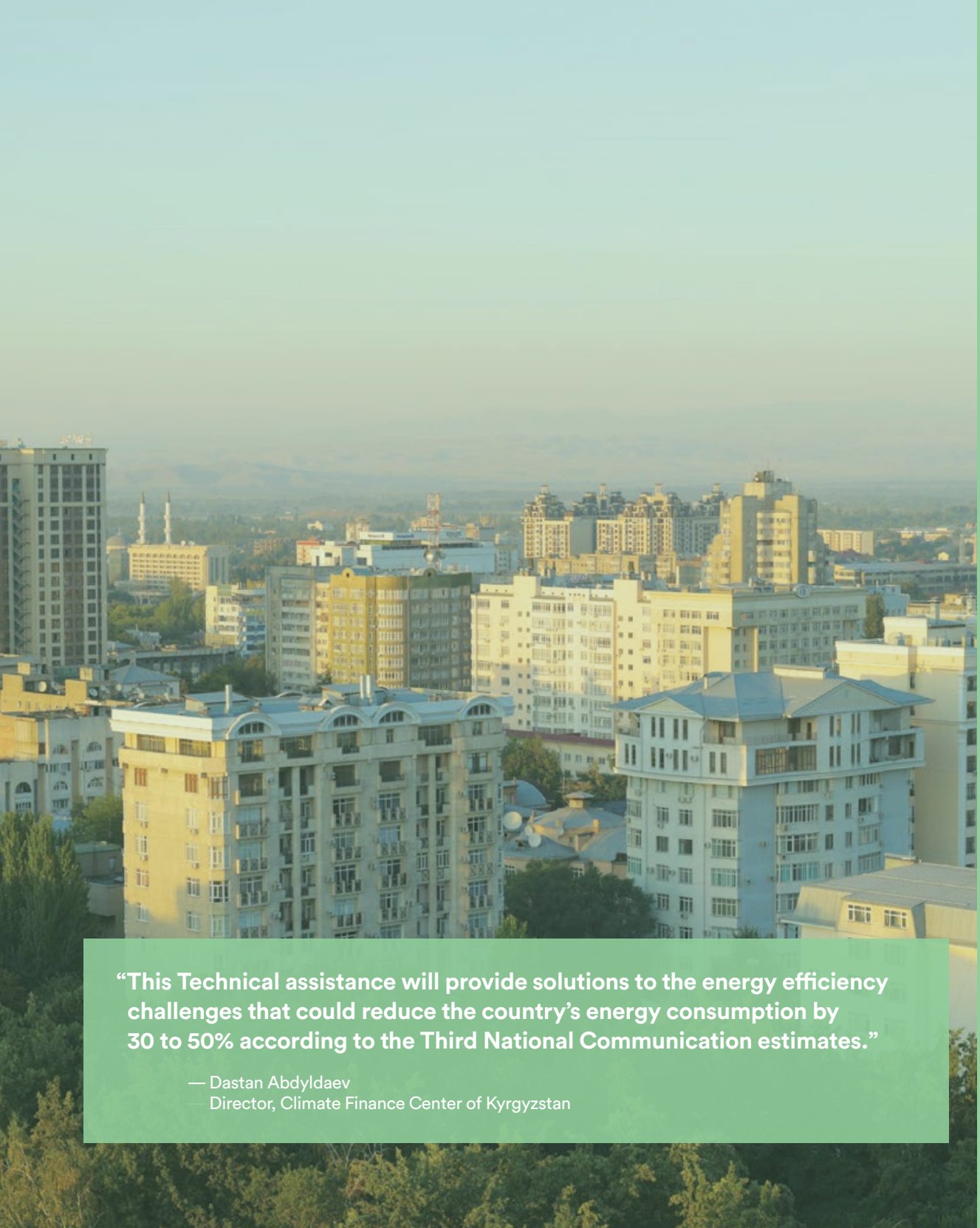
This technology assistance advances:

Kyrgyz Republic's Nationally Determined Contribution

It aims to reduce GHG emissions by 13.75% from the projected BAU baseline by 2030. Increasing the use of renewable energy technologies and energy efficient measures through the revision of building codes will contribute to improving electricity demand in the public and residential building sector and the achievement of national energy efficiency and renewable energy targets.

Sustainable Development Goals





“This Technical assistance will provide solutions to the energy efficiency challenges that could reduce the country’s energy consumption by 30 to 50% according to the Third National Communication estimates.”

— Dastan Abdyldaev
Director, Climate Finance Center of Kyrgyzstan





E-mobility

E-mobility innovations are racing ahead with recent advances in new energy vehicles, including battery electric and fuel cell electric vehicles, and alternative fuels (biofuels and e-fuels) for internal combustion engines. It is important to remember that the switch to alternative vehicles is not enough to move the dial on climate change if the source of electricity used is based on fossil fuels. The transformation of the mobility sector requires a coinciding energy sector transformation away from a carbon-intensive grid and toward renewable and more sustainable energy sources. Persisting e-mobility challenges that continue to prevent scale-up include a lack of mobility infrastructure such as charging and refuelling stations, access to renewable energy for charging, battery lifespans, and prohibitive costs to governments for building the appropriate infrastructure.

As the pandemic touched every aspect of our lives, the transport sector was no different. Cities were forced to innovate, as citizens became more concerned about both health and safety, and more focused on social distancing. With the return to cities, a renewed interest in public transit could be taking hold, ushering in a new era of excitement over e-bikes and e-scooters, and new plans for improved public transportation. Many cities are investing in new infrastructure, and with the emphasis on sustainability, technological innovation will be essential in designing these new mobility systems.

The CTCN brings together a diverse array of stakeholders to provide technical assistance on developing sustainable transport systems, including the deployment and scale-up of e-mobility transitions and feasibility studies for sustainable land transport. The Centre is supporting countries like Papua New Guinea, where national policy on EV is being drafted for land transport, alongside a roadmap for its deployment and upscaling. In Zimbabwe, the CTCN is providing similar support to assess market readiness to deploy e-mobility systems.


25/19 25FT

Accelerating the transition to sustainable mobility and low carbon emissions

Panama City has long suffered from poor air quality, exacerbated by car ownership that grew on average by 9.4% over the 2010-2015 period, and by increased urban development. Until recently, the public bus system and its outdated fleet further increased both greenhouse gas emissions and poor air quality levels, as the system comprised most of the emissions in Panama.

The CTCN, in collaboration with the Secretaría Nacional de Energía and the Ministerio de Ambiente, developed a high-level sustainable mobility plan for public bus transport in Panama City. The CTCN and its partners LOGIOS, LLC and UNIDO also established a plan to attract investments in clean transportation systems and zero-emissions technologies, starting with an evaluation of the feasibility of incorporating electric vehicles into different bus routes operating in the city. The transformation of the fleet of Transporte Masivo de Panamá, MiBus, featured the first rigorous technical analysis of electric buses that integrated real operational data with computational models to produce predictions of bus performance in a Latin American metropolitan area.

This technology assistance advances:
Panama's Nationally Determined Contribution
NDC goals include counteracting emissions growth in general through the development of energy-efficient mass public transport systems and the electrification of public transport.
Sustainable Development Goals





“The transport sector accounts for approximately 50% of energy sector emissions and nearly 30% of national emissions (excluding removals). In recent years, these emissions have been on an upward trend, which is why targeting mass transport is a priority in the development of a resilient, low-carbon economy. This technical assistance laid the foundation with technical robustness to prepare the transition of the existing fleet to electric buses as part of the next steps that the country must take towards sustainable mobility.”

— Ligia Castro de Doens
Climate Change Director, main focal point for UNFCCC
International Technical Cooperation Office of the Ministry of Environment, MiAmbiente


BYD
Build Your Dreams
Plan del
Centro.
100%


MiBus
ALCALDÍA DE PANAMÁ
BYD
ELÉCTRICO

The Climate Technology Centre & Network (CTCN) is the implementation arm of the UN Framework Convention on Climate Change (UNFCCC) Technology Mechanism. It was launched with the aim of providing technical assistance, knowledge sharing and capacity building to support a wide array of adaptation and mitigation sectors, including agriculture, vulnerability and disaster-preparedness, renewable energy, energy efficiency, industry, water, transport, and waste management. Given climate change's pervasive and increasingly urgent impacts, developing countries request support in identifying, deploying, financing, and implementing solutions to reduce GHG emissions and improve resilience. The CTCN responds to these requests by supporting all aspects of the technology cycle, empowering countries to meet commitments and raise ambitions under the Paris Agreement.

The CTCN leverages the expertise of its global network of 663 civil society, finance, private sector, and research institutions from over 100 countries in the global South and North to provide customized technology solutions. The CTCN serves as a technology broker, connecting countries to the partners that can provide the technologies, capacity building, knowledge and finance they seek.

The CTCN's work would not be possible without the National Designated Entities (NDEs) from over 160 countries. NDEs serve as technology focal points nominated by their countries to coordinate CTCN services at the national level.

The CTCN Director provides leadership, direction, and strategy in the implementation of the Centre's approved programme of work. She is supported by a small team of professional and administrative staff, together with three technical managers based in regional hubs in Mexico City (hosted by UNIDO), Nairobi and Bangkok (hosted by UNEP).

Annex I Parties

Mr. Mykhailo Chyzhenko
Ukraine

Ms. Moa Forstorp
Sweden

Ms. Orly Jacob
Canada

Mr. Sergio La Motta
Italy

Ms. Lorena Prado Orcoyen
Spain

Ms. Meropi Paneli
European Union

Mr. Erwin Rose
United States

Mr. Shiv Srikanth
United States

Mr. Kenichi Wada
Japan

Non-Annex I Parties

Ms. Halima Bawa-Bwari
Nigeria

Mr. Pedro Garcia Brito
Dominican Republic (GRULAC)

Mr. Omedi Moses Jura
Kenya (Africa)

Mr. Bongsoo Kim
Republic of Korea

Mr. Seogon Ko
Republic of Korea (Asia-Pacific)

Mr. Chang Yune Lee
Republic of Korea

Mr. Hamid Abakar Souleymane
Chad

Mr. Peter Yerima Tarfa
Nigeria

Mr. Spencer Linus Thomas
Grenada (GRULAC)

Ms. Maia Tskhvaradze
Georgia (Eastern Europe)

Mr. Ping Zhong
China (Asia-Pacific)

Non-Government Members

Mr. Mareer Husny
Technology Executive Committee

Mr. Kazem Kashefi
Adaptation Committee

Mr. Stephen Minas
Technology Executive Committee

Ms. Rose Mwebaza
CTCN Director

Ms. Vicky Noens
Standing Committee on Finance

Mr. Emerson Resende
Green Climate Fund

Observer Organization Constituencies

Ms. Anne Barre
Environmental Non-Governmental Organizations (ENGOs)

Mr. Soumya Dutta
Environmental Non-Governmental Organizations (ENGOs)

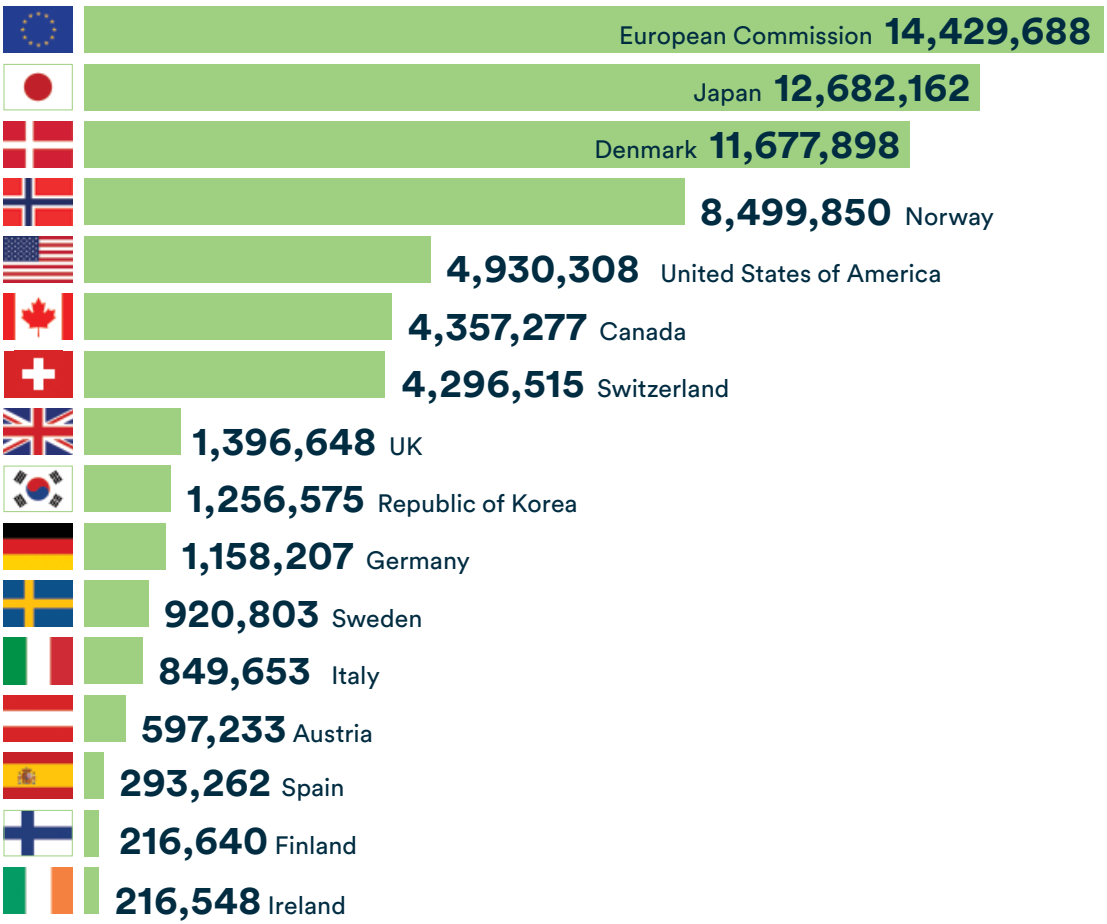
Mr. Matthew Kennedy
Research and Independent Non-Governmental Organizations (RINGOs)

Mr. Henrique Schneider
Business and Industry Non-Governmental Organizations (BINGOs)

Financial Information

$85,032,046 USD
Total Secured Income

$67,779,688 IN VOLUNTARY CONTRIBUTIONS

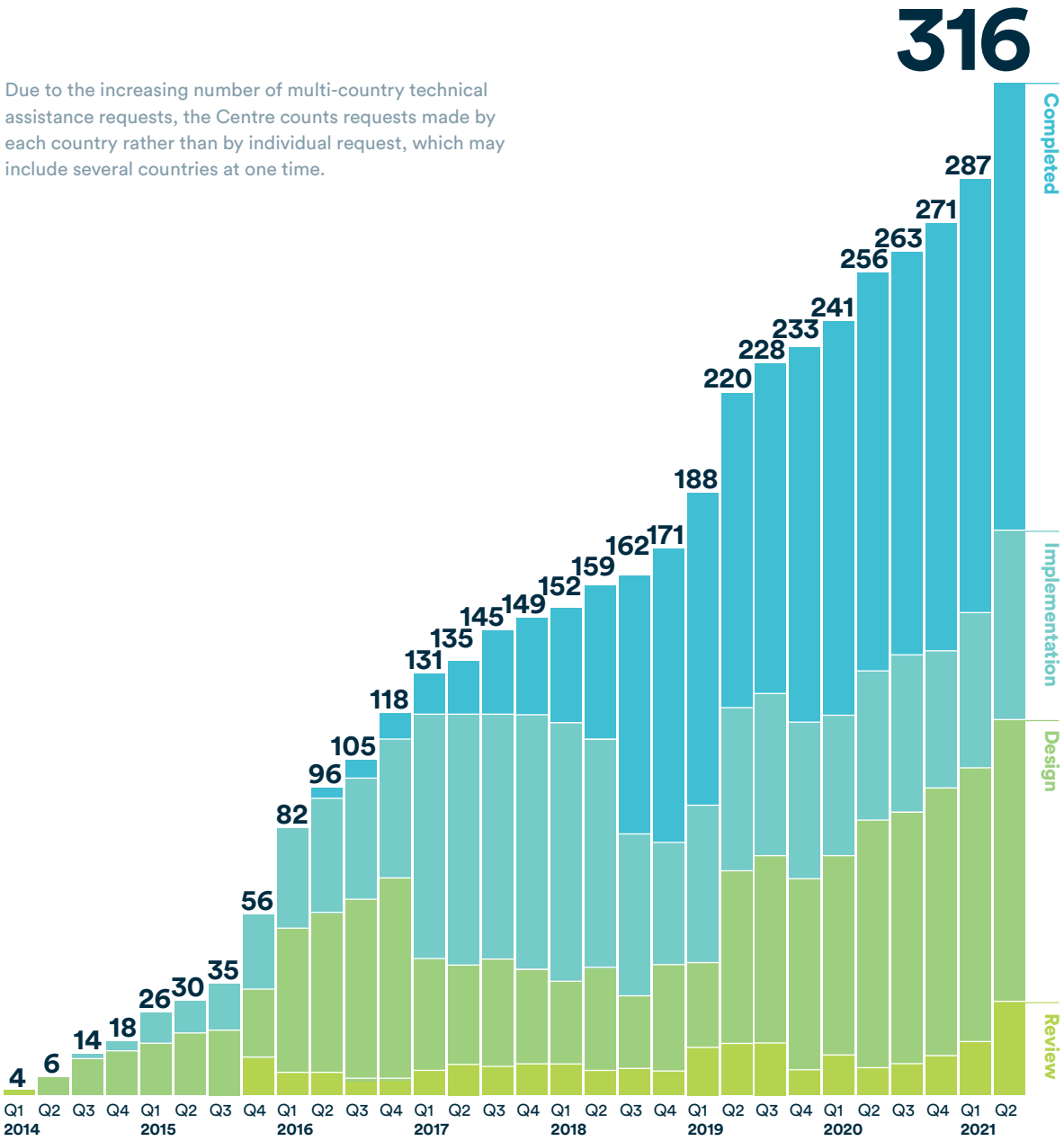


$17,252,779 FROM OTHER MECHANISMS

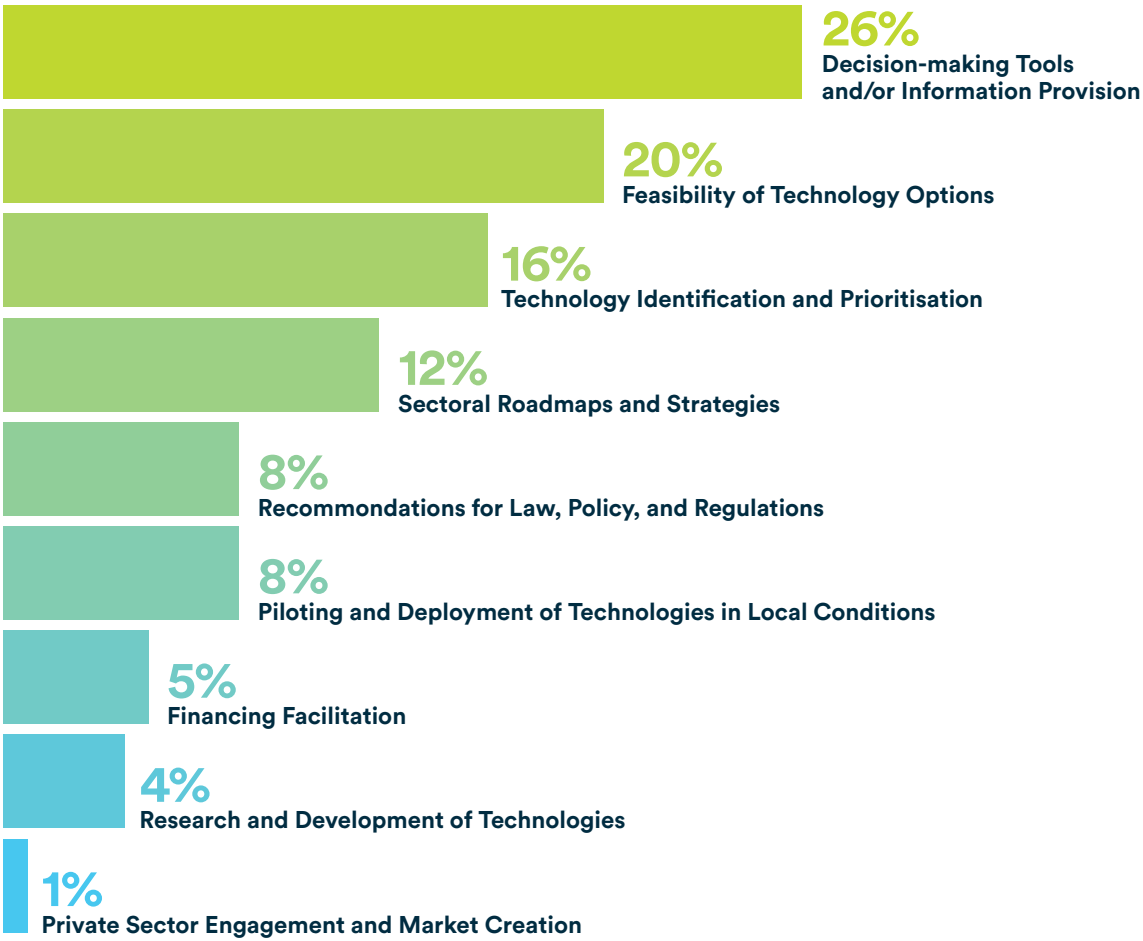


Distribution of Technical Assistance Requests by Stage

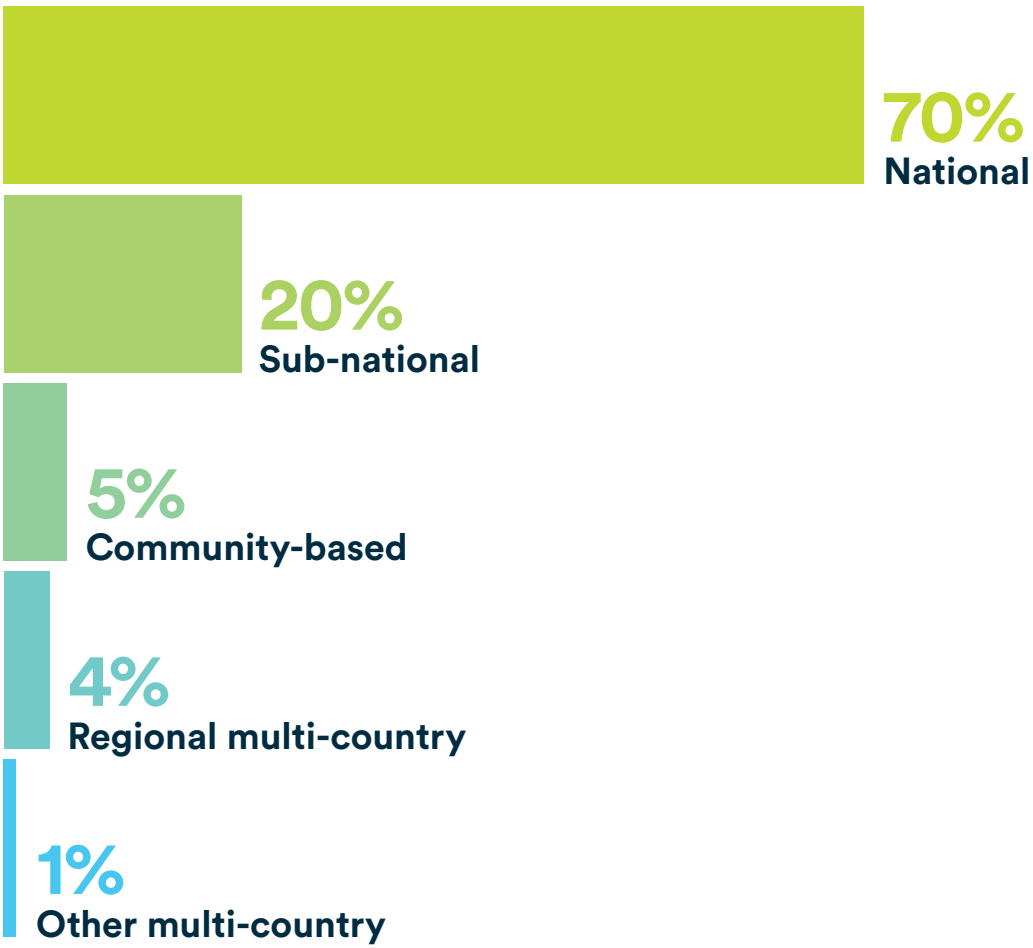
Due to the increasing number of multi-country technical assistance requests, the Centre counts requests made by each country rather than by individual request, which may include several countries at one time.



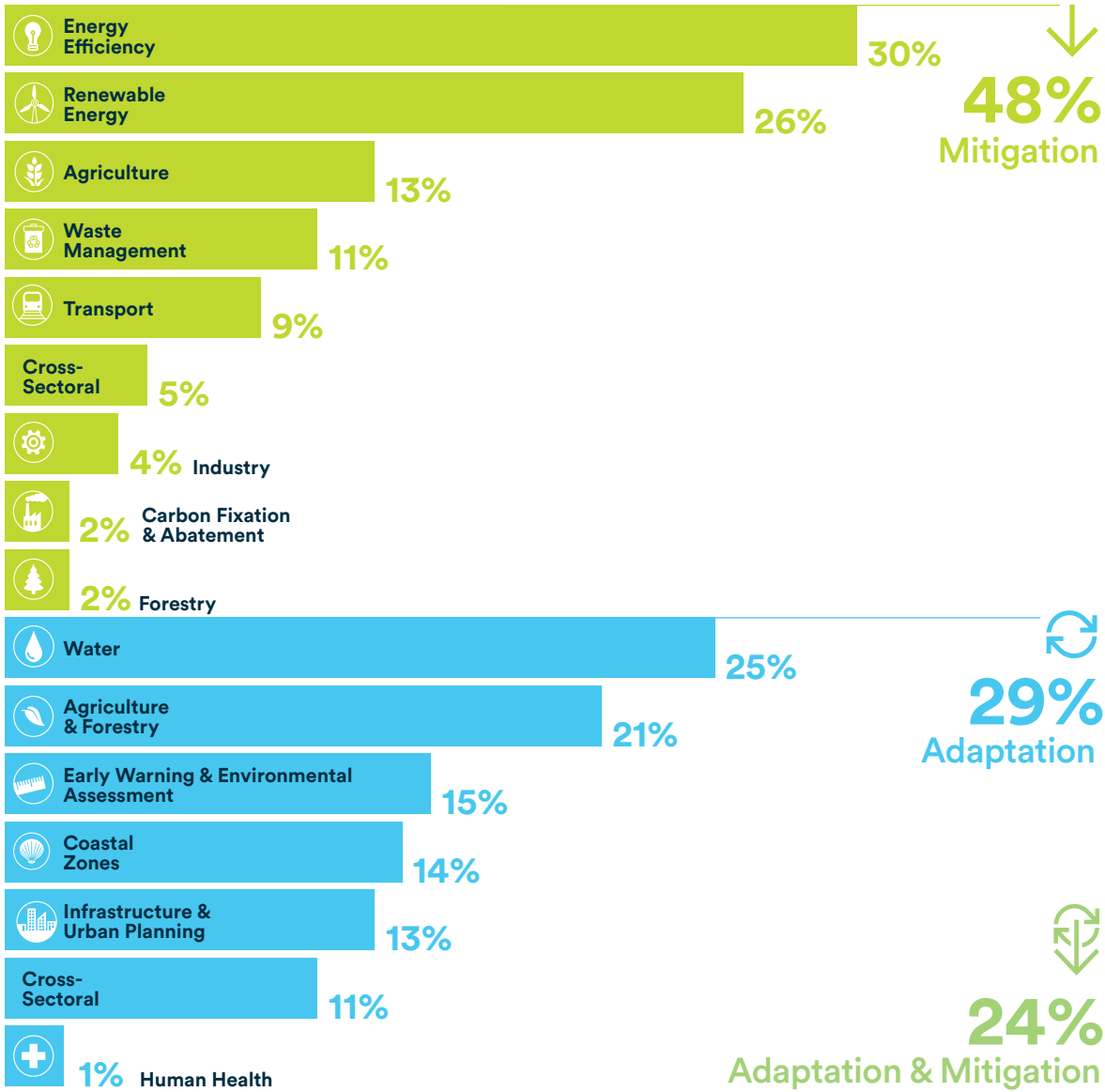
Distribution of Technical Assistance Requests by Type of Assistance



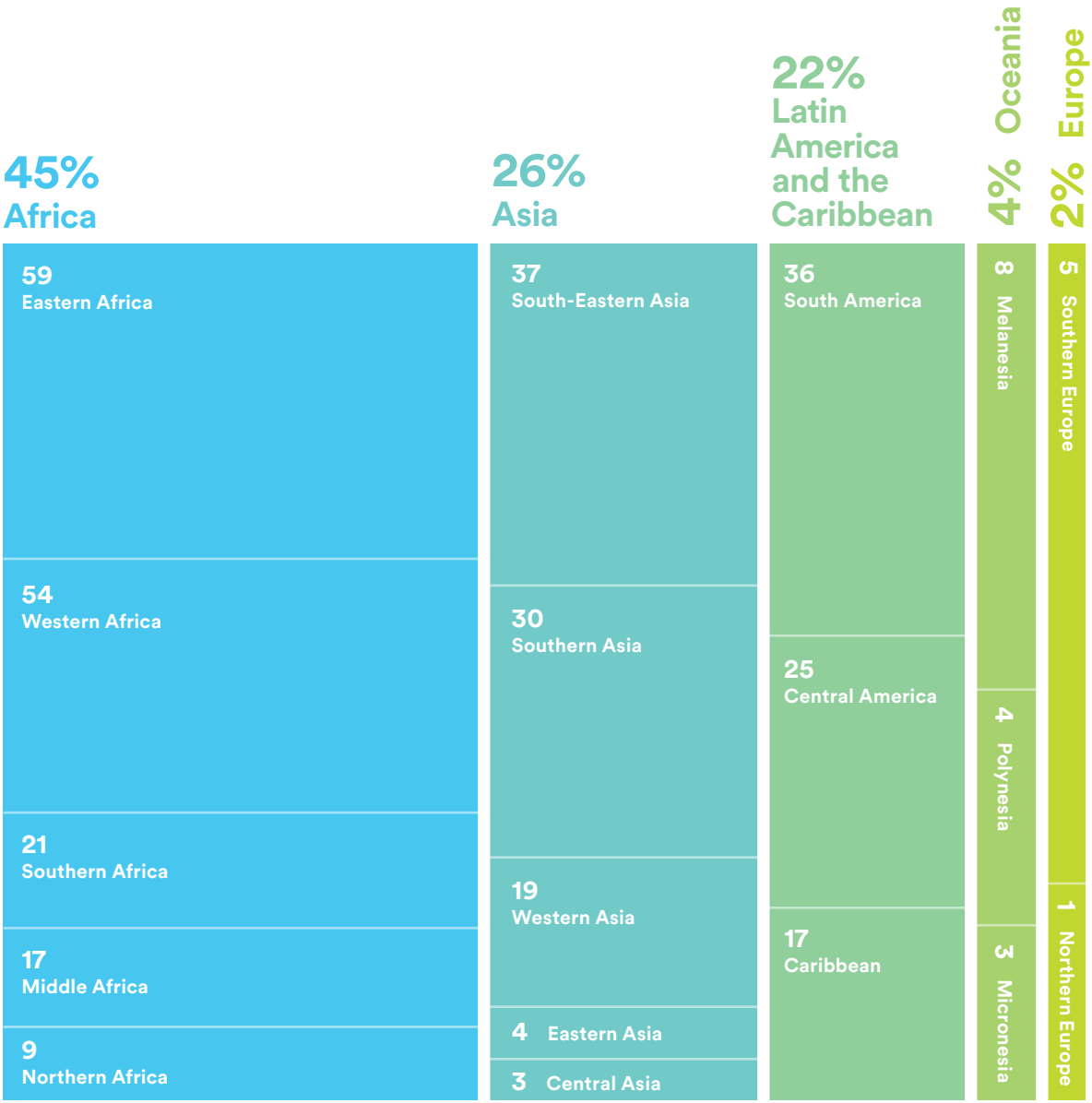
Distribution of Technical Assistance Requests by Geographical Scope



Distribution of Technical Assistance Requests by Sector



Distribution of Technical Assistance Requests by Region



Distribution of Network Members by Type of Services

491
Knowledge Management

324
Technology Development/Transfer

521
Policy and Planning

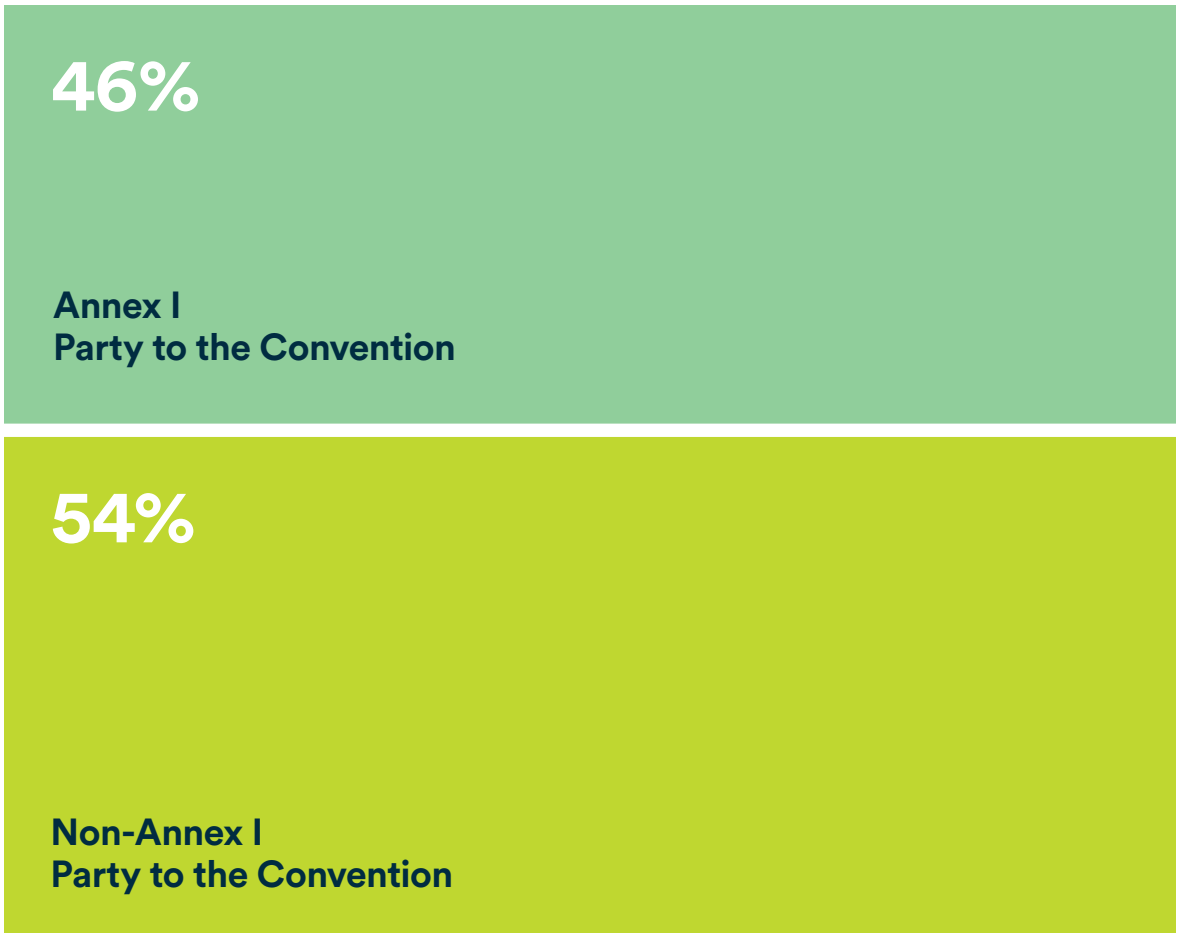
268
Collaboration in Innovation

475
Capacity Building

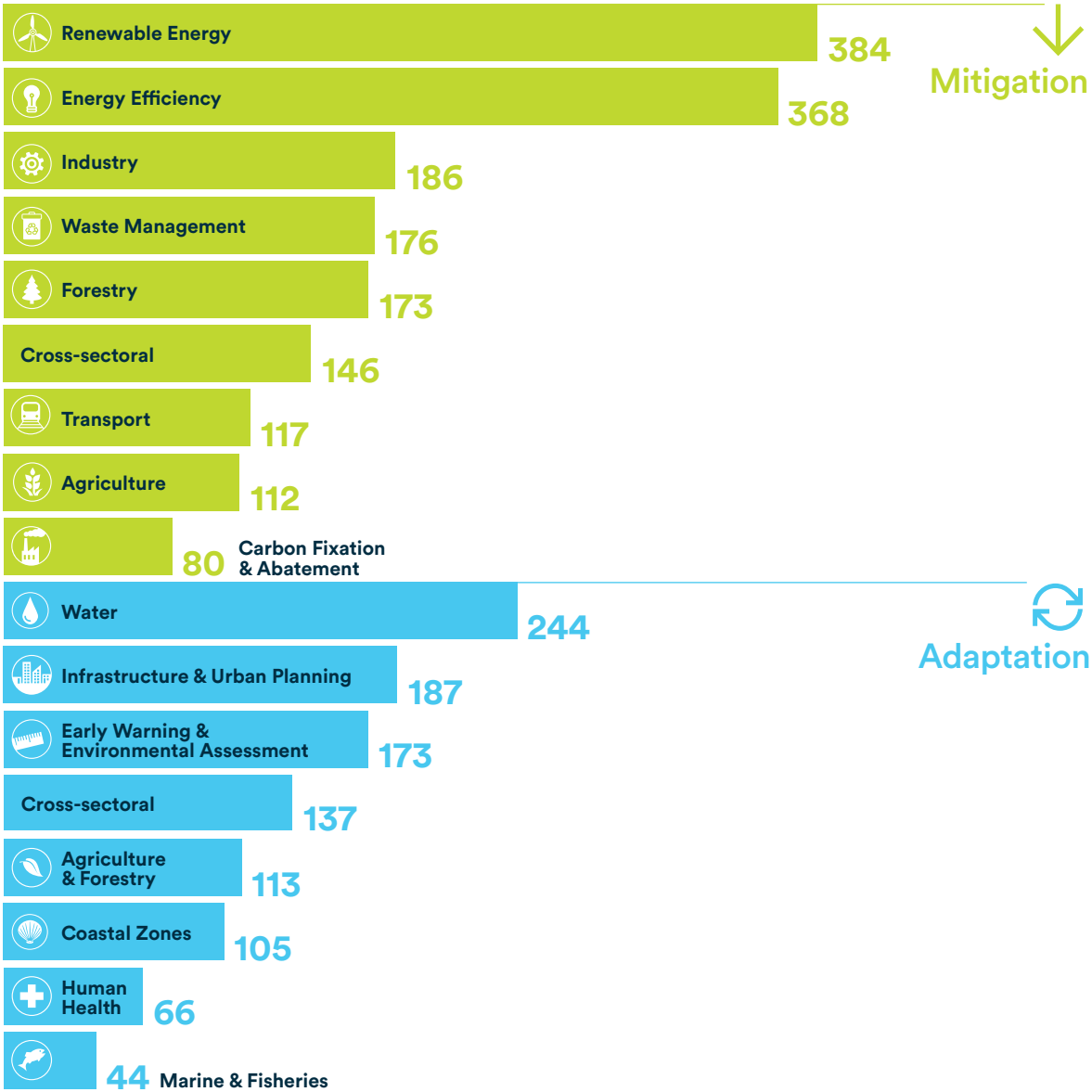
239
Investments

Distribution of Network Members by UNFCCC Annex I Status

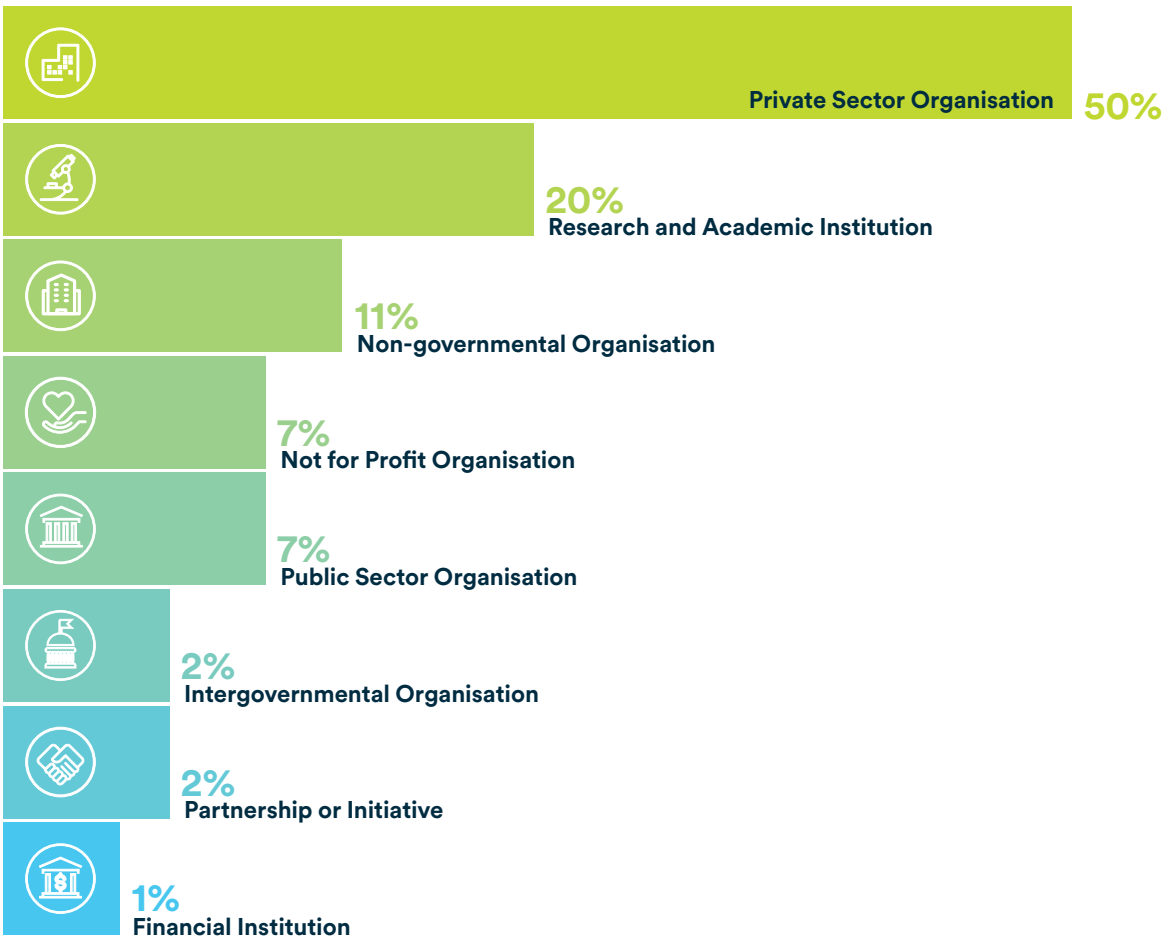
663 Network Members



Distribution of Network Members by Sector



Distribution of Network Members by Type of Institution



Network Members Engagement

69
Network members involved in TA implementation

31
Network members organized webinars

187
Network members participated in regional events

8,576
Resources provided by Network Members

National Designated Entities, CTCN technical assistance, and number of Network members by country

For more detailed information, please visit the CTCN technology portal at www.ctc-n.org.

Country	National Designated Entity	Technical Assistance
Afghanistan	Mr. Gulam Hassan Amiry, National Environment Protection Agency of Afghanistan	↻↓ Technical support and advise for the identification of technology needs in Afghanistan
Albania 1 Network Member	Ms. Enkelejda Malaj, Albanian Ministry of Environment, Forestry and Water Administration	↓ Regional Energy Efficiency Action Plan for ESD in Albania
Algeria	Mr. Noureddine Yassaa, Mr. Samy Bouchaib, Centre de Développement des Energies Renouvelables	↓ Technical assistance on the design and construction of a ground-based photovoltaic plant of 1MW rated capacity ↓ Technical assistance for the establishment of a laboratory for accreditation and quality control of photovoltaic modules
Antigua and Barbuda	Ms. Diann Black-Layne, Environment Division - Ministry of Agriculture, Housing, Lands and the Environment	↻↓ Technical Assistance for the Implementation of Projects related to the Establishment of a Sustainable Financial Mechanism for Climate Change in Antigua and Barbuda ↻ Technical assistance for resilience to climate variability in the Building Sector of Antigua and Barbuda ↻↓ Building a circular economy and reducing emissions in the waste sector ↻↓ Improving Resilience of the Education system to climate change impacts in the Eastern Caribbean region for Saint Lucia and Antigua and Barbuda
Argentina 4 Network Members	Ms. Silvia Beatriz Vasquez, Ministerio de Relaciones Exteriores, Comercio Internacional y Culto	↻ Technologies for the design and adaptation to climate change of a Regional Strategic Plan for the Coastal Management of the Province of Buenos Aires

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Armenia	Mr. Mikael Abovyan, Technology Transfer Association Union of Juridical Persons	↻↓ Guidance and Support for Promotion of Technologies for Climate Change Mitigation and Adaptation
Australia 9 Network Members	Mr. Steven Turnbull, Sustainability and Climate Change Branch, Department of Foreign Affairs and Trade	
Austria 13 Network Members Donor	Ms. Doerthe Kunellis, Division V/7 - Environmental Protection at Company Level and Technology, Federal Ministry of Agriculture, Forestry, Environment and Water Management	
Azerbaijan	Mr. Gulmali Suleymanov, Climate Change and Ozone Center within the Ministry of Ecology and Natural Resources	↻ Strengthening Capacities to Assess Climate Change Vulnerability and Impacts to Shape Investments in Adaptation Technology for Azerbaijan's Mountain Regions
Bahamas	Ms. Rhianna Neely, Ministry of the Environment and Housing	↓ Technical Assitance to Conduct a Country Wide Grid Stability Study ↻↓ Developing a national framework for the standardization of stalls and procedures for a climate smart street side vendor throughout The Bahamas
Bangladesh 5 Network Members	Dr. A.K.M. Rafique Ahammed, Department of Environment, Ministry of Environment, Forest and Climate Change	↻ Technical assistance for saline water purification technology at household level and low-cost durable housing technology for coastal areas of Bangladesh ↻ Technology for Monitoring & Assessment of Climate Change Impact on Geomorphology in the Coastal Areas of Bangladesh ↓ Development of a certification course for energy managers and energy auditors of Bangladesh
Barbados 1 Network Member		
Belarus	Mr. Andrey Pilipchuk, Ministry of Natural Resources and Environmental Protection	
Belgium 9 Network Members		
Belize 1 Network Member	Mr. Lennox Gladden, Ministry of Agriculture, Fisheries, Forestry, Sustainable Development, the Environment, Climate Change and Solid Waste Management Authority	↻↓ Technical Assistance for the development of an integrated and comprehensive agroforestry policy ↻↓ Support in the update and review of Belize´s Nationally Determined Contributions (NDC) ↻ Groundwater Monitoring for Managing Aquifers in Belize as a tool for climate-change adaptation

Country	National Designated Entity	Technical Assistance
Benin 1 Network Member	Mr. Aminou Raphiou Adissa, Ministere de l'Environnement Charge de la Gestion des Changements Climatiques, du Reboisement et de la Protection des Ressources Naturelles et Forestieres	↓ Feasibility study and development of an action plan to promote the manufacture of components of small power wind turbines and implementation of a pilot project ↻ Establishment of a sustainable system for the collection and dissemination of agro-meteorological information for producers to adapt to the adverse effects of climate change ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS ↻ West African coastal classification, hazard management and standardized communication scheme with the Coastal Hazard Wheel ↻↓ Development of a GCF concept note on Enhancing Climate Information, Knowledge Services and Climate Resilient infrastructure to Build Resilient Livelihoods amongst Agricultural Communities in the Sahel region
Bhutan	Mr. Karma Tshering, National Environment Commission Secretariat	↓ Reducing GHG Emissions from Transport by Improving Public Transport Systems through Capacity Building and Use of Technology ↓ Improving Urban Transport for Key municipalities in Bhutan for Reducing GHG Emissions: Capacity Building and Piloting of Intelligent Transport Systems ↻ Capacity development for preparing an integrated flood management plan for Dungsumchu Basin in Samdrupjongkhar
Bolivia	Mr. Ivan Zambrana-Flores, Plurinational Authority of Mother Earth	
Bosnia and Herzegovina 1 Network Member	Mr. Goran Trbic, Faculty of Sciences, University of Banja Luka	↓ Rehabilitation and Modernization of the district heating (DH) system in the City of Banja Luka - focus on energy efficiency
Botswana 1 Network Member	Ms. Penny Lesolle, Botswana Institute for Technology Research	↻↓ Updating technology needs assessment and development of technology roadmaps for prioritized technologies ↓ Leapfrogging Botswana's market to energy-efficient refrigerators and distribution transformers ↓ Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa

Adaptation Mitigation

Country	National Designated Entity	Technical Assistance
Brazil 5 Network Members	Mr. Márcio Rojas da Cruz, General Coordination of Climate, Ministry of Science, Technology, Innovations and Communications	↓ Technical Assistance for the Animation of the Brazilian Hydrogen Energy Research and Development Network ↻ ↓ Study of the circular economy for roadmap development
Burkina Faso	Mr. Ouedraogo Pamoussa, Conservation de la Nature	↻ ↓ Strengthening the resilience of cities by promoting and deploying green infrastructure in the face of climate change ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS ↻ ↓ Development of a GCF concept note on Enhancing Climate Information, Knowledge Services and Climate Resilient infrastructure to Build Resilient Livelihoods amongst Agricultural Communities in the Sahel region
Burundi	Mr. Augustin Ngenzirabona, Mr. Astere Nindamutsa, Institut Géographique du Burundi	↻ Support for the deployment rainwater technologies for agricultural purposes ↓ Support to the reinforcement of the technicians' capacities in installation and maintenance of solar equipments for technicians ↻ Easily deployable water-filled flood barrier that can be used to prevent damage from flooding and to store water vapor-tight to ensure water availability in times of drought
Cambodia	Dr. Hak Mao, Ministry of Environment - National Council for Sustainable Development	↓ Development of low-emission mobility policies and financing proposal for Cambodia ↓ Capacity assessment on local grid integration of Solar or RE based power and development of grid codes for pilot geographic area in Cambodia ↻ Application of the gravity-driven membrane (GDM) technology for supplying sustainable drinking water to rural communities in Cambodia ↻ Climate risk assessment for subnational adaptation and establishment of a local climate information system for climate change adaptation (LISA)

Country	National Designated Entity	Technical Assistance
Cameroon 3 Network Members	Mr. Forghab Patrick Mbomba, National Observatory on Climate Change	Support to the implementation of an integrated project Water-Energy-Livestock for the dairy value chain in the municipalities of Pette and Wina - North Cameroon Diagnosis on the vulnerability of three (3) communes of Cameroon in order to establish bases for developing energy and climate action plans Conducting a Technology Needs Assessment (TNA) and a Technology Action Plan (TAP) for the implementation of NDCs in Cameroon West African coastal classification, hazard management and standardized communication scheme with the Coastal Hazard Wheel Study on the valorization of forest biomass waste into energy
Canada 27 Network Members Donor	Ms. Orly Jacob, Energy and Environment Policy Division, Natural Resources Canada	
Cape Verde 1 Network Member		
Central African Republic	Mr. Maxime Thierry Dongbada-Tambano, Ministre de l'Environnement, de l'Ecologie et du Développement Durable	Study on the valorization of forest biomass waste into energy
Chad	Mr. Mahamat Hassane Idriss, Direction des Ressources en Eau et de la Météorologie, Centre et Réseau des Technologies Climatiques pour le compte du Tchad	Study on the valorization of forest biomass waste into energy

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Chile 15 Network Members	Mr. Giovanni Calderon, Agency of Sustainability and Climate Change	↓ To support the replacement of F-refrigerants used in refrigeration system in food processing production and exports (fruits and vegetables) ↻↓ The turning point for the Climate Technology Adoption in Chilean SME companies ↻ Design of Biodiversity Monitoring Network in the context of Climate Change ↻ Design of an ecological response and restoration platform against fires, for the Chilean silvo-farming sector, as a mechanism for adaptation to climate change ↻↓ Technology Needs Assessment (TNA) and Technology Action Plan (TAP) for Chile's NDC implementaion ↻↓ Real-scale urban grid-connected microgrid: capacity building evaluation, development of business models and recommendations for new regulation ↓ Large-scale production and commercialization of green hydrogen in Brazil, in Chile and in Mexico ↻↓ Study of the circular economy for roadmap development
China 19 Network Members	Mr. Chen Ji, National Center for Climate Change Strategy and International Cooperation	
Colombia 9 Network Members	Mr. Alex Jose Saer Saker, Directorate of Climate Change of the Ministry of Environment and Sustainable Development	↻ National Adaptation Monitoring System for Colombia ↓ Development of a Mechanical-Biological Treatment (MBT) pilot project of the Waste NAMA ↓ Monitoring and Evaluation of national promotion policies for energy efficiency (EE) and renewable energy (RE) against national targets
Comoros	Ms. Fatima Athoumani, Ministère de la Production, de l'Environnement, de l'Energie, de l'Industrie et de l'Artisanat	

Country	National Designated Entity	Technical Assistance
Congo - Brazzaville	Mr. Madzou Moukili, Andre Mfoukou Tsakala, Ministere du Tourisme et de l'Environnement, Ministere de la Recherche Scientifique et de l'Innovation	↓ Request for technical assistance for the implementation of a project for industrial production of charcoal and related products ↻↓ Conducting a Technology Needs Assessment (TNA) and a Technology Action Plan (TAP) for the implementation of NDCs ↻↓ Study on the identification and evaluation of technologies and industrial processes used in cement producing industries in Congo ↓ Identification of a tidal turbine technology for the electrification of small communities in the Republic of Congo ↓ Study on the valorization of forest biomass waste into energy
Congo - Kinshasa 1 Network Member	Mr. Bernard Ndaye Nkanka, Mr. Bienvenu Mupenda Kitenge, Centre d'Études et de Recherches sur les Énergies Renouvelables kitsisa de L'institut Supérieur des Techniques Appliquées-ISTA	↻↓ Conducting a Technology Needs Assessment (TNA) and a Technology Action Plan (TAP) for the implementation of NDCs in DRC ↓ Study on the valorization of forest biomass waste into energy
Cook Islands	Mr. Wayne King, Climate Change Cook Islands, Office of the Prime Minister	↻↓ Technical support and guidance to conduct a Technology Needs Assessment, develop a Technology Roadmap for the Cook Islands and provide technical assistance to develop a GCF Readiness proposal to fund the project
Costa Rica 4 Network Members	Ms. Andrea Meza Murillo, Climate Change Directorate (DCC), Ministry of Environment and Energy	↻ Development of a protocol for the planning, management and implementation of adaptation measures in land use planning at the level of Local Governments ↻↓ Development of a National Metrics System for Climate Change (SINAMECC) ↻↓ Design of a knowledge management system for tropical forests management and ecosystem services as an instrument for adaptation to and mitigation of climate change ↻↓ Towards a circular economy of local governments in Costa Rica: The case study of Turrialba ↻↓ Supporting the transition to a circular economy in Costa Rica
Cuba 1 Network Member	Mr. Armando Rodríguez Batista, Science, Technology and Innovation Department, Ministry of Science, Technology and Environment	↓ Assessment of appropriate climate technologies to prepare GHG emissions baseline for the cattle sector ↻↓ Assessment of the current status of the circular economy for developing a roadmap in several countries

Adaptation Mitigation

Country	National Designated Entity	Technical Assistance
Czechia	Mr. Pavel Zámyslický, Ministery of the environment	
Côte d'Ivoire	Mr. Kumassi Philippe Kouadio, Sustainable Environment and Energy Development Consulting Center	Establishment of an Environmental Information System (EIS) capable of guiding the choice of a good policy for sustainable development and promote optimal management of climate change issues Developing a strategy for the reduction of air pollution in the autonomous district of Abidjan in order to contribute to efforts to reduce the harmful effects of climate change Support for the implementation of an agricultural waste recovery unit Updating of Technology Needs Assessment (TNA) and Technology Action Plan (TAP) for the implementation of NDC The identification of projects for the greening and resilience of the land and coastal areas of the Commune of Cocody, Abidjan Identification and dissemination of technologies and practices for the transition towards a circular economy Mainstreaming Gender for a climate resilient energy system in ECOWAS West African coastal classification, hazard management and standardized communication scheme with the Coastal Hazard Wheel Study on the valorization of forest biomass waste into energy Development of a GCF concept note on Enhancing Climate Information, Knowledge Services and Climate Resilient infrastructure to Build Resilient Livelihoods amongst Agricultural Communities in the Sahel region
Denmark 7 Network Members Donor	Mr. Hans Jakob Eriksen, International Department, Ministry of Energy, Utilities and Climate	
Djibouti	Idriss Ismael Nour, Direction de l'Aménagement du Territoire et de l'Environnement	Study on the valorization of forest biomass waste into energy Technical assistance to identify the most suitable direct use applications and technologies in low to medium temperature geothermal systems in six African countries

Country	National Designated Entity	Technical Assistance
Dominica	Mr. Edgar Hunter, Ministry of Environment, Rural Modernisation and Kalinago Upliftment	Technical and economic feasibility of solar units and water storage on public buildings in Dominica
Dominican Republic 2 Network Members	Ms. Nathalie Flores Gonzalez, Dirección de Cambio Climático, Ministerio de Medio Ambiente y Recursos Naturales	A Community based early Warning System in every pocket from Santo Domingo, D.N. Developing a NAMA to leapfrog to advanced energy-efficient lighting technologies FTA: Technical support in the formulation of the project “Cordillera Central Biological Corridor-Los Haitises” Mapping contribution from private sector to mitigation and adaptation targets in Dominican Republic Assessment of the current status of the circular economy for developing a roadmap in several countries
Ecuador 5 Network Members	Mr. Ricardo Proaño, Undersecretariat of Climate Change, Ministry of Environment	Design and scale-up of climate resilient waste management and energy capture technologies in small and medium livestock farms Technology transfer and spread of gasifiers and biodigesters of residual biomass to minimize greenhouse gas emissions from MSW Creating a “National Diploma in Carbon Management” for Provincial GHG MRV programmes and Provincial Climate Action Strategies Assessment of the current status of the circular economy for developing a roadmap in several countries
Egypt 3 Network Members	Mr. M. Hamdy Darrag, Egyptian Environmental Affairs Agency	
El Salvador	Mr. Luis Eduardo Menjívar Recinos, Ministerio de Medio Ambiente y Recursos Naturales	Assessment of the current status of the circular economy for developing a roadmap in several countries
Equatorial Guinea	Mr. Santiago Francisco Engonga Osono, Direction Générale de l’Environnement, Ministère de la Pêche et de l’Environnement	Technical guidance and support to conduct a technology needs assessment and a technology action plan for Equatorial Guinea Study on the valorization of forest biomass waste into energy
Eritrea	Mr. Seid Abdu Salih, Department of Environment, Ministry of Land, Water and Environment	

Adaptation Mitigation

Country	National Designated Entity	Technical Assistance
Eswatini	Mr. Bafana Simelane, Ministry Tourism and Environmental Affairs, Meteorology Department	Adaptation Mitigation Building capacity for climate change science and creating awareness on Nationally Determined Contributions amongst Civil Society in Swaziland Mitigation Leapfrogging Eswatini's market to energy-efficient refrigerators and distribution transformers Adaptation Strengthening the National Disaster Management Agency's (NDMA) capacity's application of UAV and Remote sensing technology for vulnerability assessments and response planning to enhance national food security and climate resilience Adaptation Mitigation A feasibility study for the utilization of solar energy for sugarcane irrigation pumping to reduce GHG emissions from the use of carbon rich imported electricity for emerging commercial small cane growers in the Eswatini Mitigation Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa
Ethiopia 1 Network Member	Ms. Yamelakesira Tamene Bekele, Ministry of Environment and Forest	Mitigation Development of Product Standard & Comparative Labeling of "Electric Injera Mithad" Mitigation Financing strategy for Transit Oriented Development (TOD) - Addis Ababa Light Rail Transit (LRT) Mitigation Technical assistance to identify the most suitable direct use applications and technologies in low to medium temperature geothermal systems in six African countries
European Union Donor	Mr. Martin Kaspar, European Commission	
Fiji	Mr. Nilesh Prakash, Ministry of Economy	
Finland 5 Network Members Donor	Ms. Sari Tasa, Ministry of Employment and the Economy	
France 28 Network Members	Ms. Céline Phillips, ADEME - French Agency for Ecological Transition	
Gabon	Mr. Brice Biyo'o Bi Mbeng, Mr. Nestor Mintsa, Mrs. Ornela Chéryle Mathangoye, Agence Gabonaise de Normalisation	Adaptation Mitigation Conducting a Technology Needs Assessment (TNA) and a Technology Action Plan (TAP) for the implementation of NDCs Mitigation Study on the valorization of forest biomass waste into energy

Country	National Designated Entity	Technical Assistance
Gambia	Mr. Lamin Jatta, Gambia Technical Training Institute	↓ Recycling of Waste and Organic Materials (Charcoal and Briquette Production) ↓ Development of institutional framework for the instalment, use and management of solar PV systems in the Gambia ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS ↻ West African coastal classification, hazard management and standardized communication scheme with the Coastal Hazard Wheel
Georgia 5 Network Members	Ms.Maia Tskhvaradze, Ministry of Environmental Protection and Agriculture	↻ Assessment of Suitable Flood Mitigation Measures in Tbilisi, based on Tsavkisiskhevi River Extreme Flood Analysis ↓ Development of ToR for Performing a Cost Benefit Analysis (CBA) for the Introduction of EU Vehicle Emission Standards in Georgia' ↓ Tkibuli Coal Mine Methane Development project ↻ ↓ Updating of Georgia's technology needs assessment (TNA) through development of technology road maps for prioritized technologies
Germany 34 Network Members	Mr. Malte Bornkamm, Mr. Enrico Siebart, Mr. Julian Frohnecke, Federal Ministry for Economic Affairs and Energy	
Ghana 2 Network Members	Mr. Joseph Amankwa Baffoe, Environmental Protection Agency	↻ Early drought warning and forecasting considering climate change and climate variability ↓ Developing a national policy for deploying and scaping up E-mobility in 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 ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS ↻ West African coastal classification, hazard management and standardized communication scheme with the Coastal Hazard Wheel ↓ Green Cooling Africa Initiative (GCAI)
Greece 6 Network Members		

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Grenada	Ms. Merina Jessamy, National Designated Entity: Ministry of Climate Resilience, the Environment, Forestry, Fisheries, Disaster Management and Information	Improvement of water supply management through a GIS-based monitoring and control system for water loss reduction
Guatemala	Mr. Ciriaco Antonio Urrutia Lemus, Ministerio de Ambiente y Recursos Naturales	Strengthening technical capacities for the implementation of a climate online platform for the National Information System on Climate Change - SNICC - and the Environmental Information System - SIA Developing a systemic vulnerability assessment of the Guatemalan Dry Corridor ↓ Mitigation options in the waste and industrial processes sectors aligned with the updated NDC
Guinea 1 Network Member	Mr. Mohamed Alass Sylla, Mr. Kamory Traore, Direction Nationale de l'Environnement	Optimising Guinea's access to climate change adaptation funding ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS West African coastal classification, hazard management and standardized communication scheme with the Coastal Hazard Wheel
Guinea-Bissau	Mr. Viriato Luís Soares Cassamá, Instituto Nacional de Investigacao e Tecnologia Aplicada - Ministério dos Recursos Naturais	Development of a GCF concept note on Enhancing Climate Information, Knowledge Services and Climate Resilient infrastructure to Build Resilient Livelihoods amongst Agricultural Communities in the Sahel region
Guyana	Mr. Gary Best, Office of the Presidential Advisor on Environment	
Haiti	Mr. James Cadet, Direction Changements Climatiques du Ministere de l'Énvironnement	
Honduras 1 Network Member	Mr. Roberto Aparicio, National Climate Change Directorate - Energy, Natural Resources, Environment and Mining Secretariat of Honduras	Design of a national framework of climate change related indicators ↓ Reducing CO_2 emissions and deforestation by replacing traditional stoves and use of biomass pellets Nature-based solutions to increase resilience of rural mountain communities in natural protected areas affected by extreme weather events
Hong Kong SAR China 1 Network Member		

Country	National Designated Entity	Technical Assistance
Hungary	Ms. Kinga Csontos, Ministry of National Development	
India 28 Network Members	Mr. Ravi Shanker Prasad, Ministry of Environment, Forests and Climate Change	
Indonesia 4 Network Members	Ms. Ir. Laksmi Dewanthi, Director General of Climate Change, Ministry of Environment and Forestry	↓ The Development of Anaerobic Digester Technology for Palm Oil EFB Waste in Indonesia ↻ Integrated River and Coastal Management toward Sustainable Giant Sea Wall Technology Jakarta ↓ Support for e-mobility transition in Jakarta ↻ Identification of technical practices for climate-smart agriculture (CSA) in Indonesia
Iran 7 Network Members	Mr. Siroos Vatankhah, Presidency Center for Progress and Development of Iran	↓ Technology of Photovoltaic Solar Cell Design and Manufacturing ↓ Micro Combined Heat and Power Technology ↓ Desalination Plant including Power Generation (in Mega Watt scale) ↓ Optimization of Environmental Aspect and Energy Saving of Basic Oxygen Furnace Waste Gases by Replacing New Fume Treatment and Energy Recovery System Instead of Utilizer Boilers in Esfahan Steel Company ↻↓ Holding workshop on sand and dust storms (SDS) technologies to control dust storms sources with focus on degraded lands, dried up riverbeds and lakes, and plains and agricultural fields ↻ Wastewater reusing in combined cycle power plant
Iraq 2 Network Members	Susan Sami Al-Banaa, Climate Change Centre, Ministry of Environment	↻↓ Technical Guidance and Support for Conducting Technology Needs Assessment in Iraq
Ireland 2 Network Members Donor	Ms. Lucy Corcoran, Sustainable Energy Authority of Ireland	
Israel 1 Network Member	Ms. Ayelet Rosen, Ministry of Environmental Protection	
Italy 9 Network Members Donor	Mr. Sergio La Motta, Italian National Agency for New Technologies, Energy and Sustainable Economic Development	

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Jamaica 2 Network Members	Ms. Una May Gordon, Ministry of Economic Growth and Job Creation	Identification of a climate research agenda to include collaboration with academia
Japan 8 Network Members Donor	Mr. Takayuki Hirabayashi, Ministry of Economy, Trade and Industry	
Jordan	Ms. Sara Qais Al Haleeq, Ministry of Environment - Jordan	Capacity Building in Prepare Project Proposal to access Funding Technical Assistance to Support the Accreditation of JSMO Energy Efficiency Lighting Laboratory in Jordan The Clean Environment Company Feasibility Study and Technological Solutions for the Upgrade of Amman's Dirty MRF into an Integrated Solid Waste Management System
Kazakhstan 3 Network Members	Mr. Olzhas Agabekov, Ms. Saltanat Rakhimbekova, Ministry of Energy	
Kenya 12 Network Members	Mr. Kelvin Khisa, Kenya Industrial Research and Development Institute	Research on low cost green technologies for sustainable water service delivery Framework for Industrial Energy Efficiency Regulations (IEER) in Kenya Urban Briquette Making Pilot Project Formulation of Kenya's ten year national agroforestry strategy (2020 – 2030) Developing Circular Economy Roadmaps for abating GHG emissions from the Waste Sector in Kenya Technical assistance to identify the most suitable direct use applications and technologies in low to medium temperature geothermal systems in six African countries Green Cooling Africa Initiative (GCAI)
Kiribati	Ms. Maryanne Mikaere Namakim, Office of the President	Capacity Development to Address Risks in the Coastal Zones Associated with Climate Change
Kuwait	Mr. Sheikh Abdullah Ahmad AlHumoud Alsabah, Environment Public Authority (EPA)	

Country	National Designated Entity	Technical Assistance
Kyrgyzstan 1 Network Member	Mr. Kanat Abdrahmanov, The Climate Finance Center of the Kyrgyz Republic	The technology needs assessment and technology action plans for the Kyrgyz Republic Development of Policy Guidelines on Building Codes for Enhancing Energy Efficiency and Identification of Viable Technologies for Public Buildings in the Kyrgyz Republic
Laos	Mr. Syamphone Sengchandala, Ministry of Natural Resources and Environment, Department of Disaster Management and Climate Change	City Climate Vulnerability Assessment and Identification of Ecosystem-based Adaptation Intervention FTA: Designing ecosystem-based solution for building resilience of urban populations in Lao PDR Developing a power to gas masterplan in Lao PDR
Latvia	Mr. Raimonds Kass, Ministry of Environmental Protection and Regional Development	
Lebanon 2 Network Members	Ms. Samar Malek, Ministry of Environment	Development and enforcement of an efficient appliance strategy in Lebanon
Lesotho	Mr. Lefa Thamae, Ministry of Communications, Science and Technology, Department of Science and Technology	Leapfrogging Lesotho's market to energy-efficient refrigerators and distribution transformers Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa
Liberia	Mr. Christopher B. Kabah, Environmental Protection Agency of Liberia	Develop a renewable energy investment framework and conceptualization of a funding proposal to increase the share of renewable energy based electricity generation to achieve Liberia's NDC commitments The establishment of an Integrated Coastal Zone Management (ICZM) Plan to protect lives, properties and the environment Mainstreaming Gender for a climate resilient energy system in ECOWAS Upscaling Lowland Rice Production to improve food security through improved solar powered irrigation practices
Lithuania	Mr. Ricardas Valanciauskas, Agency for Science, Innovation and Technology	

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Madagascar	Mr. Michel Laivao, Mr. Todisoa Manankasina, Mr. Germain Randriasandratana, Ministère de l'Environnement, de l'Ecologie et des Forêts	Creating a technology development and education centre for climate change
Malawi 1 Network Member	Mr. Lyson Kampira, National Commission for Science and Technology	↓ Leapfrogging Malawi's market to energy-efficient refrigerators and distribution transformers ↓ Developing Circular Economy Roadmaps for abating GHG emissions from the Waste Sector in Malawi ↓ Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa
Malaysia 1 Network Member	Ms. Sugumari Shanmugam, Ministry of Environment and Water	Development of a Multi-Hazard Platform for forecasting Local Level Climate Extremes and Physical Hazards for Iskandar Malaysia
Maldives	Mr. Mareer Mohamed Husny, Climate Change Department, Ministry of Environment and Energy	Establishment of a skimming well gallery system for agricultural use in HDh.Nolhivaranfaru of Maldives
Mali	Mr. Sekou N'Faly Sissoko, L'Agence Nationale de la Météorologie	Study of technical and economic feasibility to remove barriers to the implementation of drying and storage technologies for okra, mango and potatoes to support food security Strengthening of the implementation of climate change adaptation and clean development actions by rural communities in Mali Development of agrometeorological information tools and processes for decision-making in the agricultural sector ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS ↓ Study on the valorization of forest biomass waste into energy Development of a GCF concept note on Enhancing Climate Information, Knowledge Services and Climate Resilient infrastructure to Build Resilient Livelihoods amongst Agricultural Communities in the Sahel region
Marshall Islands	Mr. Clarence Samuel, Office of Environmental Policy and Planning Coordination	Capacity Development to Address Risks in the Coastal Zones Associated with Climate Change
Mauritania	Mr. Sidi Mohamed Ould El Wavi, Ministère de l'Environnement et du Développement Durable	

Country	National Designated Entity	Technical Assistance
Mauritius 2 Network Members	Mr. Jogeeswar Seewoobaduth, Ministry of Environment, Solid Waste Management and Climate Change	↓ Assessment and identification of technology needs and best practices for reducing the GHG emitting potential of the energy sector in Mauritius ↻ Identification, Characterization and exploitation of Potential Offshore Sand Banks/Deposits ↻ Climate Change Vulnerability and Adaptation Study for the Port of Port Louis ↓ Feasibility study of anaerobic digestion of the organic fraction of solid wastes in Mauritius ↓ Green Cooling Africa Initiative (GCAI)
Mexico 9 Network Members	Ms. María Amparo Martínez Arroyo, National Institute for Ecology and Climate Change	↻↓ Analysis and technical review of the existing legal framework for the implementation of a circular economy policy in Mexico ↻↓ Analysis and technical review of the existing legal framework for the implementation of a circular economy policy in Mexico ↻↓ Study of the circular economy for roadmap development
Moldova	Ms. Ala Druta, Climate Change Office, Ministry of Environment	
Mongolia 1 Network Member	Ms. Anand Tsog, Climate Change and International Cooperation Department, Ministry of Environment and Tourism of Mongolia	↻ Development of climate change adaptation strategy for Buir Lake, Mongolia, using nature-based solutions ↻↓ Enhancing climate resilience and economic sustainability of livestock farming in a rural community of Mongolia
Montenegro	Ms. Biljana Kilibarda, Ministry of Sustainable Development and Tourism	
Morocco 1 Network Member	Mr. Mustapha Bendehbi, Unité chargée des changements climatiques, Ministère de l'environnement	

Adaptation Mitigation

Country	National Designated Entity	Technical Assistance
Mozambique	Mr. Antonio Jorge Raul Uaissone, Ministry for Science and Technology	↓ Feasibility study to use waste as fuel for cement factories ↓ Development of energy efficient appliances and equipment strategy ↻ Mapping potential areas for implementing rainwater harvesting and conservation systems in Mozambique ↻ Solar based irrigation for women empoerment - "pay as you irrigate" as a means of water management and food security in Mozambique ↓ Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa
Myanmar (Burma)	Ms. Thin Thuzar Win, Environmental Conservation Department, Ministry of Natural Resources and Environmental Conservation	↻ Promoting data for climate change, drought and flood management in Myanmar ↻ Strengthening safe drinking water supply in rural Myanmar based on the gravity-driven membrane (GDM) technology
Namibia	Dr. Jonathan Mutau Kamwi, Department of Environmental Affairs	↻ Transformative water harvesting plan for Namibia ↓ Leapfrogging Namibia's market to energy-efficient refrigerators and distribution transformers ↻ Water Recycling Technologies in Namibia ↓ Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa ↓ Green Cooling Africa Initiative (GCAI)
Nauru	Mr. Reagan Moses, Ministry of Commerce, Industry and Environment	↓ Feasibility Study for Sustainable Land Transport for Nauru ↓ Ocean Energy Technical Pre-Feasibility Study
Nepal 2 Network Members	Mr. Raju Sapkota, Ministry of Forests and Environment	↓ Developing policy framework and business model to promote sustainable use of biomass briquettes in Nepal ↻ Technical support to formulate a National Agroforestry Policy for Nepal ↻ Developing Integrated Water Resources Management (IWRM) Models for Hill Ecosystem in Nepal
Netherlands 19 Network Members		

Country	National Designated Entity	Technical Assistance
New Zealand 5 Network Members	Ms. Victoria Thomson, Climate Change Division, Ministry of Foreign Affairs and Trade	
Nicaragua 1 Network Member		
Niger	Mr. Kamayé Maâzou, Cabinet du Premier Ministre	↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS ↻↓ Development of a GCF concept note on Enhancing Climate Information, Knowledge Services and Climate Resilient infrastructure to Build Resilient Livelihoods amongst Agricultural Communities in the Sahel region
Nigeria 9 Network Members	Mr. Chukwuemeka Okebugwu, Department of Climate Change, Federal Minister of Environment	↓ Technical assistance to carry out survey of potential carbon storage sites in geological formation ↻↓ Technical Guidance and Support for Conducting Technology Needs Assessment in Nigeria ↓ Developing a national eMobility policy and framework for deploying and scaling up E-mobility in Nigeria ↓ Developing Institutional Framework for the Energy Efficiency Act and Regulations targeting energy intensive sector (household and industries) in Nigeria ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS
North Korea	Mr. Pae Yong Hyon, State Commission of Science and Technology	↓ Building Capacity for Environmental Life Cycle Assessment(ELCA) in DPRK
Norway 3 Network Members Donor		
Pakistan 2 Network Members	Mr. Muhammad Irfan Tariq, Ministry of Climate Change - Pakistan	↻↓ Technology Guidance and Support for Conducting the Technology Needs Assessment (TNA) ↓ National Certification Scheme For Energy Auditors ↓ Deployment and scaleup of electric vehicles in Pakistan ↻ Improving adaptive capacities of water sector through surface rain water harvesting technology adoption

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Palau	Mr. David Idip, Palau Automated Land and Resource Information System Office, Ministry of Finance	Capacity Development to Address Risks in the Coastal Zones Associated with Climate Change
Panama 2 Network Members	Mr. Milciades Concepción Lopez, Mrs. Ligia Castro, Ministry of Environment	↓ Accelerating the transition to sustainable mobility and low carbon emissions in Panama City ↓ Development of a Marine Dynamics database for the Panamanian coasts to assess vulnerability and climate change impacts to sea level rise
Papua New Guinea	Mr. Joe Pokana, Climate Change and Development Authority	↓ Technical support for Energy Efficiency on Refrigeration and Air Conditioning Sector Regulations Development options ↓ Developing a national policy for deploying and scaling up E-mobility and supporting sustainable infrastructure in Papua New Guinea
Paraguay 1 Network Member	Mr. Ulises Lovera, Ms. Nora Paez, Secretaría del Ambiente	Determination and evaluation of environmental flows and river basin management plans based on the Tebicuary River priority basin ↓ Technical guidance and support to conduct a technology needs assessment and a technology action plan for Paraguay ↓ Assessment of the current status of the circular economy for developing a roadmap in several countries
Peru 5 Network Members	Ms. Silvia Cristina Rodriguez Valladares, Dirección de Cambio Climático y Desertificación, Ministerio del Ambiente	Water planting and harvesting as alternative technology for capturing and storing water in high mountain areas in the Puno region Design climate change adaptation measures for the national monitoring system of adaptation measures in the Walter sector and sustainability analysis for development and implementation
Philippines 2 Network Members	Mr. Emmanuel M. De Guzman, Climate Change Commission	
Poland	Ms. Agnieszka Kozlowska-Korbicz, Ministry of the Environment - Poland	
Portugal 3 Network Members		
Romania 1 Network Member		
Russia 1 Network Member	Mr. Sergei Vasin, Ministry of Education and Science	

Country	National Designated Entity	Technical Assistance
Rwanda 2 Network Member	Mr. Faustin Munyazikwiye, Rwanda Environment Management Authority	↓ Technical assistance to identify the most suitable direct use applications and technologies in low to medium temperature geothermal systems in six African countries
Saint Kitts and Nevis 1 Network Member	Ms. June Hughes, Ms. Cheryl Jeffers, Department of Environment	↻ Increase the water supply system resilience in SKN by managing aquifers recharge (MAR) and incorporating drought risks modelling as a planning tool for climate change adaptation measures
Saint Lucia 2 Network Members	Ms. Samanthia Justin, Ms. Caroline Eugene, Ministry of Education, Innovation, Gender Relations and Sustainable Development, Department of Sustainable Development	↻ ↓ Improving Resilience of the Education system to climate change impacts in the Eastern Caribbean region for Saint Lucia and Antigua and Barbuda
Senegal 1 Network Member	Mr. Issakha Youm, Centre d'Etudes et de Recherches sur les Energies Renouvelables	↓ Development of energy efficiency projects in industries and services ↓ Green technology deployment in industrial zones ↓ Technical and Economic Feasibility of Solar Milling in Women-led Agri-Food SMEs in Senegal ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS ↻ West African coastal classification, hazard management and standardized communication scheme with the Coastal Hazard Wheel ↻ Study on the valorization of forest biomass waste into energy ↻ ↓ Development of a GCF concept note on Enhancing Climate Information, Knowledge Services and Climate Resilient infrastructure to Build Resilient Livelihoods amongst Agricultural Communities in the Sahel region
Serbia 1 Network Member	Mr. Vladica Bozic, Ministry of Agriculture and Environmental Protection	↓ Modernization of the district heating system and improvements of energy efficiency of buildings in the City of Belgrade
Seychelles	Mr. Will Agricole, Energy and Climate Change Department, Ministry of Environment, Energy and Climate Change	↓ Formulating a National Electricity Grid Code for Seychelles ↓ Assistance in developing a TOR as a first step in creating an Electricity Masterplan

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Sierra Leone	Mr. Ibrahim Sinneh Kamara, Sierra Leone Meteorological Agency, Ministry of Transport and Aviation	↻↓ Conducting a Technology Needs Assessment (TNA) and a Technology Action Plan (TAP) for the implementation of NDCs, Sierra Leone ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS
Singapore 1 Network Member	Mr. Sin Liang Cheah, National Climate Change Secretariat	
Slovakia	Mr. Igor Veres, Ministry of the Environment	
Slovenia	Mr. Zoran Kus, Ministry of Agriculture and Environment	
Solomon Islands	Mr. Hudson Kauhiona, Ministry of Environment, Climate Change, Disaster Management and Meteorology	↓ Solomon Water - Energy Efficiency and Self-generation Plan ↓ Feasibility Study for Low Carbon Transport in Solomon Islands ↻ Capacity Development to Address Risks in the Coastal Zones Associated with Climate Change
South Africa 17 Network Members	Dr. Henry Roman, Department of Science and Innovation	↓ Substantial GHG emissions reduction in the cement industry by using waste heat recovery combined with mineral carbon capture and utilization ↻↓ The Development of Technology Needs Assessment at Subnational Level ↻ Tree Monitoring for Climate Adaptation in the City of Mbombela ↓ Capacity Development for the Deployment of Demand Response (DR) in South Africa to Mitigate against Carbon Emissions and Electricity Supply Shortages ↻↓ Developing an STI-led cross-sectoral Circular Economy Roadmap for abating GHG emissions in South Africa ↓ Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa
South Korea 83 Network Members Donor	Mr. Woojin Han, Ministry of Science and ICT (MSIT)	
South Sudan	Mr. David Batali Oliver Samson, Ministry of Environment – South Sudan	↻↓ Technical Guidance and Support for Conducting Technology Needs Assessment

Country	National Designated Entity	Technical Assistance
Spain 34 Network Members Donor	Ms. Lorena Prado Orcoyen, Spanish Climate Change Office, Ministry for the Ecological Transition and Demographic Challenge	
Sri Lanka 3 Network Members	K. N. Kumudini Vidyalankara, Ministry of Environment	Technical Assistance for the Development of a Climate Smart City in Kurunegala Technical Assistance for the Development of a Climate Smart City in Kurunegala (Mitgation Element) Technical assistance for the technology adaptation program for farmers to minimize the impacts of climate change on coconut lands in Puttalam District in Sri Lanka
State of Palestine 1 Network Member	Mr. Nedal Katbeh-Bader, Environment Quality Authority	Technology Road Map for the Implementation of Climate Action Plans (INCR, NAP and NDC)
Sudan 1 Network Member	Ms. Huyam Ahmed Abdalla, Ministry of Environment, Natural Resources and Physical Development of Sudan	Developing Methodology and Capacity for Monitoring Climate Change and its Impacts on Agriculture in Sudan through Earth Observations
Suriname	Mr. Ritesh Sardjoe, Mr. Cedric Nelom, Ministry of Spatial Planning and Environment of the Republic of Suriname	
Sweden 2 Network Members Donor	Ms. Kajsa Paludan, Swedish Energy Agency	
Switzerland 10 Network Members Donor		
Syria	Mr. Ammar Abbas, Ministry of Local Administration and Environment	Technical guidance and support for conducting the Technology Needs Assessment
Tajikistan 1 Network Member	Mr. Nasimjon Rajabov, Mr. Anvar Homidov, State Administration for Hydrometeorology	

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Tanzania 4 Network Members	Dr. Gerald Majella Kafuku, Tanzania Commission for Science and Technology	↓ Enabling community of Pwani, Lindi and Mtwara access efficient and low emission biomass stoves for the household and institutional cooking ↓ Promoting the sustainable use of solar photovoltaic technology in Tanzania ↓ Sustainable Domestic Water Pumping Using Solar Photovoltaic in Tanzania ↓ Development of Energy Efficient Appliance and Equipment Strategy in Tanzania ↓ Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa ↓ Technical assistance to identify the most suitable direct use applications and technologies in low to medium temperature geothermal systems in six African countries
Thailand 6 Network Members	Mr. Surachai Sathitkunarat, Office of the National Higher Education, Science, Research and Innovation Policy Council, Ministry of Higher Education, Science, Research and Innovation	Capacity Building on Technology Development for Efficient Use of Resources in Agriculture Sector High resolution regional climate model projections for Thailand Urban Flood – Early Warning System ↓ Fostering Green Buildings in Thailand- Enabling Readiness for Investments in Building Energy Efficiency for Achieving NDC Goals ↓ Benchmarking Energy & GHGs Intensity in Metal Industry of Thailand ↓ Assessment of energy efficient street lighting technologies and financing models for Thai municipalities ↓ FTA: Technical assessment to enable readiness for up scaling investments in building energy efficiency for achieving NDC goals in Thailand
Timor-Leste	Mr. Luis dos Santos Belo, National Directorate for Climate Change, Ministry of Commerce, Industry and Environment	↓ Capacity building in renewable energy sector, Photovoltaic Solar Cell installation and maintenance for technical level and management

Country	National Designated Entity	Technical Assistance
Togo 1 Network Member	Ms. Mery Yaou, Direction de l'Environnement, Ministère de l'Environnement et des Ressources Forestières	↓ Support for the deployment of solar energy technology in rural areas in Togo ↻↓ Technical assistance for the 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 ↓ Mainstreaming Gender for a climate resilient energy system in ECOWAS ↻ West African coastal classification, hazard management and standardized communication scheme with the Coastal Hazard Wheel ↻↓ Development of a GCF concept note on Enhancing Climate Information, Knowledge Services and Climate Resilient infrastructure to Build Resilient Livelihoods amongst Agricultural Communities in the Sahel region
Tonga	Mr. Paula Pouvalu Ma'u, Ministry of Meteorology, Energy, Information, Disaster Management, Environment, Climate Change and Communications	↓ Development of a Tonga Energy Efficiency Master Plan for Tonga ↓ Tonga Circular Economy Project-Biogas Feasibility Study ↓ Revision of draft Tonga Energy Efficiency Master Plan (TEEMP)
Trinidad and Tobago 1 Network Member		
Tunisia 1 Network Member	Mr. Bouzghaya Fethi, Direction Générale du Développement Durable, Ministère de l'Equipement, de l'Aménagement du Territoire et du Développement Durable	↓ Capacity building to gain expertise in efficient lighting systems ↓ Technical assistance for the development of a standard for the utilization of digestate in agriculture ↻↓ Smart drinking water network in Tunisia: first phase in Sousse and Monastir
Turkey	Ms. Tugba Dogan Guzel, The Scientific and Technological Research Council of Turkey - Marmara Research Center (Environment and Clean Production Institute)	

Adaptation Mitigation

Country	National Designated Entity	Technical Assistance
Uganda 2 Network Member	Mr. Maxwell Otim Onapa, Ministry of Science, Technology and Innovation	Mitigation: Formulating Geothermal Energy Policy, Legal and Regulatory Framework Adaptation: Climate resilient decision making methods for Lake Victoria Mitigation: Foreign Currency PPA Risk Analysis and Assessment of Local Currency financing options for Renewable Energy Development in Uganda Adaptation: Defining Uganda's vulnerability index and updating national level indicators for measuring resilience Mitigation: Technical assistance to identify the most suitable direct use applications and technologies in low to medium temperature geothermal systems in six African countries
Ukraine	Mr. Anatolii Shmurak, Ministry of Ecology and Natural Resources of Ukraine, Climate Change and Ozone Layer Protection Department	
United Arab Emirates 2 Network Members		
United Kingdom 29 Network Members Donor	Department for Business, Energy and Industrial Strategy (BEIS)	
United States 41 Network Members Donor	Erwin Rose, Office of Global Change, Bureau of Oceans and International Environmental and Scientific Affairs, U.S. Department of State	

Country	National Designated Entity	Technical Assistance
Uruguay 4 Network Members	Ms. Nathalie Pareja, Mr. Jorge Castro, Climate Change Division - Ministry of Housing, Land Planning and Environment	Development of technology tools for the assessment of impacts, vulnerability and adaptation to climate change in the coastal zones of Uruguay Development of a national roadmap for the use of low-temperature geothermal power in thermal conditioning in residential, industrial and commercial sectors Research, Development and Deployment of climate technologies for the reduction of GHG emissions in dairy farms, through the circularity of flows and materials in Uruguay Research, Development and Deployment of technologies for the reduction of GHG emissions in dairy farms, through the circularity of flows and materials and the use of climate mitigation technologies Study of the circular economy for roadmap development
Uzbekistan	Mr. Victor Chub, Centre of Hydrometeorological Service	The Technology Needs Assessment(TNA) and Technology Action Plans(TAPs) and Roadmaps for NDC Implementation for Republic of Uzbekistan
Vanuatu	Mrs. Esline Garaebiti, The Ministry of Climate Change Adaptation, Meteorology, Geo-Hazards, Environment, Energy and Disaster Management	Feasibility Study for Low Emission Land Transport sector in Vanuatu Enhancing Vanuatu's market for energy efficient appliances
Viet Nam 15 Network Members	Mr. Pham Van Tan, Ministry of Natural Resources and Environment of Vietnam	Bio-waste minimization and valorization for low carbon production in rice sector Cost-benefit Assessment of Mitigation Options in Rice Production: Data compilation, tools and training within the Vietnamese context Pilot demonstration of ESCO model for GHG mission reduction in the cement sector in Viet Nam Feasibility study for Carbon Mineralization by using CO_2 issued from coal power plant for recycling ash slag in Cao Ngan coal power plant Development of energy audit and reporting guidelines for calculation of the emission factors (EF) for fossil fuel power plants Technical Capability Enhancement to Promote Waste-to-Energy Technology in Viet Nam Localization of water resources management technology to adapt to climate change in Hong-Thai Binh river basin

Adaptation ↓ Mitigation

Country	National Designated Entity	Technical Assistance
Yemen	Dr. Abdulqader Alkharraz, Environment Protection Agency	
Zambia	Mr. Ben Makayi, Ministry of Higher Education	↓ Leapfrogging Zambia's market to energy-efficient refrigerators and distribution transformers ↓ Developing Circular Economy Roadmaps for abating GHG emissions from the Waste Sector in Zambia Aquifer mapping technologies for Zambia ↓ Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa
Zimbabwe 7 Network Members	Ms. Munashe E.S. Mukonoweshuro, Climate Change Management Department, Ministry of Environment, Water & Climate	Developing a Climate-Smart Agriculture Manual for Agriculture Education in Zimbabwe ↓ Technical Assistance for piloting rapid uptake of industrial energy efficiency and efficient water utilisation in selected sectors in Zimbabwe ↓ Leapfrogging Zimbabwe's market to energy-efficient refrigerators and distribution transformers ↓ Developing a national framework for deploying and scaping up E-mobility in Zimbabwe ↓ Assessment of the current status of the circular economy in the waste sector for developing a waste stream specific roadmap in Zimbabwe ↓ Development of a Regional Efficient Appliance and Equipment Strategy in Southern Africa



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FR

Le Centre et Réseau des Technologies Climatiques (CTCN) promeut le transfert accéléré des technologies respectueuses de l'environnement pour un développement à faible intensité de carbone et résilient aux changements climatiques.

Le CTCN est le bras opérationnel du mécanisme technologique de la Convention-Cadre des Nations Unies sur les changements climatiques (CCNUCC), soutenu par un réseau de 650+ partenaires à travers le monde.

Le CTCN met en œuvre les demandes d'assistance technique par le biais de l'expertise de son réseau, en sélectionnant les meilleures organisations pouvant répondre aux besoins spécifiques exprimés par les pays. Les requêtes sont soumises par les pays au travers de leurs points focaux pour le CTCN, désignés par chacun des gouvernements: les Entités Nationales Désignées (END). Le transfert de technologies est en cours dans plus de 105 pays dans un large spectre de secteurs, allant de l'agriculture durable, l'efficacité énergétique au transport et l'industrie.

Le CTCN recherche activement de nouveaux membres pour son réseau de toutes les régions géographiques du monde ayant une large palette d'expériences dans le secteur des technologies pour le climat l'adhésion au réseau est gratuite. Pour en faire partie, nous vous invitons à télécharger et remplir le formulaire disponible sur notre site: www.ctc-n.org/network

ES

El Centro y Red de Tecnologías Climáticas (CTCN) promueve el desarrollo acelerado y la transferencia de tecnologías climáticas para un desarrollo bajo en carbono y resistente a los efectos del cambio climático.

En su rol como organismo operativo de la Convención Marco de las Naciones Unidas sobre el Cambio Climático (CMNUCC), el Centro de Tecnologías (CTC) está respaldado por más de 650+ miembros de la Red en todo el mundo.

El Centro utiliza la experiencia de estas instituciones para prestar asistencia técnica y capacitación a petición de los países en desarrollo para contribuir con el cumplimiento de sus Contribuciones Nacionales Determinadas (CND). Los países se ponen en contacto y colaboran con el CTCN a través de representantes nacionales, las Entidades Designadas Nacionales (END), para compartir sus solicitudes.

La transferencia de tecnología está en marcha en más de 105 países en sectores que van desde la agricultura y la energía hasta la industria y el transporte.

El CTCN busca activamente a miembros de todas las regiones geográficas que tengan experiencia en sectores relacionados con cambio climático. La membresía, que es de carácter gratuito, se puede solicitar mediante el formulario de solicitud disponible en el sitio web https://www.ctc-n.org/network.

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