

Climate Technology
Centre & Network

Progress Report

CTCN 2020





**Despite great
challenges, 2020 was a
transformational year.**

2020 was a year like no other as the COVID-19 pandemic drove the world into a global crisis of unprecedented reach and proportion. The pandemic served as a stark reminder of the world's fragilities in the face of health crises, disturbances to natural ecosystems and climate change. It has also been a defining year for climate change action, although slightly interrupted by the pandemic.

CONTENTS

04	Foreword
06	Director's Message
	TRENDS
10	Covid-19
16	Circular Economies
26	E-mobility
34	Early Warning Systems
42	Clean Energy Targets
	TECHNOLOGY FRAMEWORK
54	Innovation
60	Implementation
66	Enabling
74	Collaboration
80	Support
	CTCN
88	About CTCN
89	Advisory Board
90	Facts & Figures

**A MESSAGE FROM THE CHAIR OF THE ADVISORY BOARD
PING ZHONG**



The COVID-19 pandemic drove the world into a global crisis of unprecedented reach and proportion. The pandemic served as a stark reminder of the world's fragilities in the face of health crises, disturbances to natural ecosystems and climate change.

It has also been a defining year for climate change action, although slightly interrupted by the pandemic. Five years after the Paris Agreement was adopted, we saw delays in the submission of some countries' updated Nationally Determined Contributions (NDCs). However, we also saw that many decision-makers from the public and private sectors stepped up and committed to net-zero emissions by mid-century.

Last year was also the second year of operationalisation of the Technology Framework of the Paris Agreement, providing a structure through which to align the mandates and activities of the UNFCCC bodies under the Technology Mechanism (the Technology Executive Committee and the CTCN) with the objectives of the Paris Agreement.

Following the adoption of the Technology Framework, I am pleased to see that the CTCN has incorporated its goals and associated activities into its 2019–2022 Programme of Work and 2020 Annual Operating Plan. Over the past year, the CTCN has also successfully fostered enhanced collaboration with constituted bodies of the UNFCCC, including the TEC and operating entities of the Financial Mechanism such as the Global Climate Fund, the

Adaptation Fund and the Global Environment Facility. The CTCN also sought new partnerships with multilateral development banks and the private sector to support climate technology development and transfer at countries' request.

The Advisory Board has actively supported the CTCN throughout the past year on resource mobilisation, identifying ways that countries can create low-carbon and more resilient societies through their post-COVID economic recovery plans, and joint work and online events with the TEC.

I am pleased to share the CTCN's 2020 annual Progress Report, which documents the CTCN's contribution to global climate action over the last year while giving us a sense of the roadmap ahead toward recovering better. The work of the CTCN is especially important now to support countries' post-pandemic socioeconomic recovery as well as implementation of their commitments as outlined in the NDCs. We have a momentous opportunity before us to align these two important goals. The Advisory Board is committed to the CTCN as it supports this process.

A MESSAGE FROM OUR DIRECTOR
DR. ROSE MWEBAZA



Last year was like no other in our lifetimes. Yet, despite the pandemic, we continued to deliver together on our mandate, recognising that climate action remains such a high priority. As was the case for all bodies under the UNFCCC, the CTCN adapted to the COVID-19 challenges posed to planned activities and reoriented much of its work to online facilities while also directing resources to where they could be best utilized. The countries that we serve also faced unprecedented challenges, yet throughout the last year, the National Designated Entities remained steadfast and focused partners, working at the very crux of global climate change, health and economic objectives.

With this Progress Report, we would like to share with you the trends in climate technology demand that we experienced in 2020 as well as the outcomes of our efforts to implement the five themes of the technology framework under the Paris Agreement over the past year.

The Climate Technology Centre & Network served nearly 50 countries this year, providing support for implementation of Technology Needs Assessments, Technology Action Plans and Nationally Determined Contributions. In addition, numerous countries focused their technical assistance requests on initiatives and technology choices that support a green recovery from the pandemic. These included technical assistance responses that create national systems of innovation, the development of national circular economy roadmaps, and the building of resilient communities through the identification of adaptation technologies and the use of nature-based solutions.

The Centre's Network reached over 600 members globally. With this growing network of diverse technical and geographic expertise, our capacity to deliver has been enhanced. As such, the CTCN launched or expanded several new programmes this year: small and medium-sized enterprise (SME) climate technology clinics were piloted to introduce climate technologies and international suppliers to local SMEs; a new Youth Climate Innovation Lab programme attracted over 700 youth innovators from

Africa and Asia who were matched with Network SMEs; the Adaptation Fund Climate Innovation Accelerator was launched; and the CTCN is now the largest provider of successful Green Climate Fund technology readiness proposals.

By offering opportunities for learning and mutual exchange of knowledge and experiences with youth innovators and the UNFCCC Women and Gender Constituency, the CTCN continued to facilitate youth engagement and gender-responsive technologies to support transformative technology solutions.

I am also pleased to share that the CTCN successfully operationalised its regional approach, with technical managers and experts now working from regional offices in Bangkok, Nairobi, and Mexico City. This allows the CTCN to be closer to the countries it serves and more responsive to developing countries' climate technology needs.

We live in extraordinary times. While the COVID-19 pandemic is an acute problem with an end in sight, fighting climate change will require heightened efforts. The CTCN expresses its sincere appreciation for the financial and substantive support provided by Parties, and the active engagement of Advisory Board members, National Designated Entities, and Network members in 2020.

There is no time to lose, and I look forward to our continued collaboration as we build our momentum for change.

TOP FIVE

TRENDS

in climate technology demand

In 2020, we gained valuable new insights as COVID-19 provided lessons learned for climate change action, and countries conveyed their most pressing needs.

An unprecedented pandemic reminds the world of our fundamental interdependence. Over the past year, the COVID-19 pandemic has proven itself as not only a major health threat, but also a social and economic crisis that has exposed how countries are often unprepared and slow to respond to threats that were already on their radar.



Although its impact may be minor and short-lived in comparison to the negative effects of climate change, the pandemic has nevertheless created vast disruption, and has redirected the world's focus to singularly dealing with this crisis, thereby making progress on climate change goals and related SDGs more challenging.

There are lessons to be learned from this experience however, which are of significant relevance to global climate change efforts. COVID-19 provided a stark

example of the interdependencies between the natural world, health systems, economies, and society. It demonstrated how marginalized populations often bear the brunt of societal disruptions in terms of job loss, health outcomes, and security. However, it has also taught us that several means to address global challenges already exist and simply need to be implemented consistently, scaled up, and reinforced through effective policies to generate a substantial impact. The COVID response has

also demonstrated on one hand how quickly new solutions can be developed when they are prioritized globally; and on the other, how ignoring scientific guidance or delaying action can lead to considerable and unnecessary negative consequences to lives, health systems, the economy, and basic societal functioning.

At the ground level, we have seen that entrepreneurs the world over have responded to the pandemic with great innovation, adapting to new obstacles and



“And when we get past this crisis, we will face a choice – go back to the world we knew before or deal decisively with those issues that make us all unnecessarily vulnerable to this and future crises. Everything we do during and after this crisis must be with a strong focus on building more equal and inclusive societies that are more resilient in the face of pandemics, climate change, and the many other challenges we face.”

— U.N. Secretary-General António Guterres

A review of several proposed green recovery plans reveals some common themes:



Clean Energy. If recovery measures move away from business as usual to apply an enhanced focus on renewable energy and energy efficiency, they could drive a lasting shift in the global energy mix and help achieve the Paris Agreement and SDGs.



Buildings. This area of focus includes both retrofitting and new construction with improved materials and energy efficient technologies.



Circular Economy. COVID-19 exposed limits on existing supply chains and emphasized a growing need for resource efficiency by incorporating greater recycling, reuse, and repair of goods as a way to enhance value-creation potential and achieve greater resilience. Several countries are therefore looking at how they can support SMEs to employ new and more sustainable business models, while planning to build low-carbon industrial centres that emphasize industrial symbiosis.



Nature-based solutions. A recent World Economic Forum report estimates that more than half of the world's GDP is moderately or highly dependent on nature and its services. Investments in nature-based solutions can protect communities from natural hazards (such as floods), potentially reduce future outbreaks of zoonotic disease, and create economic gains.



Smart Mobility. Creating renewable-based, efficient infrastructure, incentivising electric vehicles, and promoting behavioural changes such as increased public transit and cycling, will reduce the impact of travel and provide positive health and environmental co-benefits.

opportunities. At national levels, as governments try to reignite growth following the economic downturn created by COVID-19, there is much discussion on how to foster a green recovery that benefits not only the economy but the climate and human health as well.

Many of these themes track with the technology needs highlighted in the updated NDCs submitted by the end of last year, which predominantly focused on **agriculture, climate observation and early warning, energy, industry, infrastructure and buildings, transport and water**. These are also well aligned with technical assistance requests that the CTCN received last year and is beginning to receive this year. (The CTCN and the Technology Executive Committee will continue

to analyse NDCs from developing countries as more are submitted this year in order to gain a full picture of technology needs.)

By directing COVID-19 economic stimulus efforts toward a greener, more resilient and inclusive recovery, countries can make meaningful progress toward achieving the aims of the Paris Agreement while increasing market opportunities and the well-being of vast populations. The *New Climate Economy report* estimated that investing in bold climate action could deliver an economic gain of at least 26 trillion USD between now and 2030 and create over 65 million new jobs. This finding should be given substantial consideration as countries strive to stimulate their economic recoveries.



Circular economies become the focus of recovery plans after countries weather the risks of the linear model. The concept of a ‘circular economy’ has been defined and discussed in academic communities since the 1970s and, until recently, has occupied a space outside of the dominant political discourse on sustainability and responses to climate change.



Recently, the circular economy agenda has received a boost with numerous mentions in post-pandemic economic recovery plans as part of governmental and supra-national pledges to ‘build back better,’ such as in the European Commission’s ‘Green Deal.’ Yet exactly how this transition toward a circular economy should take place remains unclear for many and indeed the concept of a circular economy is often criticised for being largely theoretical and aspirational, with few

real-world examples of national or sector-specific circularity.¹

What does a circular economy look like in reality, what is the role of technology in achieving this vision and how does it relate to climate change? Simply put, the circular economy is a system that moves away from the traditional ‘take-make-waste’ linear model of production and consumption to one where economic growth is decoupled from the extraction and ultimate disposal of natural resources. This is achieved

through the expanded use of renewable energy, and the minimisation or reuse of material waste and pollution, including greenhouse gases. Inherent to the concept of circular economy is the idea that the pursuit of greater material resource efficiency is a driver of technological innovation, job creation and sustainable economic growth. As such, the circularity concept can be translated into a political and economic reform agenda that contributes to the achievement of almost all of the UN’s Sustainable Development Goals (SDGs). Table 1 summarises the various aspects of circular economy business models.

The COVID-19 pandemic has brought into sharp focus the risks associated with the linear economy, revealing weaknesses in existing (unsustainable) supply chains, where the prospects of greater resource efficiency through recycling, reuse, and the repair of goods enable countries to create and capture greater



CIRCULAR BUSINESS MODELS

Source: Business models for the circular economy (OECD, 2019)

	Circular Supply	Resource Recovery	Product Life Extension	Sharing	Product Service System
Key Characteristics	Replace traditional materials with renewable materials	Produce secondary raw materials	Extend product lives	Increase utilisation of existing productions and assets	Provision of services rather than products
Resource Efficiency Driver	Close material loops	Close material loops	Slow material loops	Shared assets	Operation and maintenance efficiency
Business Model Sub-Types	Cradle to Cradle	Industrial symbiosis Recycling, upcycling, downcycling	Repair, reuse, remanufacture, refurbish	Co-access Co-ownership	Product-oriented, client-oriented, output-oriented
Main Sectors	Diverse consumer product sectors	Metal Paper Plastics	Automotive Heavy machinery Electronic	Transport Lodging Machinery Consumer products	Transport Chemicals Energy

economic value and resilience. However, in order to kick-start circular economic activity, a basic prerequisite is adequate information on current resource pathways, including in the informal sector, which is often lacking. Following this, enabling environments supported by policy, regulations and incentives need to be established and incorporated into national industry and economic development plans. Relevant technologies then need to be identified and potentially adapted to suit local circumstances. Local capacities need to be developed and sector-specific demonstrations are required to make the business case, especially as a means to engage small and medium-sized enterprises.

The CTCN is responding to country requests for technical assistance to articulate circular economy actionable roadmaps that will incentivise or unlock investment in clean technologies and industrial processes

that follow the principles of economic circularity. In providing this service, the CTCN aims to ensure that the circular economy becomes accessible to lower-income countries in order to enhance opportunities for technology-driven climate action, economic growth and comparative advantage.

In Africa, there are currently 16 countries collaborating with the CTCN on circular economy initiatives. These vary in scope, ranging from the development of circular economy roadmaps for abating greenhouse emissions in the waste sector in Kenya, Malawi, Mauritius, Zambia, and Zimbabwe, to more specific exploration of the valorisation of biomass waste in national energy systems in Cameroon, the Central African Republic, Chad, Congo, The Democratic Republic of the Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Gabon, Mali, and Senegal.



Latin American countries partner on circularity

In Latin America, the concept of circular economy is gaining political ground. Several countries in the region have already implemented public policies and private initiatives to advance circular economy efforts, characterized mainly by regulations and programmes that establish a framework for waste management, and extended responsibility to the producer on recycling, waste recovery and reuse.² However, these initiatives have not been framed within a national strategy for a circular economy that systematizes this experience or defines objectives and goals, costs, benefits, and barriers.



“In Uruguay, we recognize and are promoting the importance of the circular economy to deliver the economic growth which, in turn, preserves and improves the natural capital, promotes renewable resources and the efficiency of systems. Participation in this CTCN regional project has been a novel venture which allows four countries in the region to share their experiences, focussing on the contribution of the circular economy to reducing greenhouse gas emissions and compliance with the Nationally Determined Contributions. In the case of Uruguay, implementation of the project has focused on opportunities to apply the circular economy in the area of food production, an activity in which our country has characteristics which enable it to achieve significant development in the domestic and export market. It is also an area which makes a great contribution in relation to greenhouse gas emissions. We hope that the recommendations resulting from this technical assistance will contribute to the prevention of climate change and fulfilment of commitments under the Paris Agreement, a task to which we must all commit.”

— MS. CARLA ZILLI

Officer of Climate Change National Direction, Ministry of Environment, Uruguay

In order to move progress on circular economy efforts forward, the governments of four Latin American countries (Brazil, Chile, Mexico, and Uruguay) partnered to submit a multi-country request to the CTCN. While they are already aware of the economic, social, and environmental benefits that a circular economy can provide, the countries seek specific strategies to implement their visions. With support from the CTCN, these countries have articulated road maps for achieving general, sectoral, or process-specific circular economies. This included creating performance indicators that facilitate monitoring compliance with their NDCs and relevant SDGs (9, 12 and 13). The regional nature of this technical assistance also enables a benchmark analysis of other countries, mainly in Europe, which have already implemented road-maps, such as France and Finland.

In summary, the CTCN technical collaboration included:

- Analysis of key players and circular economy initiatives in the participating countries;
- Identification of the value of the circular economy and definition of benefits, opportunities, and challenges in each participating country;
- Compilation of international experiences;
- Mapping of cases of successful implementation of industry 4.0 for the circular economy at the international level, and adoption of certain practices at the local level considering technological developments in these countries; and
- Identification of potential circular economy projects for each requesting country, prioritizing specific territories.

THIS TECHNICAL ASSISTANCE ADVANCES:

Brazil, Chile, Mexico and Uruguay’s Nationally Determined Contributions to reduce greenhouse gas emissions by 2030: Brazil (by 43%); Chile (30%); Mexico (22%); and Uruguay (to emissions comparable to 1990 levels).

Sustainable Development Goals







E-mobility offers a fast track to cleaner skies and more sustainable transport. Over the past year, cities around the world experienced a vision of what the future of transport could look like, as the COVID-19 pandemic led to less traffic, fewer emissions, and cleaner skies.





According to the International Energy Agency, combined forms of transport currently account for an estimated 24% of global energy-related CO₂ emissions. This level could grow significantly by 2050, when the number of vehicles on the road is projected to double to 2.5 billion globally. Much of this growth is expected to take place in developing countries where air pollution and traffic jams are already posing significant challenges in many cities.

Over the past year, a number of countries have requested CTCN technical assistance in order to initiate a transformation to e-mobility. In Africa, the development of national policies and frameworks for deploying and eventually scaling up e-mobility is a priority for countries such as Ghana, Nigeria, and Zimbabwe. In Asia-Pacific, the CTCN is collaborating with several governments to test and deploy e-mobility. Some countries, such as Indonesia and Sri Lanka, are potential frontier markets for

e-mobility demonstration that can cater to the mobility needs of urban populations. Others are least developed countries and small island states like Cambodia, Nauru, Tonga, and Vanuatu, who seek to conduct feasibility studies, develop roadmaps, and analyse financing and policy options to guide their transition to e-mobility and reduce dependency on fossil fuels.

E-mobility offers a pathway to lower-emission transport, and includes fully electric, conventional hybrid, plug-in hybrid as well as hydrogen-fuelled vehicles. Rapid advancements in e-mobility use are due to technological advancements in lithium-ion batteries, but also to growing public demand for more environmentally friendly transport options, as well as countries' climate change commitments and policies requiring greater fuel efficiency and/or electric vehicle incentives.

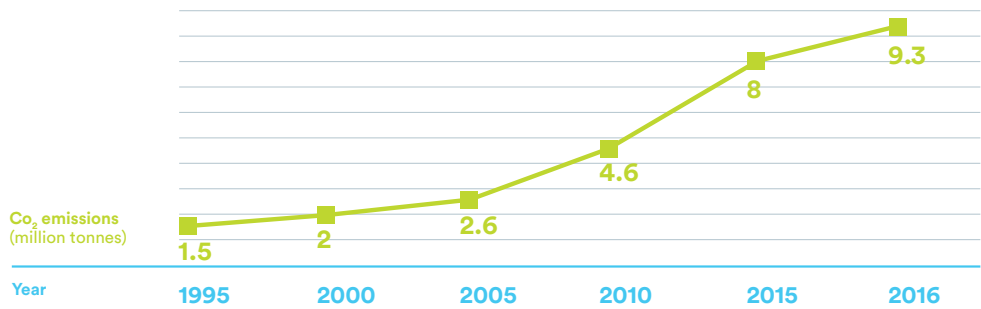
Moreover, by supporting charging infrastructure, e-mobility offers a decentralized and

controllable electricity supply and potential storage capacity to complement the energy mix in the grid with an increased share of clean and intermittent sources. Electric transport can also lead to improved health and environmental outcomes due to reductions in pollution and urban traffic.

While much attention is given to electric cars, many countries see a potential for more substantial transformation by harnessing the capability of e-mobility for public transport, as well as commercial vehicles, including a growing variety of light to heavy duty trucks. Demand for electric mobility is thus accelerating in developing countries as it offers a transition away from fossil fuels, an opportunity to leapfrog public transport technologies, and a means to promote the electrification of economies. However, there is also a strong recognition that uptake of e-mobility must be supported by effective policies, regulations, infrastructure, and financing.

Cambodia explores e-mobility technologies and financing

Cambodia's reliance on road transport has increased alongside its economic development. The country mainly relies on second-hand fossil fuel vehicles that are imported with no age limits or emission standards. Given the rise in the number of vehicles on the road and their fuel composition, Cambodia has increasing concerns about emissions and air quality degradation in urban areas.



Indeed, the transport sector is expected to account for an increasingly large share of greenhouse gas emissions in Cambodia. The country produced a total of 9.3 million tonnes of CO₂ in 2016, of which the transport sector was responsible for 5 million tonnes overall, with road transport comprising 4.2 million tonnes.

The country has identified several barriers impeding a successful transition to a low-emission pathway, including a lack of up-to-date transport information, and policy, planning, institutional capacity, investment, market, and technical barriers. Cambodia's Ministry of Environment requested CTCN support to address these barriers.

The objective of this technical assistance was 1) to provide Cambodia with an action plan for low-emission vehicle policy options, and 2) to assist the Ministry in accessing global funds to promote sustainable and low-emissions transport. The assistance was designed by the UN Environment Programme and implemented by Envelops through the pro bono support of the Republic of Korea.

A baseline assessment was undertaken for Cambodia's road transport sector through an intensive consultation process to identify policy, technology, and financing options for deploying low emission transport interventions tailored to national circumstances. Based upon these inputs and additional research, a proposed policy action plan was developed which identified two pathways for implementation: 1) diffusion of e-bikes, and 2) diffusion of e-buses and e-cars. A stakeholder consultation workshop was then conducted to discuss and refine the plan.

Next, a draft GCF concept note was developed to seek support for the promotion and diffusion of e-bikes with charging infrastructure, which included the development of loan and incentive programs. The concept is currently under review with the GCF Accredited Entity. It is anticipated that the diffusion of more than 25,000 e-bikes in various Cambodian cities will lead to GHG emissions reductions of approximately 64,000 tons of CO₂e over the course of the cycles' lifespan (estimated to be 3-5 years).

The technical assistance will ultimately contribute to GHG emissions reductions from the road transport sector and improved energy security through a decreased reliance on imported fossil fuels. Moreover, an action plan for clean and efficient mobility will contribute to urban resilience for vulnerable populations through improved health and well-being resulting from reduced air pollution and the widespread adoption of clean and efficient vehicle technologies.

THIS TECHNICAL ASSISTANCE ADVANCES:

Cambodia's Nationally Determined Contribution to reduce 0.39 million tons of CO₂e from the transport sector by 2030 through mitigation interventions including the promotion of mass public transport and the increased use of hybrid cars, electric vehicles, and bicycles.

Sustainable Development Goals







Early warning systems bolster resilience to climate extremes, which have begun plaguing agricultural production. Traditionally, farmers have adjusted their planting schedules to account for incremental changes in climate patterns.



Increasingly however, weather patterns are becoming unpredictable and agricultural land is subject to more numerous extreme climate events that contribute to desertification, drought, floods, landslides, storm surges, soil erosion, and saline water intrusion. According to the Food and Agriculture Organization, natural disasters are occurring nearly five times as often compared to 40 years ago.³

Vulnerability assessments and early warning systems are often used in an attempt to mitigate risks by reducing exposure and vulnerability for agricultural sectors. Early warning systems typically combine monitoring, forecasting, and risk assessments. The information derived from such systems is then used to develop preparedness plans so that timely action can be taken to avert or reduce the impact of a variety of potential hazards. Finally, information must be effectively communicated

to stakeholders. This can be facilitated in a number of ways, including through the use of radio and mobile phones in rural areas.

Early warning systems can be implemented at the local through global levels for a variety of threats such as biological hazards (bacteria, insects, parasites, viruses), geological hazards (tsunamis, earthquakes, landslides), and meteorological hazards (floods, droughts, temperature extremes).

The CTCN has received an increased number of requests over the past year related to early warning systems and vulnerability assessments. Sudan submitted its first-ever request to the CTCN, seeking to develop a methodology and build the capacity of the Ministry of Agriculture and Forests to utilise remote sensing technologies to monitor climate change and its potential impacts on the agricultural sector. Eswatini's National Disaster Management Agency is also working with the CTCN to develop the agency's

capacity to utilise unmanned aerial vehicles and remote sensing technologies to provide data for agricultural vulnerability assessments and response planning.

Some of the requests to the CTCN are broader in scale, extending beyond agriculture to include vulnerability assessments for coastal zones, forestry, and water sectors. In Uganda for example, the CTCN is working to develop a national vulnerability index for monitoring resilience in a number of priority sectors specified in the country's NDC. Iran is collaborating with the CTCN to identify tools to both monitor and address increasing sand and dust storms and their impact on agricultural and water resources.

Progress in quality, processing and availability of early warning data has markedly improved over the last few years with technological advances in real-time data collection, modelling, and simulation capabilities. The European Union's Copernicus Programme,

with its continuous, open access global earth observation information services, is an example of remarkable recent developments in combining innovative technologies with increased access to data for environmental monitoring. The system utilises global data from satellites together with sensors that are ground-based on the seas or in the air to monitor the planet and its various ecosystems.

Vulnerability assessments and early warning systems can indeed serve as critical tools for policy makers as they aim to ensure food security. They offer an opportunity to analyse and address other existing vulnerabilities in the agricultural value chain, such as gender considerations and adequate access to information and services for farming communities, particularly in traditional rain-fed farmlands that are especially vulnerable to droughts and flooding.



Guatemala's Dry Corridor gets a new focus

Guatemala has experienced increasing temperatures and reduced precipitation over the last few decades, while extreme weather events like hurricanes have devastated the agriculture sector.



“The successful implementation of this technical assistance will provide significant contributions to increase adaptive capacities in the agriculture, livestock and food security sector, by providing key information for the implementation of adaptation measures. The information, which will also be presented in a special form, will identify different realities within the Dry Corridor, which will be of great help in taking decisions. The information generated will allow sectoral institutions to adapt their planning instruments in the short term and will allow channelling of resources and efforts in a more effective and efficient manner.”

— MS. JENNIFER ZAMORA

*Head of the Department for Vulnerability and Adaptation to Climate Change
Ministry of Environment and Natural Resources, Guatemala*

More than 30% of Guatemala’s population is employed in the agriculture sector. Increasing climate phenomena have the potential to severely impact food security, economic opportunities, and livelihoods, given that most farming relies upon rainfed agriculture. Certain areas of Guatemala are more at risk than others, and its Dry Corridor is one of the most vulnerable to extreme hazards. This area, a region encompassing parts of Guatemala, Honduras, El Salvador, and Nicaragua (though it extends even further north and south), is typically hardest hit by droughts, while flooding is also becoming a growing threat. The Dry Corridor is also home to some of Guatemala’s poorest communities, which endured a 78.1% decrease in maize production in 2019 due to lack of rain.⁴

As part of its effort to plan adequate adaptation measures, the Guatemalan Ministry of Natural Resources and Climate Change sought assistance through the NDC Partnership Climate Action Enhancement Package to develop a vulnerability analysis for the Dry Corridor that would ultimately inform Guatemala’s updated NDC and other related planning frameworks. The CTCN offered to conduct the analysis and CTCN Consortium member CATIE (the Tropical Agricultural Research and Higher Education Center of Costa Rica) was selected to implement the assistance.

The vulnerability analysis included a review of temperature, precipitation, and extreme climate events over the period 1980-2020. In order to gather inputs from local communities and experts alike, CATIE created a technical advisory group and solicited the participation of a large and varied group of stakeholders in order to gather data on

vulnerabilities from a socio-economic, cultural and environmental context. Based upon the information gathered, they generated a series of maps to describe the vulnerability of the area and to assist in the prioritization of specific areas that are most exposed to soil degradation, or prone to severe floods, prolonged periods of drought, or other extreme climatic events. They also identified populations that have already experienced compromised food security due to decreased food production. Rural communities classified as highly vulnerable to food insecurity and those living in poverty and extreme poverty were prioritised, including indigenous peoples and women farmers with insufficient or unproductive land. Many of these communities are relegated to farming on hillside areas, where soil quality is low and/or eroding.

Finally, adaptation actions were recommended for the at-risk agricultural, livestock and food security sectors, and these were validated through two national workshops for incorporation in the NDC update. Two project concept notes were also developed in order to seek funding for implementation of the adaptation recommendations.

THIS TECHNICAL ASSISTANCE ADVANCES:

The update to Guatemala’s Nationally Determined Contribution in terms of adaptation priorities and actions for ensuring food security and livelihoods in the Dry Corridor.

Sustainable Development Goals







Clean-energy targets help to enable energy access and drive advances that will disrupt daily life for the better. Globally, progress has been made toward the SDG7 targets, especially on access to electricity, where the total population without access to electricity - either on or off-grid - fell from 1.2bn in 2010 to 789m in 2018.⁵





Progress has been driven by advances in solar PV, battery and LED technology which have both enabled, and been enabled by, significant policy-driven market creation and price declines. In particular, the observed uptake and diffusion of solar PV technologies is driving a rapid socio-technical transition in the energy sector across Africa, albeit unevenly.⁶

Solar PV technologies at various scales and applications have the potential to accelerate the achievement of electrification targets, especially in off-grid areas where the feasibility, supply and costs of standalone systems renders them affordable, even for low-income households. Further, advances in mini-grid technology, battery storage, efficient appliances and 'smart grids', serve to accelerate the access agenda by reducing the need for excess generation capacity, thereby lowering the capital cost of new power systems.

Such technological progress also promises to disrupt the way in which people cook their food, which is another target within SDG7 where progress is lacking. Biomass fuels (firewood and charcoal) remain the dominant technology for cooking, which has major impacts on human health and the environment. According to the 2019 UNEP Emissions Gap Report, the amount of fuelwood burned across Africa is estimated to be over 400 million m³ a year, releasing over 760 million tons of CO₂e into the atmosphere. Black carbon from residential solid fuel burning is estimated to add the equivalent of another 8–16 per cent of the global warming caused by CO₂.⁷ Air pollution from both indoor and outdoor sources was linked to 4.9 million premature deaths from respiratory and cardiovascular disorders in 2017.⁸

According to the World Bank, four billion people globally still lack access to clean, efficient, convenient, safe, reliable, and affordable cooking energy. Of this total, 1.25 billion are said to be in ‘transition,’ with access to improved cooking services, while the remaining 2.75bn face significantly higher access barriers.⁹ Further, the World Bank study finds that just 10% of the population in Sub-Saharan Africa has access to modern sources of energy for cooking. Solar e-cooking technologies are likely to deliver affordable solutions to some of these households, yet a range of financial and non-financial barriers remain, especially in sub-Saharan Africa where solar PV markets have markedly different levels of readiness.¹⁰ Creating or expanding these markets requires targeted and country-specific analysis, capacity building and stakeholder-informed plans and

financing pathways. This is where the CTCN plays a role.

Over the past year, the CTCN received requests from Southeast Asia, West Africa, and the South Pacific for assistance with a variety of renewable energy goals. Some of these aim to connect rural areas with access to hydro or solar powered energy and thereby enhance economic opportunities, while others focus on innovative solutions such as Nauru’s request regarding ocean energy and Lao PDR’s request for a master plan for power-to-gas technologies.



Togo builds its national renewable energy market

As with many countries in sub-Saharan Africa, Togo struggles with very low rates of access to clean and modern energy, especially in rural areas where only 7% of the population has access to electricity. However, the government has set an ambitious goal to achieve universal access to electricity by 2030, 50% of which is to be generated by renewable technologies. The country's new electrification strategy integrates both grid expansion and off-grid technologies, including a target to build 300+ PV mini-grids and electrify 555,000 households with solar home systems by 2030.

“PAYG Solar kits offer great opportunities to get electricity. These affordable lamps are well designed for the farmer’s communities and we will be pleased to have affordable equipment thanks to this project.”

— KOBONA KOMNA
Chief of Kablive village

To help achieve this vision, the Organization for the Environment and Sustainable Development in Togo requested technical assistance from the CTCN to gather and analyse information on the national renewable energy market, relevant technologies, and financing models. The Republic of Korea’s Kyungpook National University Institute for Global Climate Change and Energy offered to conduct pro-bono research to support the project, which included a pre-feasibility study on the techno-economic feasibility and environmental sustainability of solar systems in rural communities in Togo.

Informed by an analysis of the local solar resource and existing and latent power demand, on-grid solar energy systems and a PV/battery hybrid system were analysed for four villages in both the Northern and the Southern parts of Togo, namely the Malfakassa, Hahomegbe, Koumbogou and Kablive communities. All sites were deemed feasible for the hybrid PV/battery systems. The

study indicated a financing pathway for the on-grid systems, in partnership with the Togolese Agency of Rural Electrification and Renewable Energies (AT2ER), and identified the roll out of solar home systems, financed by a Pay-As-You-Go model in areas hosting scattered households (Kablive and Koumbogou), as the optimal solution.

The CTCN’s technical assistance also highlighted the need for awareness raising among household consumers on the importance of using energy efficient appliances powered by PV technologies, by communicating the cost for every kWh of energy consumed in a simple and easily understood way. The project resulted in the development of a concept note for the Green Climate Fund to finance a solar hybrid mini-grid system in Kablive.

THIS TECHNICAL ASSISTANCE ADVANCES:

Togo’s Nationally Determined Contribution which identified the energy sector as a priority for reducing GHG emissions by 11.14% relative to the baseline scenario.

Sustainable Development Goals







TECHNO FRAN

TECHNOLOGY NETWORK

Putting the Paris
Agreement into action



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. Over the last year, this has enabled us 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.

A close-up photograph of a person's hand, wearing a black wristwatch, interacting with a complex industrial control panel. The panel features several digital displays with blue screens and various buttons, including red and green emergency stop buttons. The background is a blurred industrial environment with a large green cap and a brown bag hanging from a metal structure.

Working together to accelerate

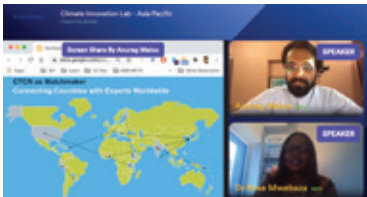
Innov

A photograph of a worker in profile, wearing a blue hard hat and a dark face mask. The worker is looking towards the left. The background is an industrial setting with various pipes and structures. The image has a blue and green color scheme.

te and strengthen technology

vation

To achieve the goals of the Paris Agreement, technological innovation needs to be accelerated and strengthened so that it can deliver environmentally and socially sound, cost-effective, and useful climate technologies on a more widespread scale. For the CTCN, this means supporting technology innovation through technical assistance, capacity building and knowledge sharing.



Launching Youth Climate Innovation Labs

In 2020, the CTCN piloted a new concept for supporting the development of youth capacities to create climate technology solutions through a series of facilitated workshops called Youth Climate Innovation Labs. Taking place in Africa and Asia, the series utilized innovation tools such as design thinking and artificial intelligence to engage youth, the private sector, and Network members in collaborative technology ideation and innovation.



Introducing Technology Clinics specifically tailored for SMEs

The CTCN also implemented SME Technology Clinics to generate awareness in the private sector of relevant technologies and new markets that can be established through their use. The programme facilitated SMEs' opportunities to network with international climate technology suppliers, access financing, gain skills and strengthen the supporting policy frameworks in their countries.

Kenya and Tanzania were selected to host Technology Clinics based on the potential of their industrial SME markets to

develop sustainably and adopt specific climate technologies. Three-day virtual matchmaking events were organised in each country focusing on the benefits of adopting climate-smart technologies and the market-related opportunities associated with such technologies. Technology providers shared information on their products and offers, benefits and costing guidelines while financiers presented their funding foci, financing structures and eligibility criteria.



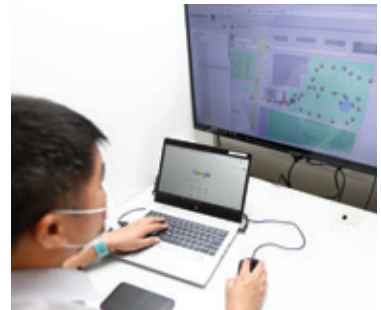
New Climate Innovation Accelerator

To support innovation in climate change adaptation, the CTCN, its co-host the UN Environment Programme, and UNDP launched the Adaptation Fund's Climate Innovation Accelerator. The 10 million USD Accelerator aims to assist countries to test, evaluate, deploy, and scale up innovative adaptation practices and technologies. In addition, the programme aims to facilitate knowledge sharing and exchange of best practices, thus strengthening opportunities for South-South and triangular cooperation on innovation in adaptation.



Awarding Challenge Program for Adaptation Innovation grant

The CTCN was also selected by the Global Environment Facility as one of nine organizations (out of more than 400 submissions) to implement its Challenge Program for Adaptation Innovation. Through a grant of 677,000 USD, the CTCN will assist urban planners in Nelson's Dockyard National Park in Antigua and Barbuda; Chokwe, Mozambique; and Kaysone Phomvihane City, Laos, to identify financial tools and mechanisms for financing adaptation technologies and build relationships between municipalities, the private sector, financial markets, and infrastructure funds.



Technical Assistance requests grow

In terms of technical assistance, the CTCN received a variety of requests from countries that focused on relatively new technology solutions or adapting technologies for local use. These included the application of unmanned aerial vehicles and remote sensing technologies for vulnerability assessments and response planning in Eswatini; an ocean energy technical pre-feasibility study in Nauru; exploring power to gas options in Laos; and a feasibility study on carbon mineralization in Viet Nam.

Spreading the word on RD&D

The CTCN also organised nine events and workshops on climate-technology RD&D and innovative technologies in 2020. The Centre partnered with technology experts from its Network to host several events and was also invited to present at conferences hosted by other stakeholders to share its experience on RD&D and innovation. The CTCN also published a paper on “*The Role of the Climate Technology Centre and Network as a Climate Technology and Innovation Matchmaker for Developing Countries*” in the journal Sustainability.





Making climate action effective

Implement

A man wearing a blue t-shirt and a red baseball cap with 'ISLV' on it is leaning over a metal trellis structure in a field. He is looking down at something in his hands. The background shows green foliage. The image has a light green border on the right and a blue border at the bottom.

ve through tailored & inclusive

entation

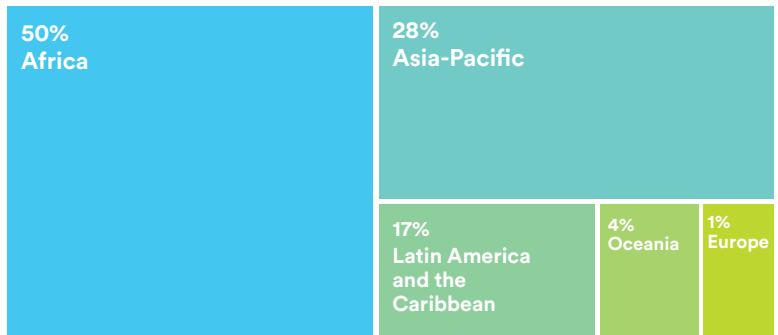
Since its inception, the CTCN has collaborated with 102 developing country Parties to implement technology development and transfer assistance. The Centre has received a total of 261 requests for technical assistance, including fifteen multi-country requests. Ninety of the technical assistance requests were completed during last year's reporting period while 44 were under implementation, 56 were in the response plan design phase, and 26 requests were under review.



Technical assistance requests combine multiple types of assistance

Most requests demonstrated the need for a combination of various types of assistance. Twenty-four percent of requests for technical assistance implemented in 2020 sought support for the development of sectoral roadmaps and strategies, followed by 17% for the development of decision-making tools and information provision, and 17% to conduct feasibility studies of technology options.

Requests for technical assistance



Regional implementation strengthens our multi-country approach

Requests from Africa accounted for nearly half of technical assistance demand, followed by Asia-Pacific (28%), Latin America and the Caribbean (17%), Oceania (4%) and Europe (1%). Requests from Least Developed Countries (LDCs) represent 58% of all technical assistance requests, while Small Island Developing States (SIDS) represent 26%.

The CTCN's regional presence has facilitated the use of multi-country approaches that target projects with a clear regional dimension or bring together similar country requests in a region to enable economies of scale and consistent approaches across countries.

Six (6) multi-country technical assistance interventions were implemented in 2020 (three in LAC, two in Africa, Europe and Western Asia, and one in Asia-Pacific) serving 32 countries.

6

multi-country technical assistance interventions

Technology Needs Assessments and Nationally Determined Contributions

Technical assistance requests continue to be more firmly anchored in countries' Nationally Determined Contributions (NDCs) and Technology Needs Assessment (TNA) processes. The vast majority of requests are directly related to implementation of NDCs and last year, the CTCN supported nine countries to undertake their TNAs and develop Technology Action Plans (TAPs): Cameroon, Cook Islands, Democratic Republic of Congo, Equatorial Guinea, Gabon, Iraq, Nigeria, Paraguay, and Syria.



Engagement on both mitigation and adaptation

Fifty-eight percent of mitigation requests to the CTCN are related to either energy efficiency or renewable energy, while the two largest adaptation categories are agriculture and forestry (21.4 %) and water (19.6%). Although the types of mitigation and adaptation requests remain quite similar to those received in 2019, an increasing number of requests are more holistic and programmatic in nature compared to previous years. These include mitigation requests on eMobility technologies and policies, adaptation requests on ecosystem-based adaptation and urban adaptation/resilience, and integrated mitigation and adaptation requests for development of smart-cities.




Gender mainstreaming

In order to support an inclusive technology approach, gender and endogenous capacities are used as technical assistance eligibility and prioritization criteria for CTCN technical assistance requests. The CTCN also continues to engage gender experts in the delivery of its technical assistance through the established procedure that no less than 1 per cent of programme and operational funds shall be designated towards gender mainstreaming actions.

USD **\$873,000**

**Leveraging additional
funding as a result of
technical assistance**

CTCN technical assistance interventions helped countries to leverage 240 million USD in additional global investments, well exceeding the initial technical assistance contributions worth 873,000 USD. The mobilised funding includes debt-instruments (loans and loan guarantees) as well as the provision of technical assistance which can be blended with financial instruments and grants. Forty-five percent of NDEs surveyed in July 2020 noted that the CTCN's technical assistance had helped leverage additional funding or investment.



Fostering technology uptake by improving

Enabling

environments and capacity building



The CTCN provided significant capacity building as a component of its technical assistance services, with a particular focus on local stakeholders. Practical training on adaptation and mitigation technologies, financing and enabling environments was delivered at global, regional, and national levels. Likewise, South-South learning on low-emission transport was co-facilitated by a network member for Asia-Pacific and Africa. Finally, the CTCN supported the sharing of cross-sectoral experiences on climate technology issues at the NDC-Partnership Pacific Hub.



Assisting countries in developing and implementing policies for enabling environments

Approximately 40% of the technical assistance requests received by the CTCN over the past year have focused on creating enabling environments through the analysis and development of sectoral roadmaps, strategies, policies, and regulatory guidelines. For example, the CTCN is currently collaborating with the Kyrgyz Republic on the development of policy guidelines for building codes related to enhancing energy efficiency.



Fostering private sector involvement in climate technologies

Capacity building initiatives included the organisation of technology clinics for small and medium-sized enterprises in Asia and Africa in order to generate awareness of technologies available to businesses and the new markets that can be established through their use. In countries such as the Dominican Republic, the CTCN is supporting the National Council for Climate Change and Clean Development Mechanism to overcome barriers to private-sector engagement in mitigation and adaptation action required to meet their Nationally Determined Contributions.



Enhancing public awareness on climate technology development and transfer

The CTCN expanded awareness of its technology services and shared information on adaptation and mitigation technologies by engaging stakeholders through newsletters, web and social media content, videos and numerous online events throughout the year. The CTCN's activities were covered 598 times in global and national media, and earned 29,1 million impressions on social media. The CTCN has also hosted and/or presented at over 30 events and launched a joint publication with the Energy and Resources Institute (TERI) entitled "Women in Energy: Breaking Stereotypes and Inspiring Change."



Facilitating gender-responsive technologies for mitigation and adaptation actions

The CTCN, in partnership with UNFCCC Women and Gender Constituency and Women Engage for a Common Future, continued its support for gender-responsive technologies by conducting capacity development throughout the year for Gender-Just Climate Solutions Award winners and other organisations addressing gender and climate change. Participants increased their understanding of climate negotiations, met with UNFCCC and their countries' climate change representatives, and engaged in in-depth capacity building on advocacy, entrepreneurship, project design, technology identification, and financing. They regularly exchanged experiences on their projects and identified synergies for future collaboration and

multi-country projects that can fuel ambitious climate action. Participants from throughout Africa, Asia-Pacific and Latin America, represented innovative solutions in agriculture, circular economy, fishery, forestry, renewable energy, water, and waste management. Through mentoring, participants received support to develop financial and technical assistance proposals that will advance the upscaling of their initiatives. For example, one of the organizations, Enda Graf Sahel, successfully submitted a CTCN technical assistance request to assess the technical and economic feasibility for solar mill use in women-led agri-food SMEs.

A capacity building event was presented by the CTCN, UNEP DTU Partnership, and Women and Gender Constituency

on “Conducting a Gender-Responsive Technology Needs Assessment.” The event shared countries' results from the first year of utilising the TNA Gender Guidebook in the TNA process, as well as practical examples of gender mainstreaming in climate technology processes and their impacts.

The CTCN supports information and knowledge sharing on the linkages between gender and climate technology processes by providing access to information via its gender hub on the CTCN website, which contains nearly 700 knowledge resources related to gender and climate.

15,000

information resources

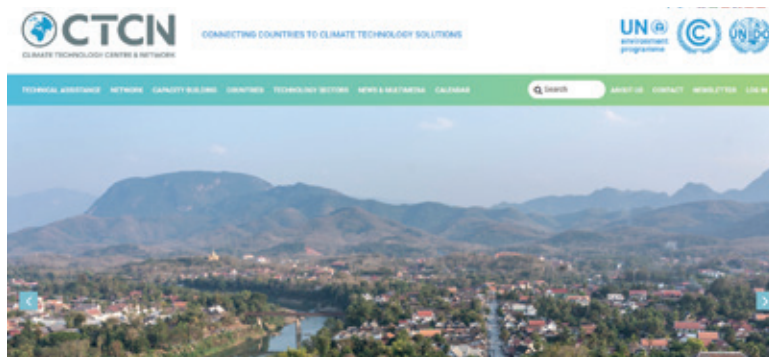
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UN languages

Facilitating information-sharing on technology development and transfer

The **CTCN online knowledge portal** contains over 15,000 information resources and can be viewed in all six UN languages. Visitors to the site can access climate technology case studies, descriptions, national planning documents, publications, tools, and webinars. The number of visitors to the CTCN website increased by 62% over the previous year.

The most visited web pages included technology descriptions and products, technical assistance descriptions, and Network information. Among the top 30 countries who spend the most time on www.ctc-n.org, one third are LDCs and nearly one-third are SIDS. Africa represents half of top users, followed by Latin America & the Caribbean and then Asia-Pacific.



CTCN webinars, delivered in collaboration with Network members and other partners, presented new and innovative technology approaches. Recent webinars included relevant topics such as environmentally sound management of COVID-19 waste, and the relationship between climate change, food security and COVID-19. To date, over 6,000 participants have benefited from 141 CTCN webinars and events.

Regional **Technical Expert Meetings on Mitigation** were organised jointly by the TEC and the CTCN on the theme of climate smart cooling solutions for sustainable buildings. Virtual meetings, organised for Africa, Asia Pacific, Eastern Europe and West Asia, and Latin America and the Caribbean, provided an opportunity for stakeholders to

share information on new sustainable solutions for cooling that take into consideration climate impacts and new societal needs, policies that should be developed and implemented to optimize the use of energy and resources, and challenges that prevent the private sector from investing in more environmentally-friendly cooling equipment. Special focus was given to natural and passive cooling solutions, including the design of buildings using local knowledge, construction techniques and materials.



Formulating and analysing information on capacity building activities

The CTCN commissioned an analysis of select capacity building activities to gain an understanding of the opportunities for transformational impact of future initiatives. It was found that capacity building enhanced the abilities of key actors, namely government representatives and private sector, NGO, and civil society organisations, to drive transformational interventions. The study will be released in 2021 and will provide more detailed information.

In addition, in order to capture the transformative outcomes achieved by award winners and capacity building participants of the Gender-Just Climate Solutions programme, an impact review has recently been completed. The review 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 and thereby generate greater impact. The information provided through surveys and interviews demonstrated that including gender considerations in climate action lays the foundation for multiple transformative benefits, including in areas such as food security, sustainable land management, poverty alleviation, health and well-being, decent work and economic development. It can also contribute to redressing power imbalances and patriarchal norms, ensuring equal participation in decision-making, and enabling greater access to and control over resources, including finances.

Enhancing collaboration with existing capacity building organizations to create synergies

The CTCN collaborated with the Adaptation Fund and the Paris Committee for Capacity Building to launch an Adaptation & Capacity Building Newsletter at COP 25. The e-newsletter, distributed quarterly, compiles information from a number of bodies and organizations on adaptation-related trainings, publications, workshops, and webinars for those engaged in strengthening resilience to climate change.



United Nations Climate Change
Paris Committee on Capacity-building



ADAPTATION FUND



CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

Climate Change Adaptation Readiness and Capacity-Building Support Bulletin

Issue Nr. 2 (1 January – 31 March 2020)

This bulletin provides news about the readiness and capacity-building support for climate change adaptation that is available to developing countries and provided by organizations under and outside the UN Convention and Paris Agreement.

News and Announcements

- Adaptation Fund, CTCN and UNDP launched new grant programme to foster innovation of adaptation practices. Read more [here](#).
- Adaptation Fund becomes member of the PCCB Network. Read more [here](#).
- The newest National Implementing Entity (NIE) of the Adaptation Fund, Fonds Interprofessionnel pour la Recherche et le Conseil Agricoles of Côte d'Ivoire received a South-South Cooperation grant through which it received peer support from an already accredited NIE, Centre de Suivi Ecologique of Senegal. Read more [here](#).
- Green Climate Fund strengthens the role of women on climate change frontline. Read more [here](#).
- Green Climate Fund calls for public comments on the raft supporting operating procedure of the Independent Redress Mechanism (IRM) on retaliation. Read more [here](#).
- The United Nations Convention to Combat Desertification has launched its e-learning platform which offers inter alia, courses related to land and climate. Read more [here](#).



Engaging diverse stakeholders

Collaboration



Stakeholders for enhanced

Cooperation

Ensuring collaboration among a broad array of stakeholders in technology planning and implementation ensures that technology priorities, challenges, and experiences are captured in a more inclusive way, and that diverse expertise and knowledge can be harnessed for more efficient and effective technology outcomes.



Engagement with National Designated Entities

The CTCN organized virtual forums for Annex 1 and non-Annex 1 National Designated Entities (NDEs) to share experiences and discuss key technology issues. Topics included the GCF Readiness Programme, the GEF Challenge Programme, industrial energy efficiency, urban resilience and COVID-19 biomedical waste management. In addition, Germany's NDE organized webinars on private sector and market mechanisms for technology transfer acceleration.

The Climate Technology Centre also conducted a survey for non-Annex I NDEs with

regard to updates on Nationally Determined Contributions in August 2020. All NDEs who responded to the survey were aware of the NDC revision process, the majority having already engaged with the UN Development Programme (UNDP) and NDC Partnership for this process. Most NDEs indicated that updates would be completed by the end of the year and many solicited CTCN support on developing project pipelines and concept notes for NDC implementation.



Enhanced engagement with Network members

The CTCN developed a new Network engagement plan in 2020 that responded to Network members' interest in engaging in more networking, knowledge sharing, national events, and matchmaking events (as conveyed in a 2019 Network member survey). A number of Network engagement initiatives were launched, including the creation of more knowledge sharing and capacity building engagement opportunities such as targeted webinars, technology clinics, pro-bono research, co-creation of regional technology briefs, and Youth Climate

Innovation Labs which sought to match the Network's small and medium sized enterprises with youth innovators to collaborate on innovative climate change solutions. Virtual meetings with Climate Technology Network members were also organized, including events tailored for civil society, private sector, and RD&D Network members.

In addition, the CTCN began to regularly provide feedback to Network members on their technical assistance bidding proposals and introduced a two-tier bidding process to facilitate the participation of more Network members

in technical assistance projects. As a result, the number of technical assistance cases implemented by Network members has increased significantly: 75% of new technical assistance cases were implemented by Network members in 2020.



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. For example, in August 2020 the CTCN presented its work on gender-responsive technology development and transfer at the Global Gender Summit. The CTCN also continued to engage with the UNFCCC Women & Gender Constituency and supported the development of a number of gender and climate change publications in partnership with UNEP, UNIDO, UN Women and Women Engage for a Common Future.



Collaboration with youth

The CTCN has increasingly engaged young people in its technology work over the last few years, with the goals of offering both technology services to youth and providing young people with a platform from which to share their insights and experience with climate change technologies. The CTCN has enhanced its collaboration with the UNFCCC youth constituency, YOUNGO. At COP25, the CTCN and YOUNGO co-hosted an interactive discussion on youth engagement in climate technology action. Likewise, the CTCN launched Youth Climate Innovation Labs in Africa and Asia which provided young

people with training and tools to develop solutions to various climate change challenges. The Centre supports youth engagement in climate action while building important inter-generational bridges in support of transformative technology solutions by offering opportunities for learning and mutual exchange of knowledge and experiences, such as through highlighting the work of youth innovators and the co-creation of articles, workshops and webinars. Additional types of collaboration are highlighted in the Support section.



A hand is visible on the left side of the frame, reaching out towards a vast field of solar panels that stretch across the foreground and middle ground. The sky is filled with soft, white clouds, and the overall color palette is dominated by blues and greens, with a bright yellow-green bar at the top and a blue bar at the bottom.

Identifying and generating financial

Support

for climate technology action

Financing is a critical component in technology development, transfer, and deployment. Increasingly, developing countries are emphasizing funding needs as a challenge to be overcome through CTCN technical assistance. Nearly 70% percent of the applications received by the Centre over the past year included financing facilitation as a component of the overall request.



USD \$5.9 million

20

GCF readiness projects



GREEN
CLIMATE
FUND



Improving financing

The CTCN responds to financing needs by assisting countries in conducting technology feasibility and cost analyses, identifying potential funding sources, and developing business plans and funding concept notes. The Centre also engages in partnerships with a variety of funding entities, including those within the UNFCCC Financial Mechanism.

For example, the CTCN was selected, together with UNDP, by the Adaptation Fund to jointly implement its Climate Innovation Accelerator Programme (AFCIA). As part of the AFCIA programme, the CTCN will deliver technical assistance to test, evaluate, roll out and scale up innovative adaptation practices, products, and technologies.

Partnering with the GEF

The CTCN was also chosen by the GEF to implement its Challenge Program for Adaptation Innovation. The CTCN will assist urban planners in mid-size cities to identify possible financial tools and mechanisms for financing adaptation technologies and building relationships between municipalities, the private sector, financial markets, and infrastructure funds. A project design document is under preparation and will be submitted to the GEF Council for endorsement in early 2021.

The CTCN completed activities under the GEF funded project “Promoting Accelerated Transfer and Scaled-up Deployment of Mitigation Technologies” in December 2020, after five years

of implementation. Thirteen technical assistance interventions were financed by this project, including a multi-country technical assistance intervention on the circular economy in Brazil, Chile, Mexico, and Uruguay, which proved instrumental in shaping the Latin America and the Caribbean Circular Economy Coalition, of which the CTCN is a strategic partner.

Since 2017, the Green Climate Fund (GCF) and the CTCN have partnered under the GCF Readiness and Preparatory Support Programme through which the CTCN provides services and expertise in response to developing countries’ requests using GCF country resources. The CTCN has accessed 5.9 million USD for the implementation of 20



European Bank
for Reconstruction and Development



Collaborating with MDBs

GCF readiness projects between 2019 and 2020, seven of which are completed or near completion. The CTCN contributed to the development of an additional 12 readiness proposals by countries for the GCF in 2020. Pending the full approval of all submissions, the CTCN will access an additional 4.6 million USD for their implementation.

In line with the recommendations of the evaluation report of the Poznan Strategic Programme, the CTCN has engaged with multilateral development banks (MDBs), specifically those hosting Climate Finance Centres. The CTCN regularly exchanges information on the respective project pipelines between the CTCN and the Centres to facilitate scaling up of the technologies. In addition, the CTCN has explored MDB collaboration for joint programming of activities and capacity building programmes. This includes organizing a capacity building programme on accessing climate finance with the African Development Bank, exchange of pipeline of projects with the European Bank for Reconstruction and Development and the Islamic Development Bank, and a joint event with the Asian Development Bank on clean technologies in Asia.

USD **\$1,000,000**

Climate Action Enhancement Package

In addition to the Financial Mechanism, the CTCN has supported seven countries through the NDC Partnership Climate Action Enhancement Package (CAEP). Some CAEP funds have been provided to the CTCN for technical assistance implementation, while the CTCN will co-finance, and in some cases fully cover, the remainder of individual technical assistance costs. The Climate Technology Centre continues its efforts to mobilize resources, including pro bono and in-kind contributions, in order to support programme implementation. The value of pro-bono and in-kind support secured for CTCN activities last year was over 1 million USD. This includes contributions received from a monitoring and evaluation expert as a result of USAID pro-bono support.



Improving monitoring

In order to monitor its overall progress in providing technology support to developing countries, the CTCN completed the update of its new monitoring and evaluation system and internal dashboard. The system will facilitate capturing the impact of the CTCN's capacity building and technical assistance through aggregated output, outcome, and impact indicators such as anticipated funding leveraged and anticipated GHG emissions reduced. Detailed guidelines for implementing partners and NDEs have been developed, providing an overview of the procedures for monitoring and evaluation of technical assistance, as well as standardized methodologies for reporting on quantitative and qualitative core indicators.



Assessing the transformational impact of CTCN support

Following the guidance provided by the Technology Framework to ensure effectiveness and efficiency by addressing the transformational changes envisioned in the Paris Agreement, the CTCN sought to better understand how the transformational impacts of its support could be assessed. Through the use of the Initiative for Climate Action Transparency (ICAT) Transformational Change Methodology, researchers at the UNEP DTU Partnership conducted an analysis of transformative characteristics in ten CTCN technical assistance examples and two capacity building programs.

According to the ICAT methodology, transformational impacts can result from processes and outcomes of policies or actions that drive large-scale and long-term structural changes in society toward climate mitigation and sustainable development

goals and targets. The results of this analysis revealed that the transformative outcome characteristics specific to CTCN's mandate are the sustained nature and scale of climate mitigation, resilience and sustainable development. The analysis further determined that the CTCN addresses process characteristics such as R&D and innovation, awareness, and policy, and that the Centre enhances the abilities of key actors, namely government representatives and private sector, NGO, and civil society organisations, to drive transformational interventions. Finally, the analysis confirmed that the CTCN had achieved outcomes for technology deployment, mitigation, adaptation and sustainable development through its capacity building and technical assistance activities.

CTC

CN

ABOUT THE CTCN

Climate change is a complex and urgent issue that demands a coordinated, global response in order to identify, finance, and implement solutions to reduce greenhouse gas emissions and improve resilience to the effects of climate change on an unprecedented scale. The Climate Technology Centre & Network (CTCN) was launched with this very aim in mind.

The CTCN provides capacity building, technical assistance and knowledge sharing on a wide array of adaptation and mitigation sectors, from agriculture, disaster-preparedness and energy to industry, pollution, water and waste management. These interventions are driven by the requests of developing countries as they seek to raise and realize their ambitions under the Paris Agreement.

The CTCN's assistance is not limited to technology deployment alone. We support all aspects of the technology cycle, including:

- research and development;
- technology identification, feasibility studies and assessments;
- technology prioritization and piloting;
- capacity building;
- policy and regulatory guidance;
- entrepreneurship and market creation;
- upscaling and financing.

The CTCN is the implementation arm of the UN Framework Convention on Climate Change Technology Mechanism and is hosted by the UN Environment Programme and the UN Industrial Development Organization (UNIDO). In this way, the CTCN operates as a genuine example of “serving as one UN.”

The Centre is able to deliver assistance to so many countries on a broad range of sectors through a unique partnership model that leverages the expertise of its host UN agencies, along with a global network of over 600 academic, civil society, finance, private sector, and research institutions, as well as National Designated Entities from over 160 countries, to provide customized technology solutions. The private sector makes up nearly 50 percent of the Centre's Climate Technology Network, most of whom represent small and medium-sized enterprises where so many innovative mitigation and adaptation technologies are being developed and adapted. The CTCN's private sector members are almost equally distributed between the Global North and South

In this way, the CTCN serves as a technology broker, connecting countries to partners that can provide the technologies, capacity building, knowledge and finance they seek.

Annex I Parties

Mr. Mykhailo Chyzhenko
Ukraine

Ms. Mette Møglestue
Norway

Mr. Shiv Srikanth
United States

Ms. Moa Forstorp
Sweden

Ms. Sara Aagesen Muñoz
Spain

Mr. Kenichi Wada
Japan

Ms. Orly Jacob
Canada

Ms. Meropi Paneli
European Union

Mr. Sergio La Motta
Italy

Mr. Erwin Rose
United States

Non-Annex I Parties

Mr. Joseph Amankwa Baffoe
Ghana

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

Ms. Maia Tskhvaradze
Georgia (Eastern Europe)

Mr. Pedro Garcia Brito
Dominican Republic (GRULAC)

Mr. Peter Yerima Tarfa
Nigeria

Mr. Ping Zhong
China (Asia-Pacific)

Mr. Omedi Moses Jura
Kenya (Africa)

Mr. Spencer Linus Thomas
Grenada (GRULAC)

Non-Government Members

Ms. Stella Gama
Technology Executive Committee

Mr. Kazem Kashefi
Adaptation Committee

Ms. Vicky Noens
Standing Committee on Finance

Ms. Dinara Gershinkova
Technology Executive Committee

Ms. Katya Kuang-Idba
Global Environment Facility

Ms. Rose Mwebaza
CTCN Director

Mr. Mareer Husny
Technology Executive Committee

Mr. Stephen Minas
Technology Executive Committee

Mr. Emerson Resende
Green Climate Fund

Observer Organization Constituencies

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

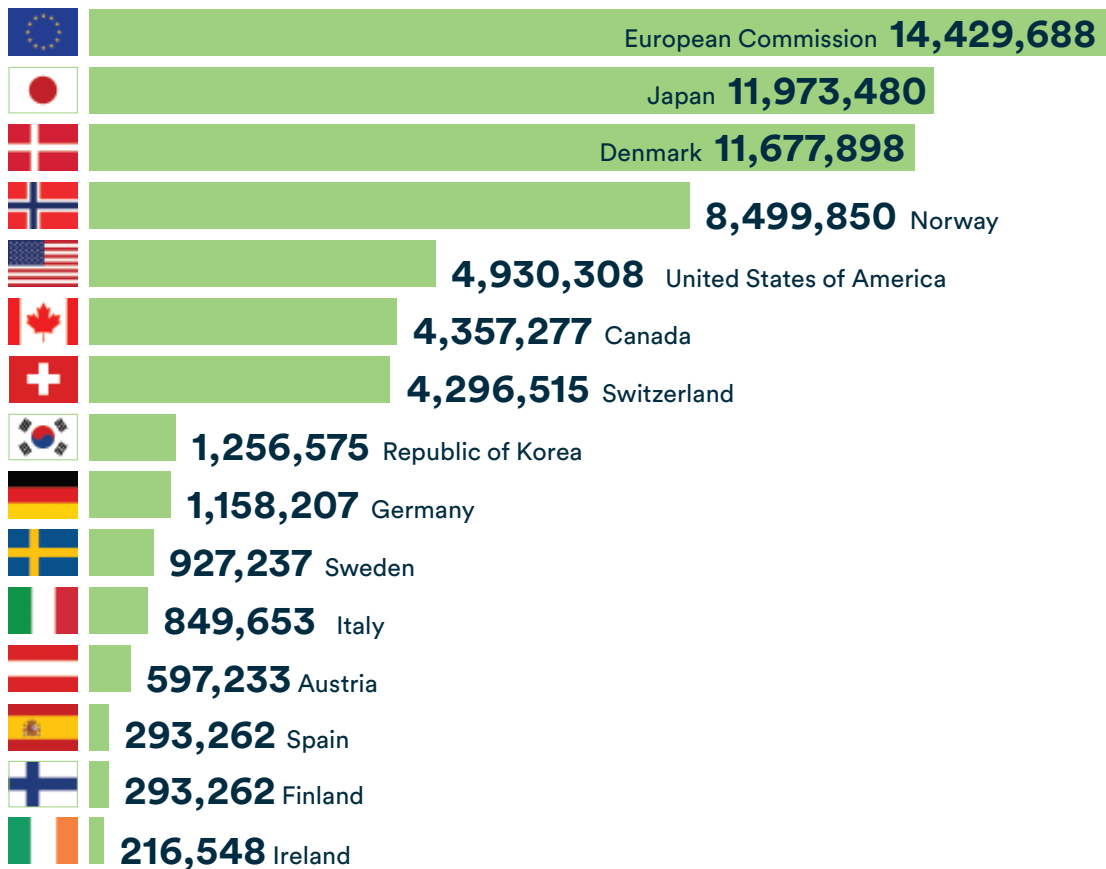
Mr. Matthew Kennedy
Research and Independent Non-
Governmental Organizations
(RINGOs)

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

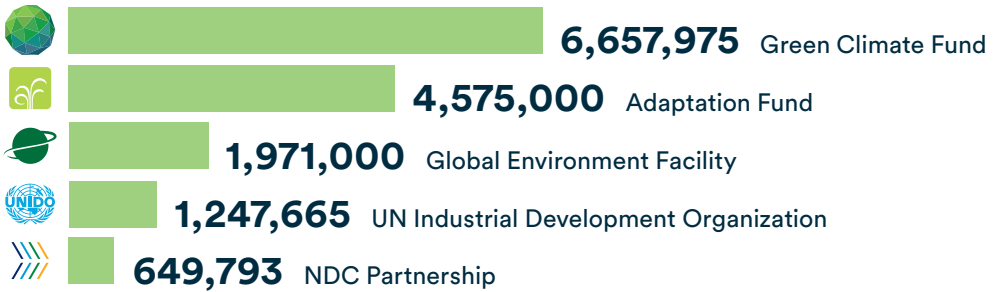
FINANCIAL INFORMATION

\$80,858,426 USD
Total Secured Income
as of 12 March 2021

\$65,756,993 IN VOLUNTARY CONTRIBUTIONS

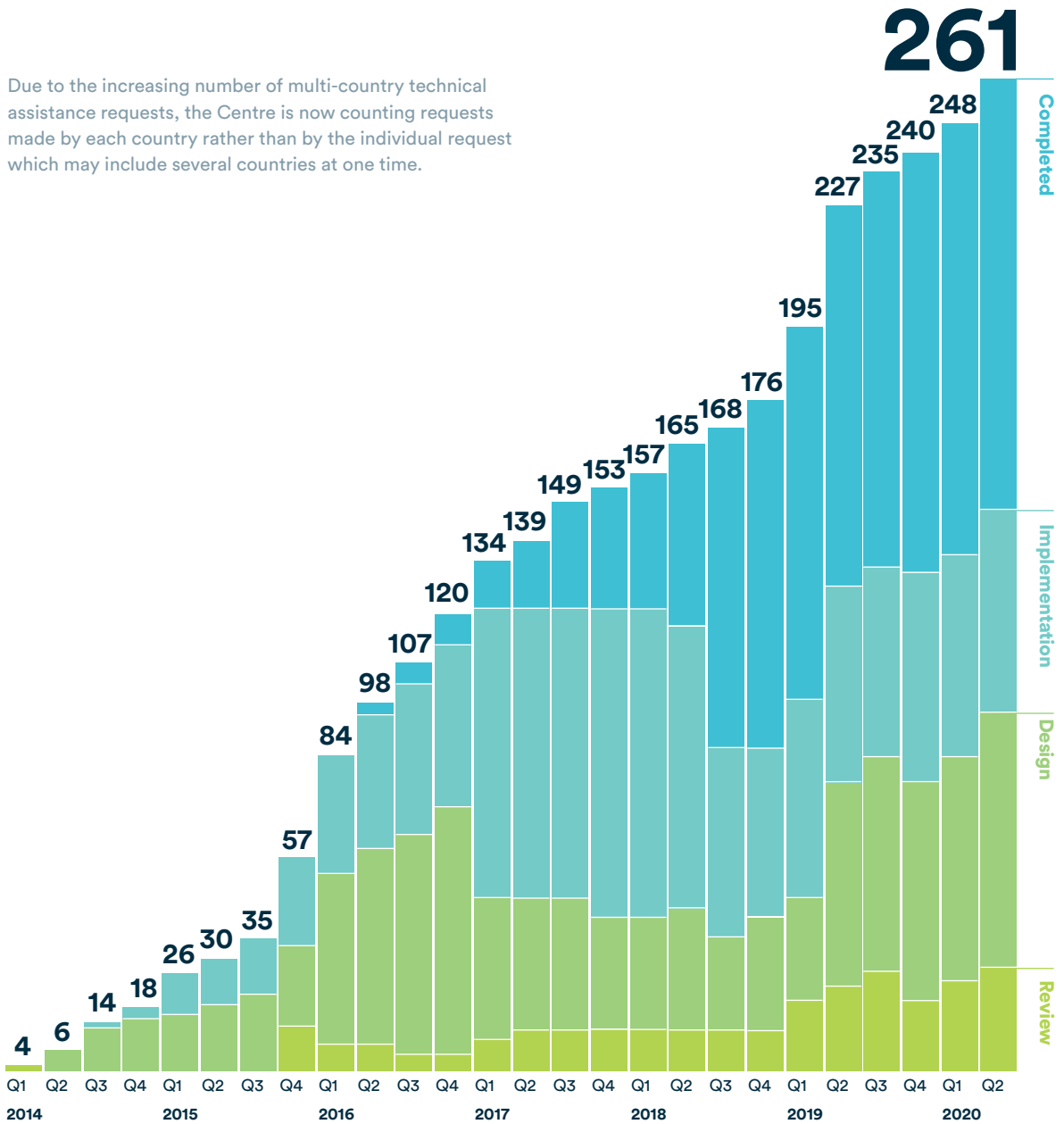


\$15,101,433 FROM OTHER MECHANISMS

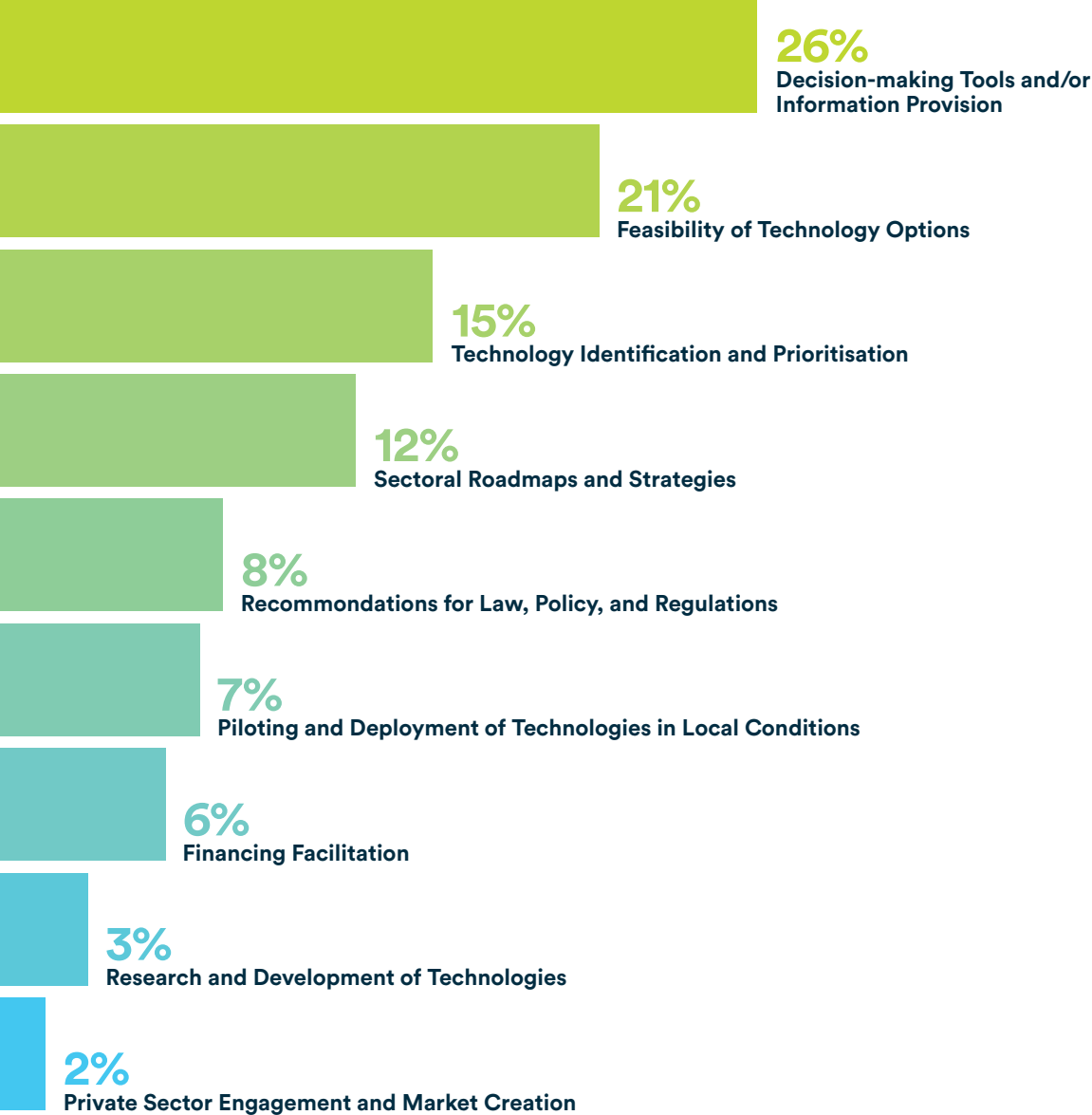


DISTRIBUTION OF TECHNICAL ASSISTANCE REQUESTS BY STAGE

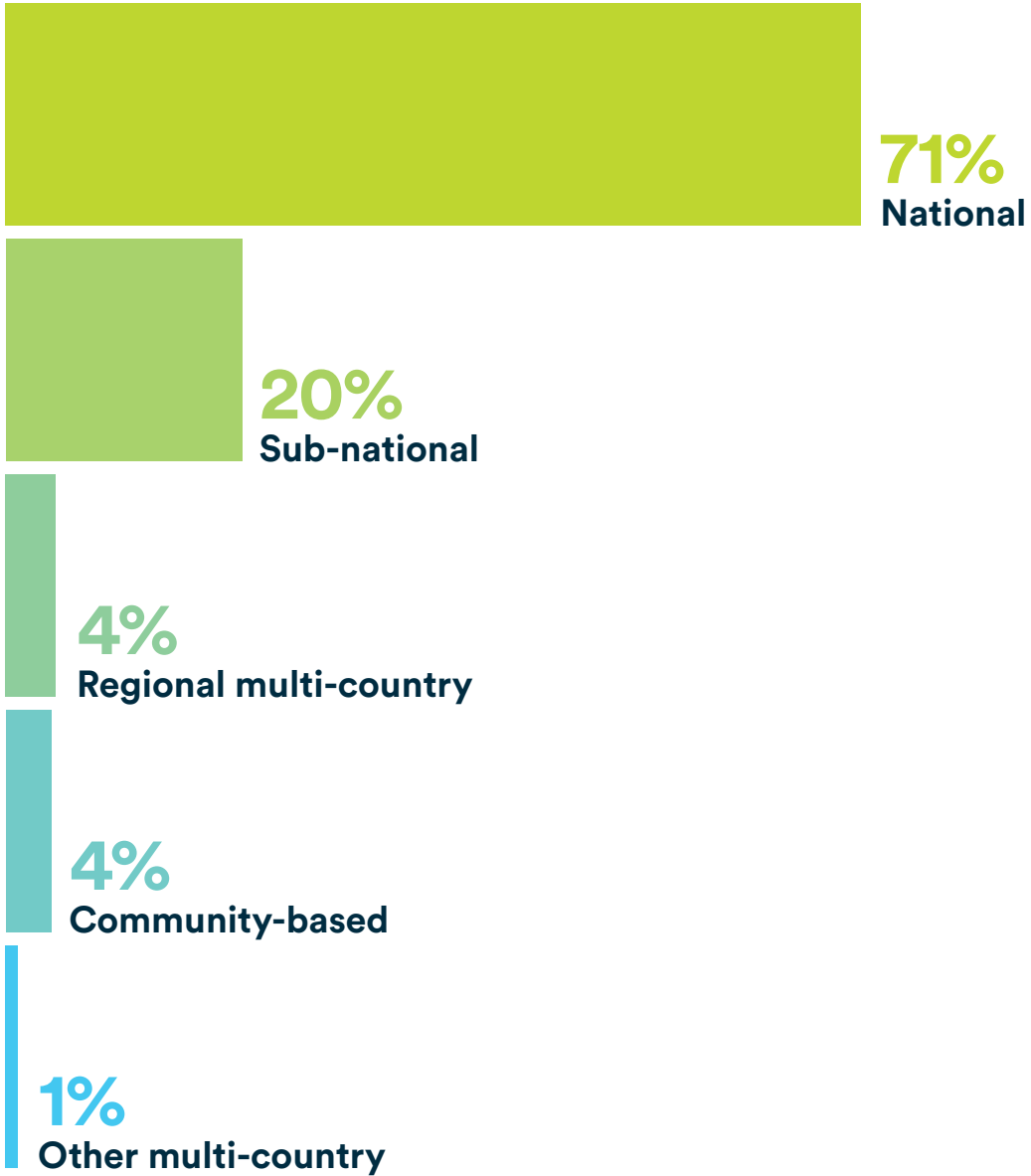
Due to the increasing number of multi-country technical assistance requests, the Centre is now counting requests made by each country rather than by the individual request which may include several countries at one time.



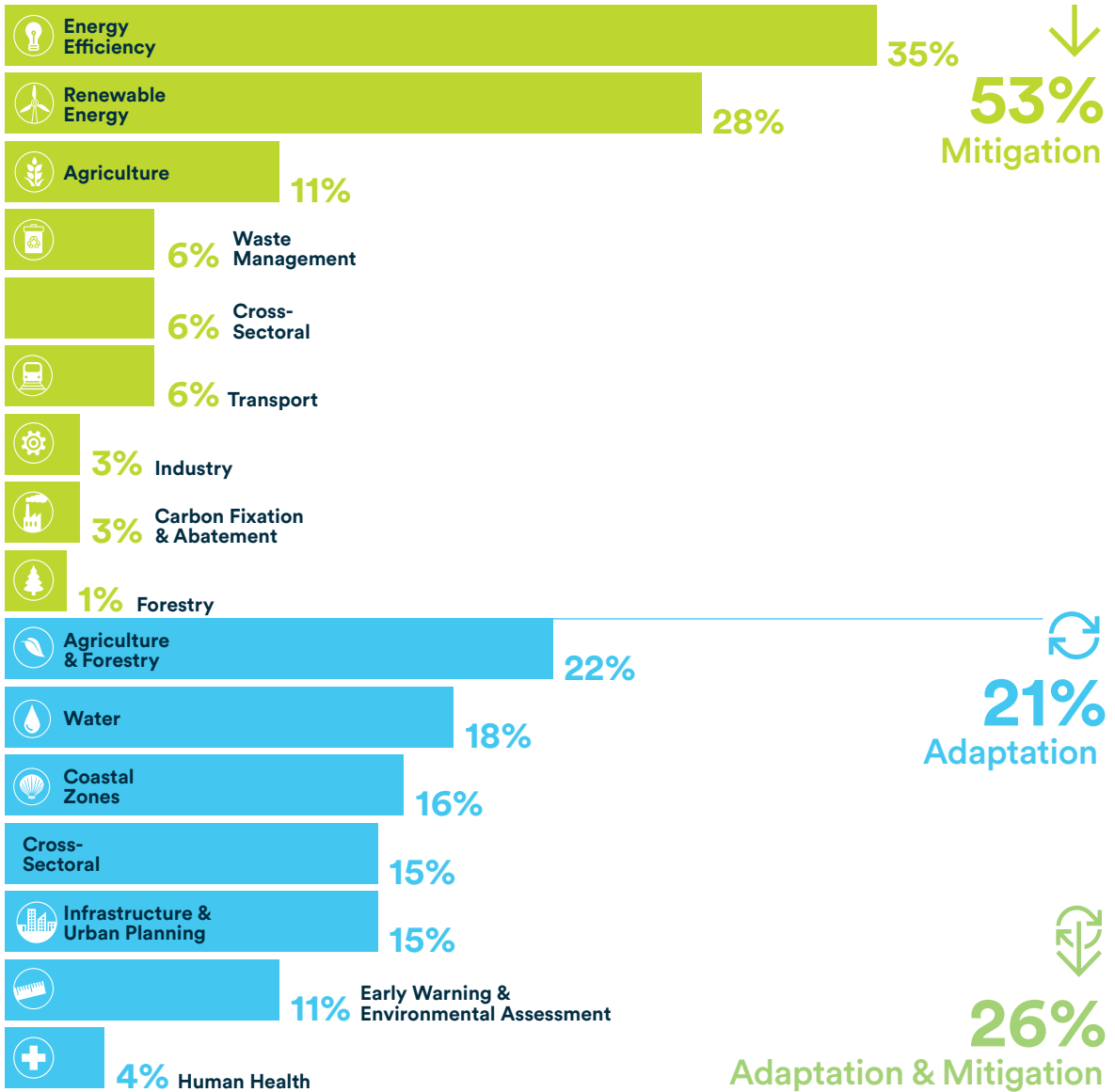
DISTRIBUTION OF TECHNICAL ASSISTANCE REQUESTS BY TYPE OF ASSISTANCE



DISTRIBUTION OF TECHNICAL ASSISTANCE REQUESTS BY GEOGRAPHICAL SCOPE

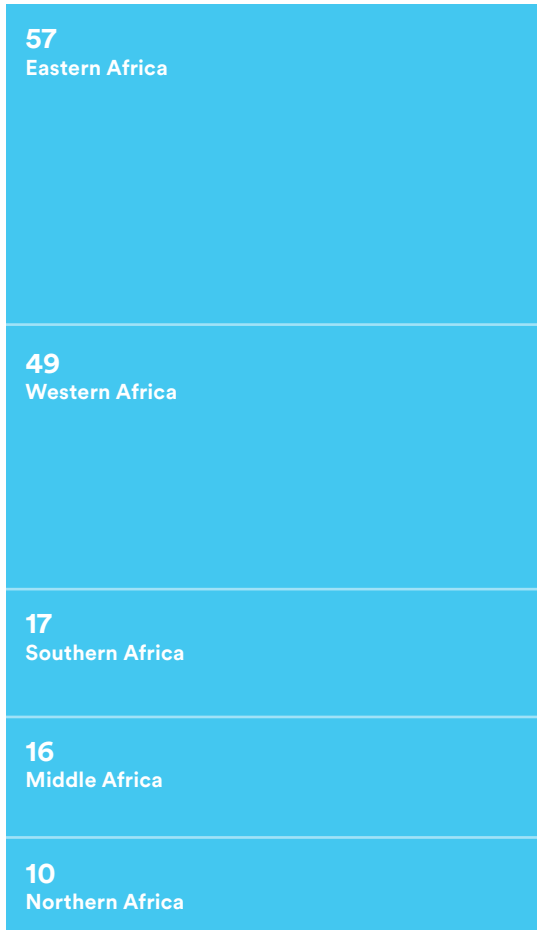


DISTRIBUTION OF TECHNICAL ASSISTANCE REQUESTS BY SECTOR



DISTRIBUTION OF TECHNICAL ASSISTANCE REQUESTS BY REGION

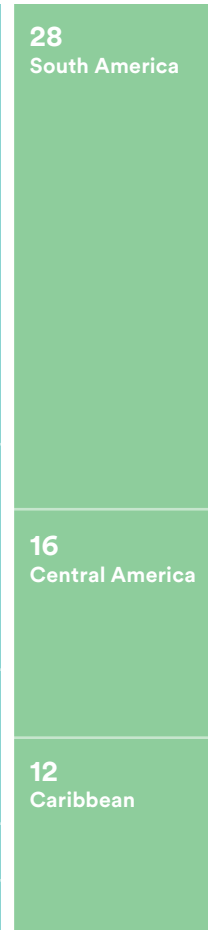
%50
Africa



28%
Asia



17%
Latin America and the Caribbean



4% Oceania



1% Europe



DISTRIBUTION OF NETWORK MEMBERS BY TYPE OF EXPERTISE



DISTRIBUTION OF NETWORK MEMBERS BY UNFCCC ANNEX I STATUS

592 Network
Members

47%

**Annex I
Party to the Convention**

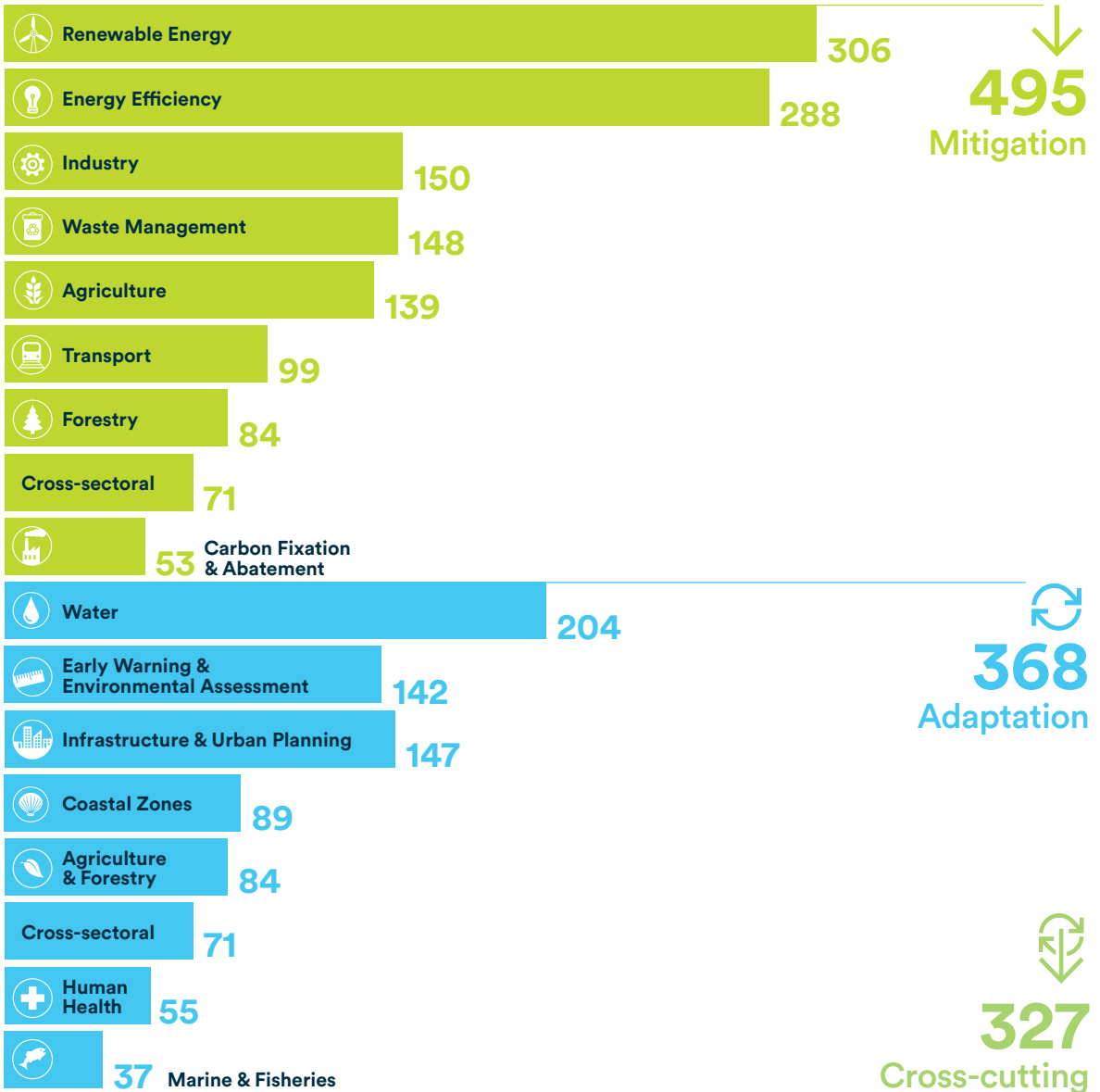
51%

**Non-Annex I
Party to the Convention**

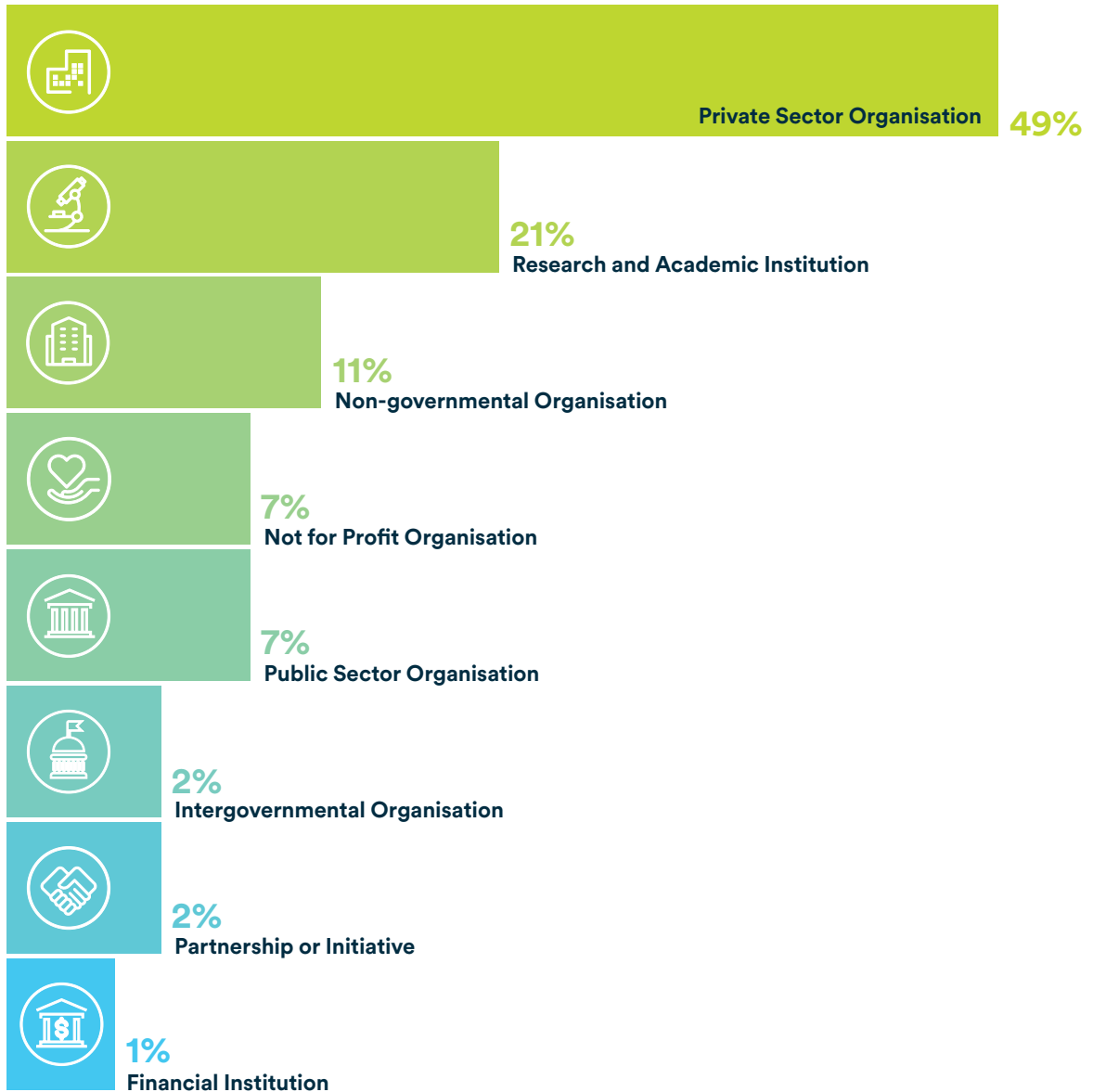
2% International

**<1%
N/A**

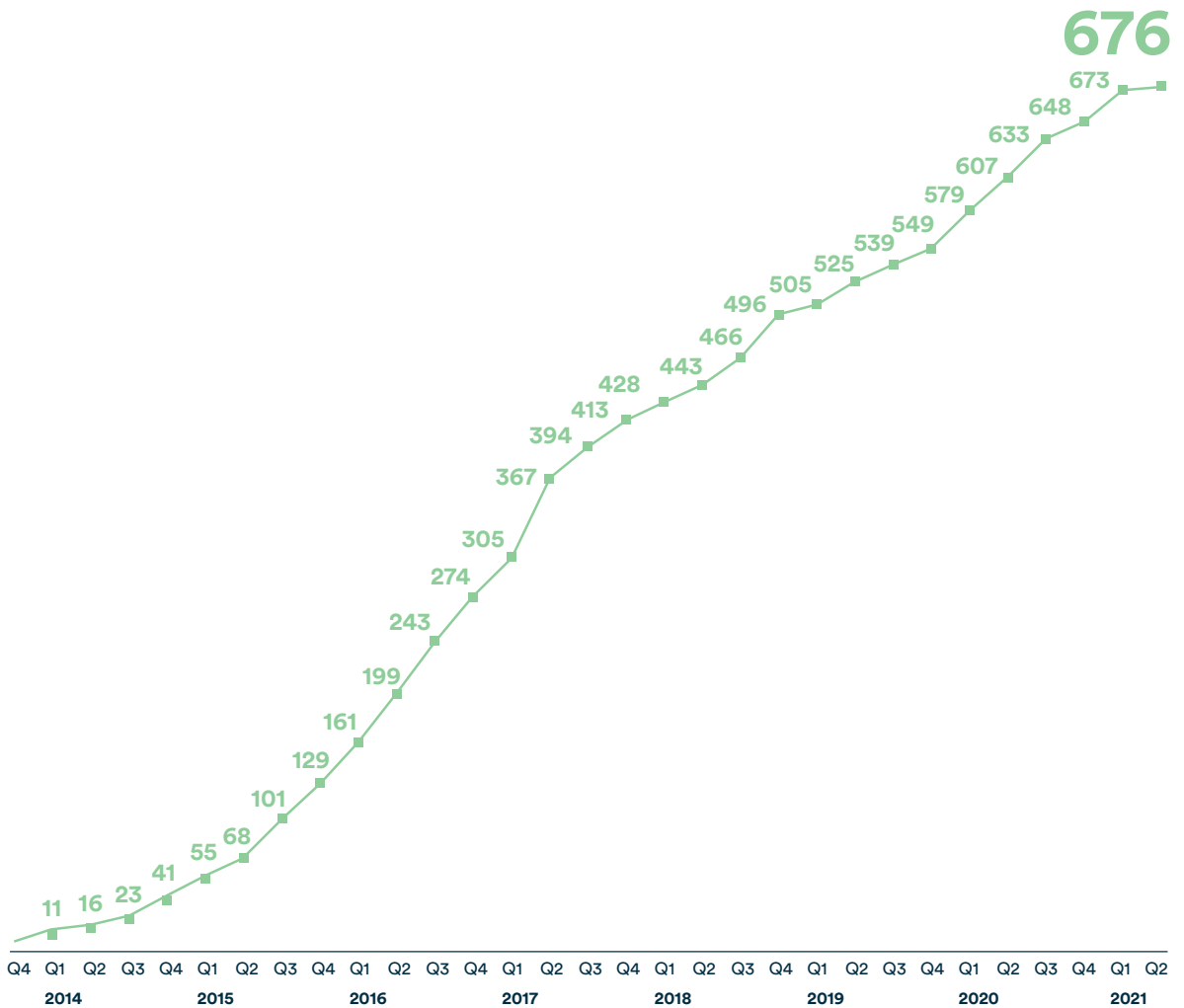
DISTRIBUTION OF NETWORK MEMBERS BY SECTOR



DISTRIBUTION OF NETWORK MEMBERS BY TYPE OF INSTITUTION



NETWORK MEMBERS TOTAL APPLICATIONS RECEIVED



NETWORK MEMBERS ENGAGEMENT

58

**Network members
involved in TA implementation**

29

**Network members
organized webinars**

187

**Network members
participated in regional events**

8,574

Resources provided by Network Members

NOTES

- 1 Hofstetter, J.S., De Marchi, V., Sarkis, J. et al. From Sustainable Global Value Chains to Circular Economy - Different Silos, Different Perspectives, but Many Opportunities to Build Bridges. *Circ.Econ.Sust.* (2021). <https://doi.org/10.1007/s43615-021-00015-2>
- 2 Schröder, P., Albaladejo, M., Ribas, P.A., MacEwen, M. and Tilkanen, J. (2020) The Circular Economy in Latin America and the Caribbean: Opportunities for Building Resilience. Chatham House Research Paper <https://www.chathamhouse.org/2020/09/circular-economy-latin-america-and-caribbean>
- 3 Food and Agriculture Organisation (2019) Early Warning Early Action
- 4 Elperiodico (2019) Oxfam reports more than 70 percent loss of corn and beans in four departments
- 5 International Energy Agency (IEA), International Renewable Energy Agency (IRENA), United Nations Statistics Division (UNSD), The World Bank, World Health Organization (WHO). (2020). Tracking SDG7 – The Energy Progress Report 2020. Retrieved from: https://irena.org/-/media/Files/IRENA/Agency/Publication/2020/May/SDG7Tracking_Energy_Progress_2020.pdf
- 6 Ockwell, D., Byrne, R., Hansen, U., Haselip, J. and Nygaard, I. (2018) The uptake and diffusion of solar power in Africa: socio-cultural and political insights on a rapidly emerging socio-technical transition. *Energy Research & Social Science* Vol. 42 <https://doi.org/10.1016/j.erss.2018.04.033>
- 7 Chapter 6. Bridging the gap: Global transformation of the energy system. Emissions Gap Report 2019, UNEP. <https://www.unep.org/resources/emissions-gap-report-2019>
- 8 Stanaway et al (2018). Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, Vol. 392. [https://doi.org/10.1016/S0140-6736\(18\)32225-6](https://doi.org/10.1016/S0140-6736(18)32225-6)
- 9 ESMAP (2020) State of Access to Modern Energy Cooking Services Report <https://www.worldbank.org/en/topic/energy/publication/the-state-of-access-to-modern-energy-cooking-services>
- 10 Batchelor, S. et al. (2018) Solar electric cooking in Africa: Where will the transition happen first? *Energy Research & Social Science*, Vol. 40, pp. 257-272

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.

Bras opérationnel du mécanisme technologique de la Convention-Cadre des Nations Unies sur les changements climatiques (CCNUCC), le Centre est hébergé par deux organisations hôtes: l'ONU Environnement (Le Programme des Nations Unies pour l'Environnement) et l'ONUDI (L'Organisation des Nations Unies pour le Développement industriel) et soutenu par un réseau de 500 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 93 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 brazo implementador del Mecanismo Tecnológico de la Convención Marco de las Naciones Unidas para el Cambio Climático, el Centro de Tecnologías Climáticas (CTC) está hospedado y administrado por ONU Programa Para el Medio Ambiente y la Organización de las Naciones Unidas para el Desarrollo Industrial (ONUDI), y respaldado por más de 500 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 93 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>.



CTCN

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