Climate Technologies and **Technology Needs Assessments** activities in **Latin America & the Caribbean**

Webinar

30/06/2020

16PM-17:30PM CET

Lindy C. Charlery – UNEP DTU Partnership
Vladimir Hecl – UNFCCC
Emerson Resende – Green Climate Fund
Donovan Campbell – University of West Indies, Jamaica
Ayesha Constable – UNDP, Jamaica
Moderated by Léa Jehl Le Manceau – UNEP DTU Partnership

www.tech-action.org/

Introduction to the webinar

Léa Jehl Le Manceau, TNA Project Assistant - UNEP DTU Partnership

Introduction to the Technology Needs Assessment (TNA) project in Asia-Pacific

Lindy C. Charlery, TNA Regional Coordinator Latin America & Caribbean - UNEP DTU Partnership

TNAs and the UNFCCC process

Vladimir Hecl, Programme Officer - UNFCCC

Presentation from the Green Climate Fund

Emerson Resende, Climate Policy Specialist - Green Climate Fund (GCF)

TNA Regional Centre's views on TNA activities

Donovan Campbell, Senior Lecturer - University of the West Indies, Mona Campus

National perspectives on the TNA process

Ayesha Constable, TNA Assistant Coordinator Jamaica

& Climate Change Researcher

Q&A session

GDPR Principles:

- Lawfulness
- Fairness
- Transparency
- Data minimization
- Storage limitation
- Accuracy
- Integrity and Confidentiality

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Data Management
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UNEP DTU PARTNERSHIP

Lindy C. Charlery

Lindy Charlery is specialized in the general field of Environmental and Resource Economics. His current focus ranges from issues related to adaptation to climate change and the need for climate smart technologies, to agricultural development and natural resource management, specifically in developing countries. Lindy is a Native of the Caribbean Saint Lucia, and brings to the table vast international experiences, with active networks in Asia, Australia, Latin America and the Caribbean and Europe, places he has both worked and conducted research. Lindy is the Regional coordinator for the TNA project in the LAC region.

Vladimir Hecl

Vladimir is Programme Officer at the UNFCCC, Bonn, Germany. He received Ph.D. from Technical University in Zvolen, Slovakia in 2012 from assessment of NOx production from short rotation biomass combusting. After over 10 years working at Energy Centre Bratislava, he served as project officer in Intelligent Europe Energy Agency of the DG TREN of the European Commission. In 2006 Vladimir joined the technology implementation team of the UNFCCC, working in technology negotiations, and in technology needs assessments of non-Annex I Parties to the UNFCCC, including both mitigation and adaptation technologies.

Emerson Resende

Emerson Resende is a Climate Policy Specialist at the Green Climate Fund in South Korea. He's responsible for advising the Fund on issues of technology development and transfer and guiding the implementation of directions received from the UNFCCC Conference of the Parties, in particular on issues of complementarity and coherence with other climate funds. Before joining the GCF, Emerson worked for the Food and Agricultural Organization of the United Nations and GIZ on the ground, the IDB Invest in Washington DC and led the Private Sector Initiative of the UNFCCC secretariat in Germany.

Donovan Campbell

Donovan is a Senior Lecturer in the Department of Geography at the University of the West Indies, Mona Campus. His current research is focused on climate change adaptation and disaster risk reduction in Small Island Developing States (SIDS). He is currently a Lead Author for the IPCC's Sixth Assessment Report (AR6) and served in a similar capacity for the recently published Special Report on Climate Change and Land.

Ayesha Constable

Ayesha Constable is a climate change researcher and practitioner with over a decade of experience in the field. Her recent professional engagements include providing coordination support to enhance institutional and technical capacity for building national resilience through the UNDP's Japan Caribbean Climate Change Project (JCCCP). Ayesha's academic publications explores themes related to gender, climate change perceptions and determinants of adaptation. As Assistant TNA Coordinator, she supports the implementation of the TNA project in Jamaica. Ayesha dedicates her spare time to supporting youth-led climate change organizations through the Young People for Action on Climate Change which she founded.

The global Technology Needs Assessment (TNA) project

Latin America and the Caribbean (LAC)

www.tech-action.org

Lindy Charlery (lincch@dtu.dk)

UNEP DTU PARTNERSHIP

Webinar
30 June 2020

DTU UN environment programme

What are the Technology Needs Assessments?

- climate technology pathways for implementing the Paris Agreement

TNAs are a set of nationally driven activities that identify and analyse mitigation and adaptation technology priorities of developing countries

- ***Funded by the Global Environment Facility, implemented by UN Environment Programme through UNEP DTU Partnership***

www.tech-action.org

Regional activities

- ✓ Regional capacity building workshops
- ✓ Technical support missions
- ✓ National trainings
- ✓ Help desk
- ✓ e-learning
- ✓ guidebooks & tools

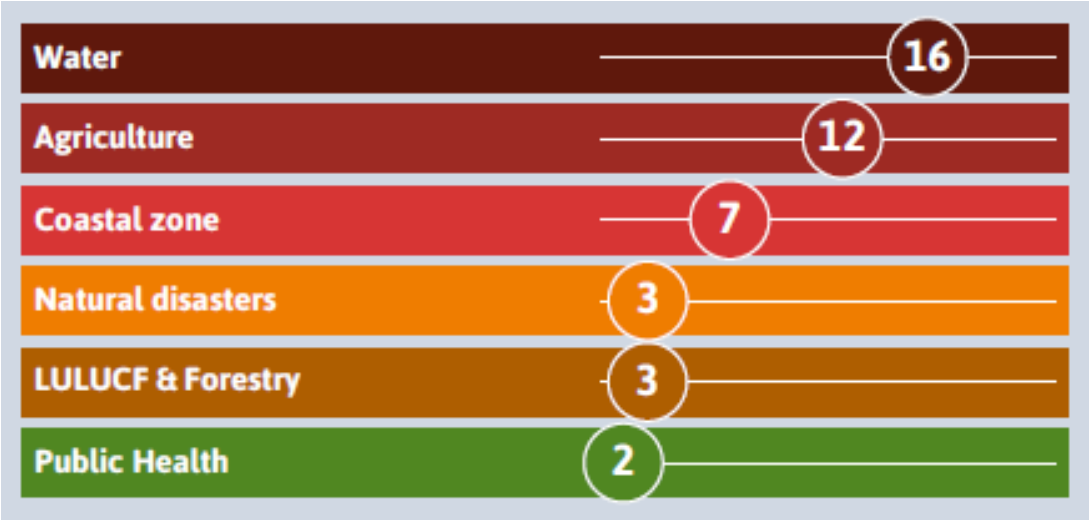
Regional Centres

FB DESDE 1963 | FUNDACIÓN BARILOCHE

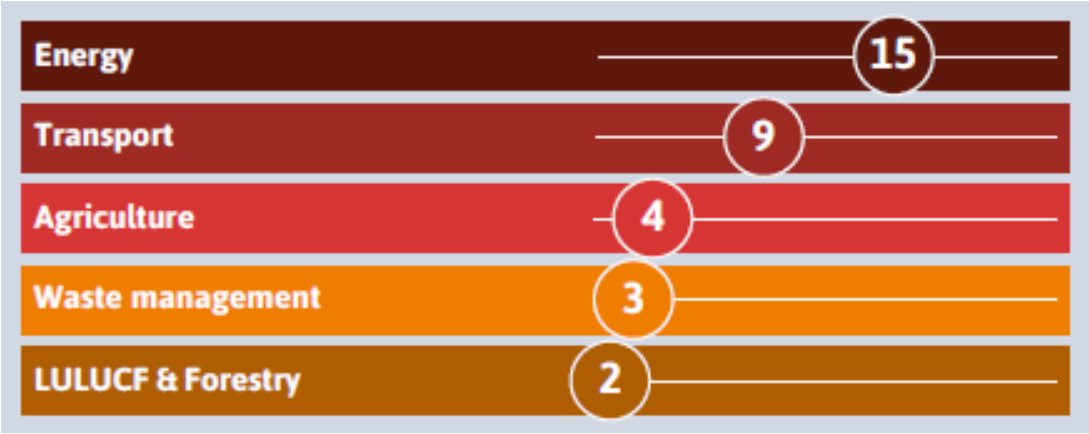
libélula
Gestión en Cambio Climático y Comunicación

THE UNIVERSITY OF THE WEST INDIES
MONA CAMPUS
JAMAICA, WEST INDIES

Prioritised sectors, LAC Region



Adaptation

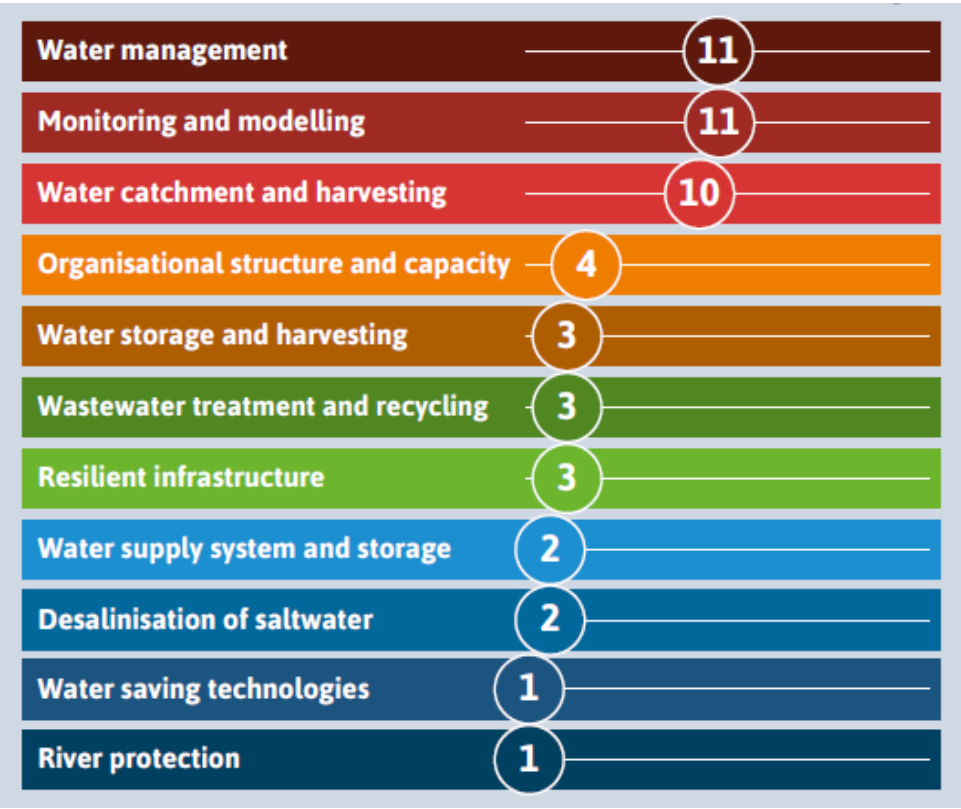


Mitigation

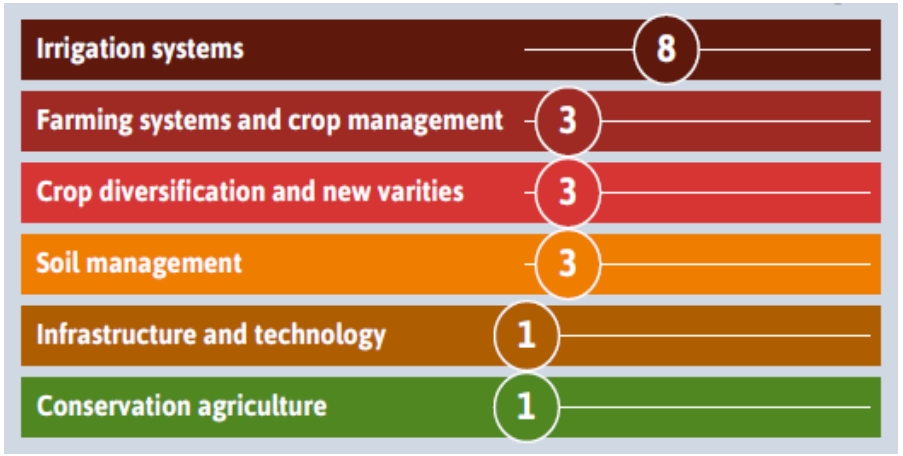
Regional TNA brief available here:
https://tech-action.unepdtu.org/resources/

Prioritised Technologies for Adaptation, LAC Region

Water Sector

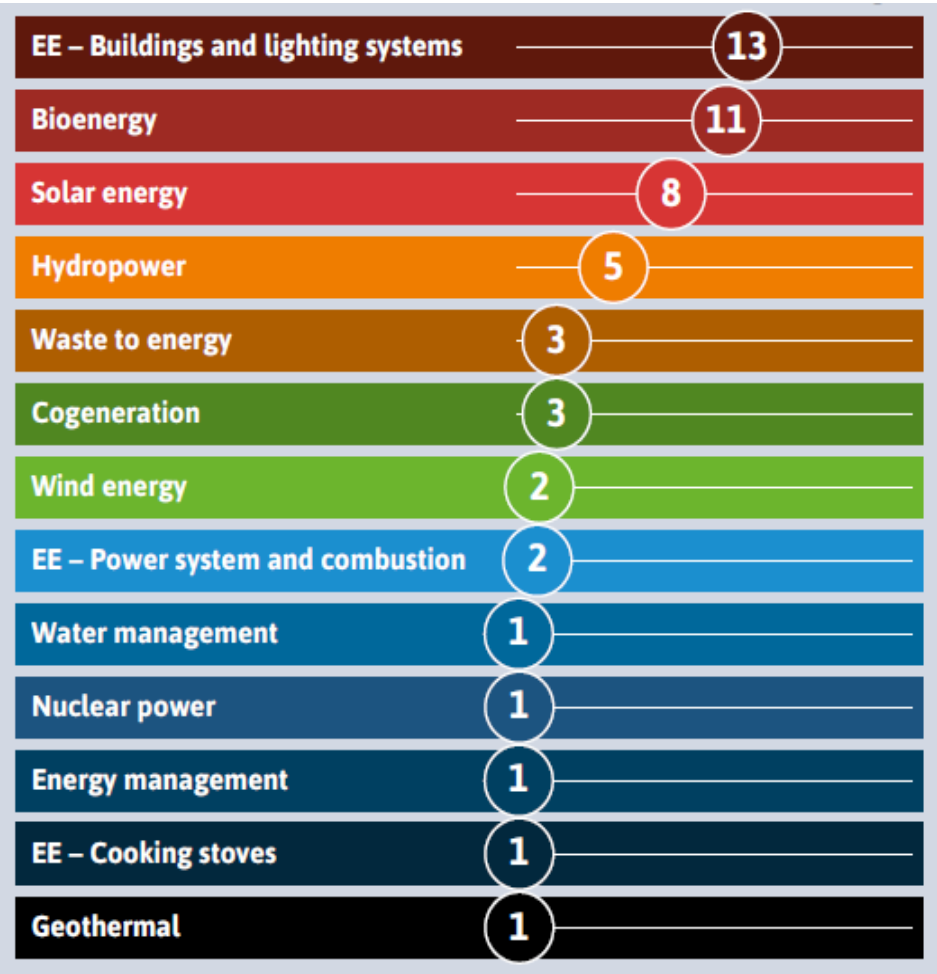


Agriculture Sector

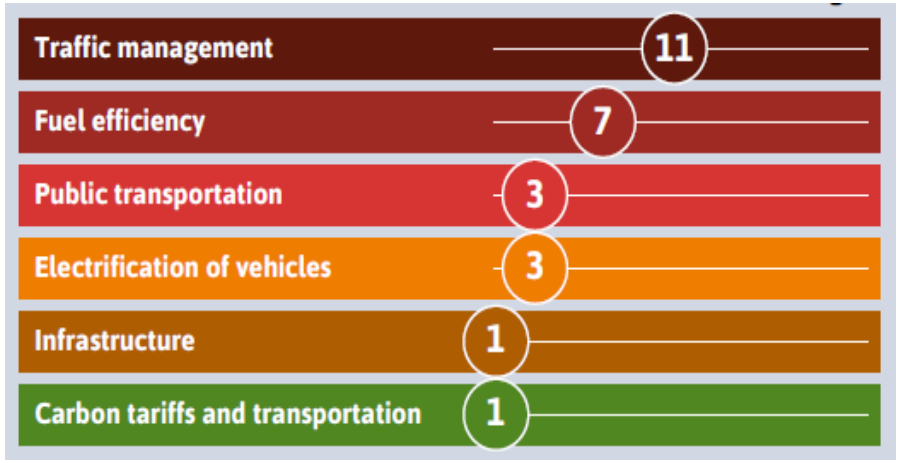


Prioritised Technologies for Mitigation, LAC Region

Energy sector

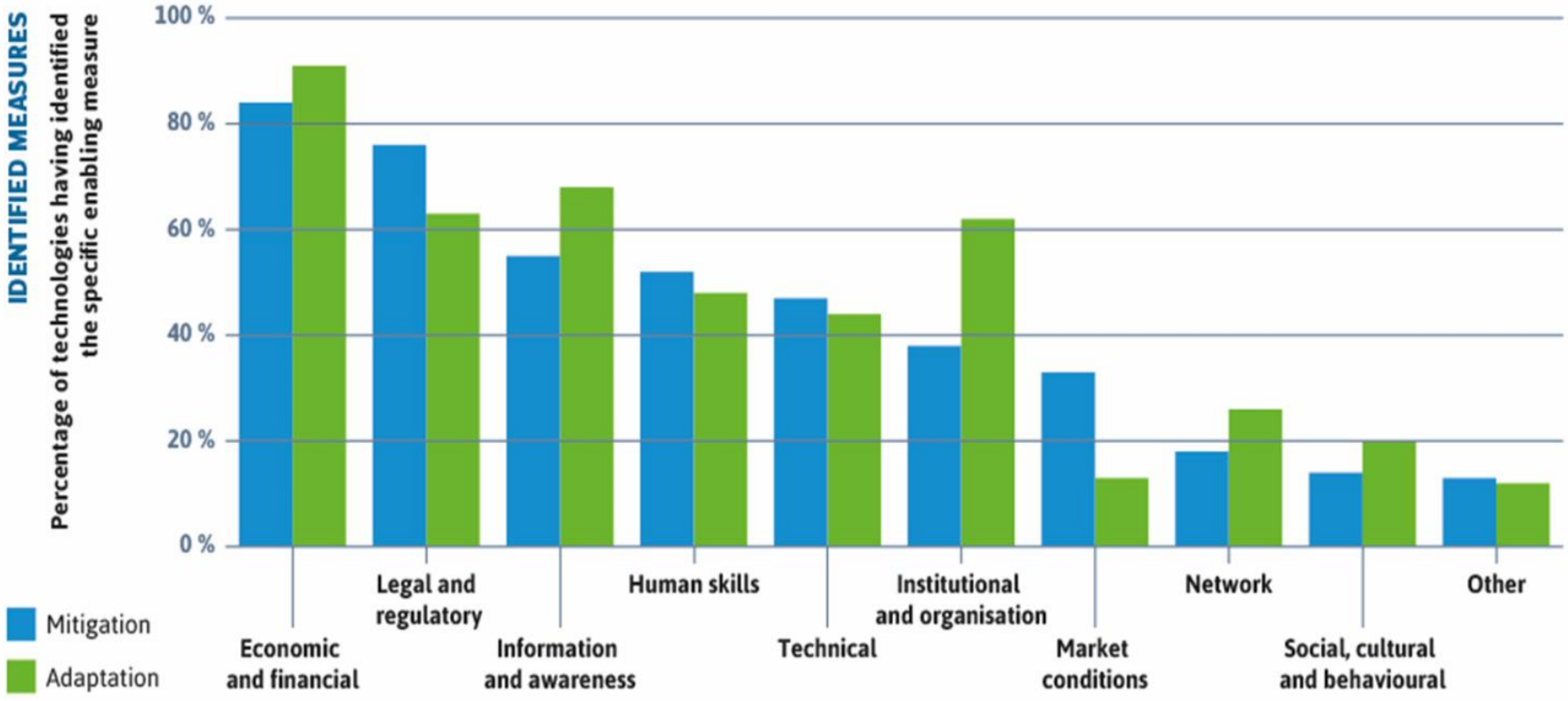


Transport sector



The ecosystems

- requirements for technology transfer, implementation and uptake to be successful



GRENADA (TNA 2018)

Results of the TNA process

- The results of the TNA process were integrated into Grenada's Second Communication to the UNFCCC.
- also forms part of project proposals submitted to international donors to funding
- Incorporated into the recently drafted national sustainable development plan
- are being integrated into the Nationally Determined Contribution - currently under revision

COLOMBIA (TNA 2018)

Low Carbon and Efficient National Freight Logistics Initiative

- Colombia has developed a medium-size project with the GEF Trust Fund, which is implemented by the Inter-American Development Bank.
  - With a total cost of five million USD
  - goal of reducing GHG emissions from the freight transport sector.

Explore TNA reports and country priorities

More information on TNAs available at:

www.tech-action.org and http://unfccc.int/ttclear/

Lindy Charlery

lincch@dtu.dk

United Nations Framework Convention on Climate Change

Climate Technologies and Technology Needs Assessment activities in Latin America and Caribbean region.

UNEP DTU & UNFCCC Webinar
June 30, 2020

Vladimir Hecl
UNFCCC Technology team

Technology in Paris Agreement

- Parties share a long term vision on **importance of fully realizing technology development and transfer** in order to improve resilience to climate change, and to reduce GHG emissions.

- **Establishment of technology framework** to provide guidance to the work of technology mechanism in promoting and facilitating enhanced action on technology development and transfer in order to support the implementation of the PA.

- Parties to the UNFCCC shall **strengthen cooperative action** on technology development and transfer.

- The **Technology Mechanism** established under the Convention **shall serve PA**.

To operationalize Paris Agreement, the COP in its Decision 1/CP.21, (para. 67) requested the SBSTA to initiate elaboration of the **Technology Framework** which should:

- Facilitate undertaking and updating TNAs, and implement their results via bankable projects,
- Provide enhanced finance and technical support,
- Assess technologies that are ready for transfer,
- Enhance enabling environments for, and address barriers to, development and transfer of environmentally and socially sound technologies.

Key themes of the Technology Framework:

- Innovation
- **Implementation (TNAs)**
- Enabling environments and capacity building
- Collaboration and stakeholder engagement
- Support

Implementation:

- Actions and activities under this key theme should also facilitate the implementation of mitigation and adaptation action identified using planning tools and processes such as:

- nationally determined contributions,
- long-term low greenhouse gas emission development strategies,
- **technology needs assessments,**
- national adaptation plans,
- technology road maps and
- other relevant policies,

and facilitate overcoming challenges by implementing such action.

Implementation:

TNA discussed workstreams:

- **Facilitating the undertaking and updating of TNAs**, as well as enhancing the implementation of their results, particularly technology action plans and project ideas, and capacity building related to TNAs.

- **Promoting the alignment of TNAs with NDCs and NAPs** in order to increase coherence between the implementation of those national plans with national strategies to achieve climate-resilient and low-emission development.

- **Reviewing the TNA guidelines** and updating them as necessary with a view to TNAs leading to plans and implementation that are aligned with the transformational changes envisioned in the Paris Agreement.

TNA compilation and synthesis

Deliverable I: TNA report

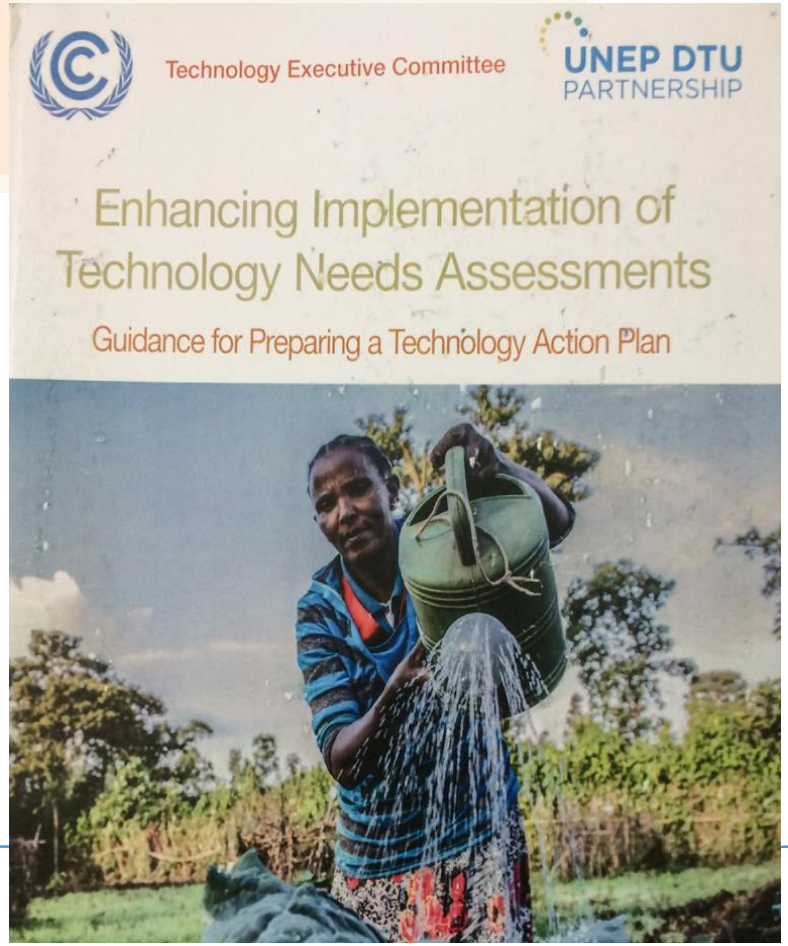
Main elements:
- Sector identification and prioritization
- Technology identification and prioritization in each prioritized sector

Deliverable II: Barrier analysis and enabling framework report

Main elements:
- Barrier analysis for each technology and enablers addressing the barriers
- Enabling framework technologies

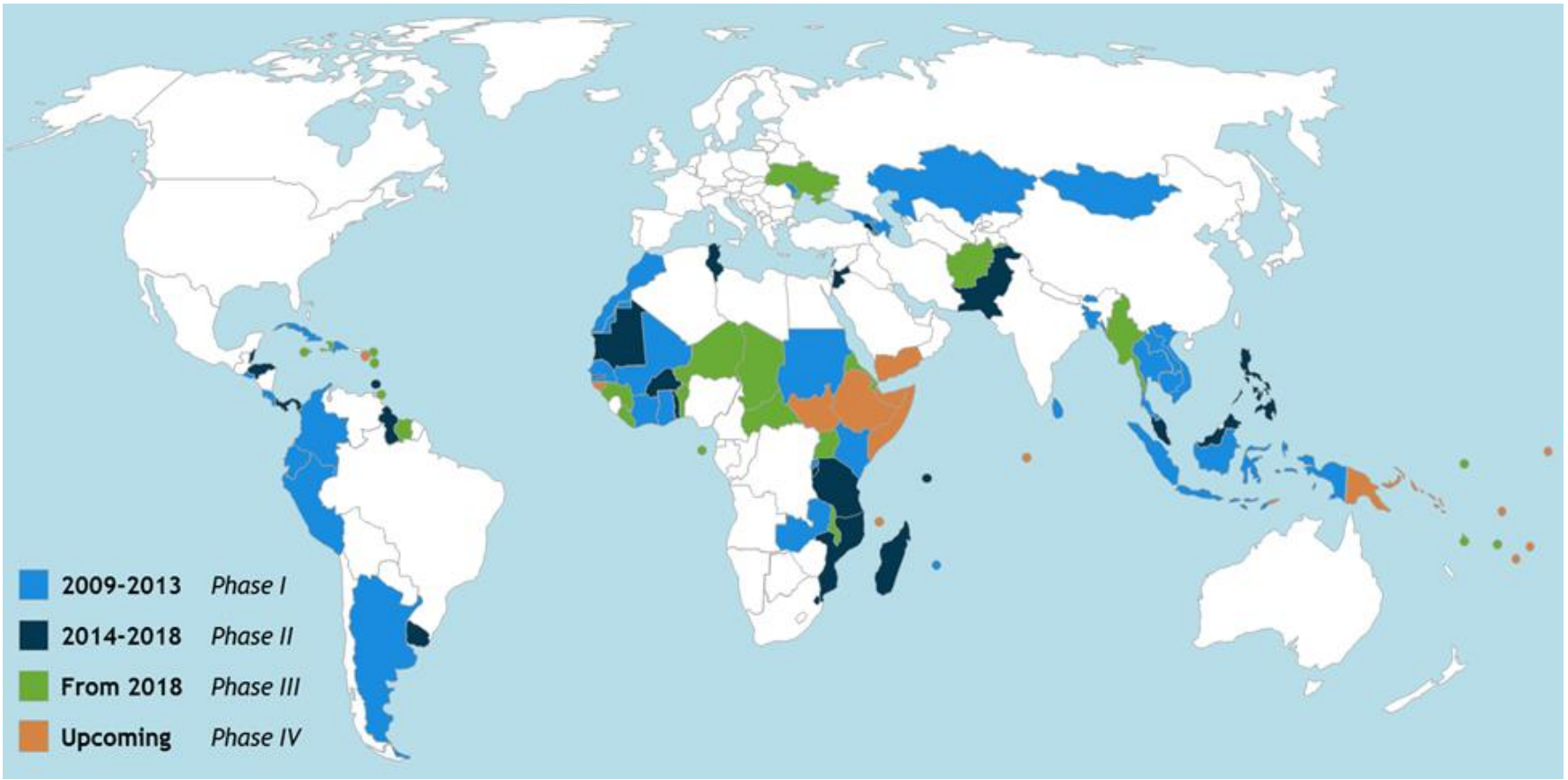
Deliverable III: Technology Action Plans

Main elements:
- Action plan for prioritized technologies per sector
- Action plan for each prioritized technology
- Cross-cutting issues



GEF TNA GLOBAL SUPPORT PROJECT

TNA of developing countries (2019)



4th TNA synthesis report

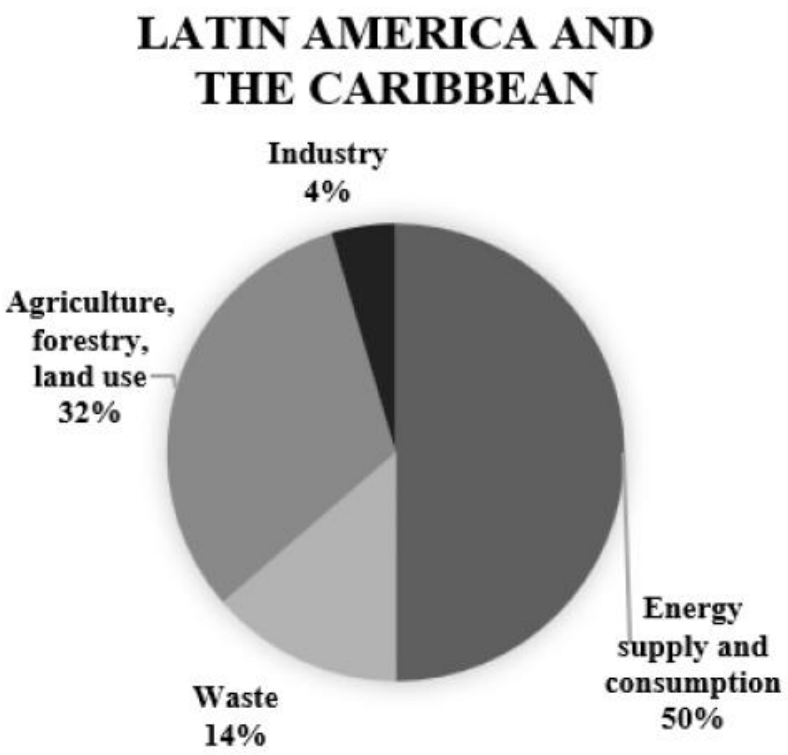
- The 4th TNA synthesis report covers the finalized TNA reports of 53 non-Annex I Parties that were submitted by 20 August 2019

- TNA reports were submitted by 21 Parties from Africa, 18 Parties from the Asia-Pacific region and 14 Parties from Latin America and the Caribbean.

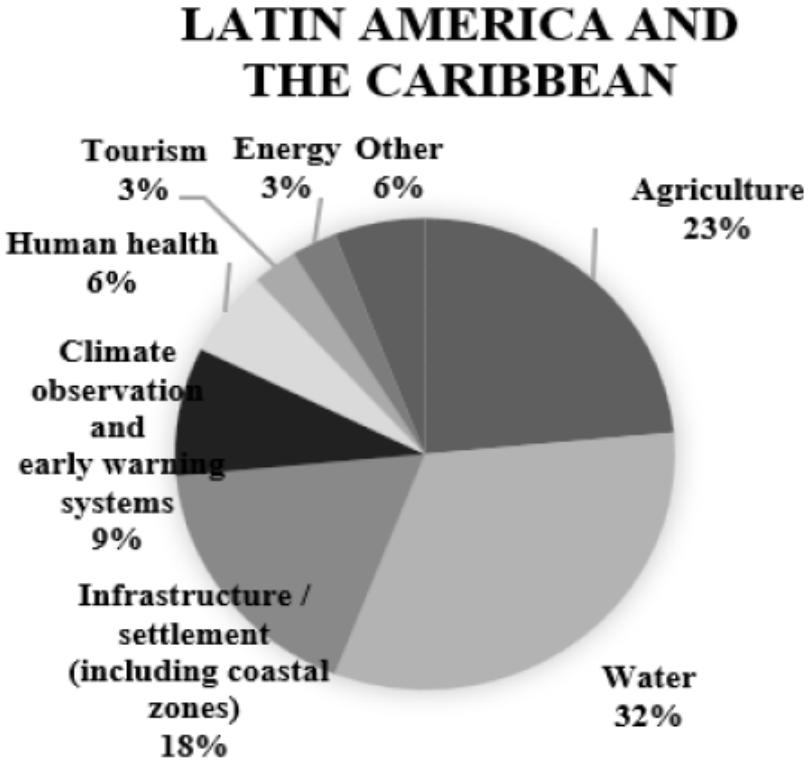
- Energy supply and consumption in mitigation and Agriculture and Water were reported by Latin American and Caribbean countries as the sectors with most of climate technology needs.

4th TNA synthesis report

Mitigation sectors



Adaptation sectors



Content of a new TEC Policy Brief

- Describes gaps, challenges and good practices of the TNA implementation process,
- Provides overview of good practices of TNA implementation,
- Delivers examples of ways to enhance implementation of TNAs,
- Offers recommendations on actions for enhancing the implementation of TNA results on various levels: domestic, regional, international, financial, private sector, others.

Gaps and challenges

- Lack of domestic capacities to facilitate implementation,
- Limited access to funding sources in many developing countries,
- Lack of involvement of funding institutions in the early stages of the preparation of project proposals,
- Implementation-oriented approaches are not sufficiently considered,
- Late engagement of funders with TNA teams,
- Mismatch between TNA identified priority needs and priorities of donors.

Good practices of TNA implementation

Uruguay (phase II)	**Diversification of electricity mix with a strong domestic renewable energy component**	**Local capacity-building in relation to new renewable energy and electricity storage technologies, considering future scenarios in which surplus stored will be used to meet local electricity demand in some key sectors of the national economy**
Honduras (phase II)	Sustainable livestock production	Sustainable livestock NAMA identified in TNA and TAP; NAMA and TNA in tandem

Ways to enhance implementation of TNAs

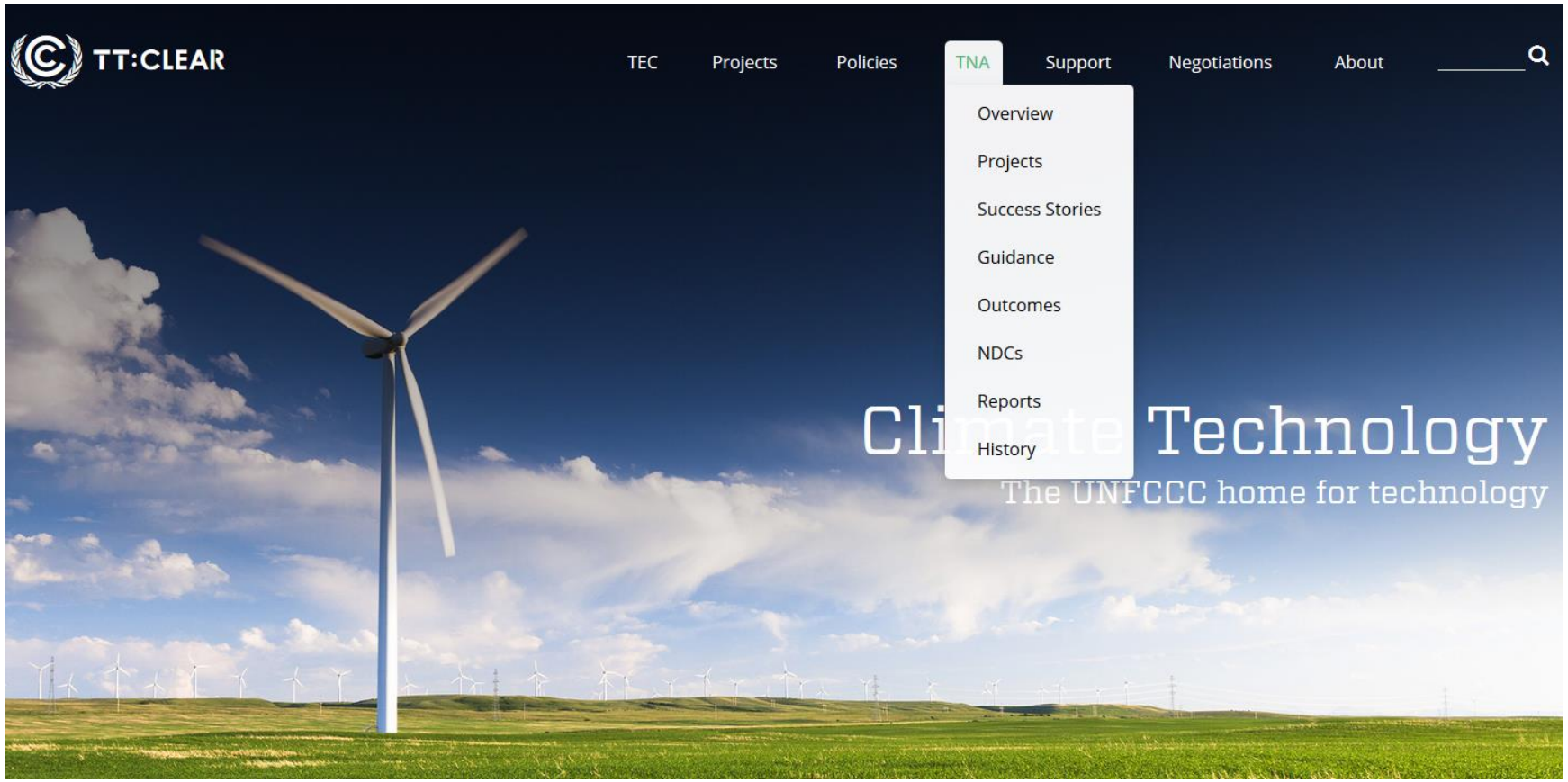
- The engagement of stakeholders and ministries during the TNA and post-TNA phase in order to **include TNA-prioritised technologies in new or ongoing governmental programmes**,
- Co-development of TNAs and TAPs with NAMAs, NDCs, GEF, GCF and AF pipelines helps to **mainstream TNA outcomes in overarching national strategies and programmes** for climate and sust. dev.,
- **Development of pilot projects to demonstrate technology options**, with financial support from multilateral funding programmes and development partners, and technical support and advice from CTCN,
- **Engage possible funders for the TAP activities in an early stage of the TNA-TAP process**, which can inform country stakeholders about what funders will fund and avoid mismatches between countries' and funders' priorities,
- **Consideration of TNA prioritised technology options in proposals** submitted to the GCF and other relevant institutions,
- **Role of equipped and trained champions is key for projects success**, to continue work beyond TNA project timelines.

Recommendations on actions for enhancing the implementation of TNA results

Domestic (capacity building, enabling environment)

- **Further promotion of TNA results** domestically with a view to enhance their implementation,
- Experts from relevant bodies, such as **Ministries of Finance, and Energy/Economy, NDEs, NDAs and others could be introduced to domestic TNA results** as an opportunity to leverage their implementation potential,
- **Governments have a major role** to play in creating the enabling environments for technology transfer through strengthening of legal and regulatory frameworks,
- An effective **enabling environment** for technology development and transfer is often characterized by sound coordination and communication among government departments and agencies, with the goal of streamlining and easing the way for technology investment,
- **Tracking of implementation of TNA results** is not only included as a final step of the TAP development, but also as an issue to be discussed upon the start of the TNA process.

http://unfccc.int/ttclear/



Thank you

Vladimir Hecl
UNFCCC secretariat, technology team

GCF Support to Climate Technologies and Technology Needs Assessment

Activities in Latin America and the Caribbean

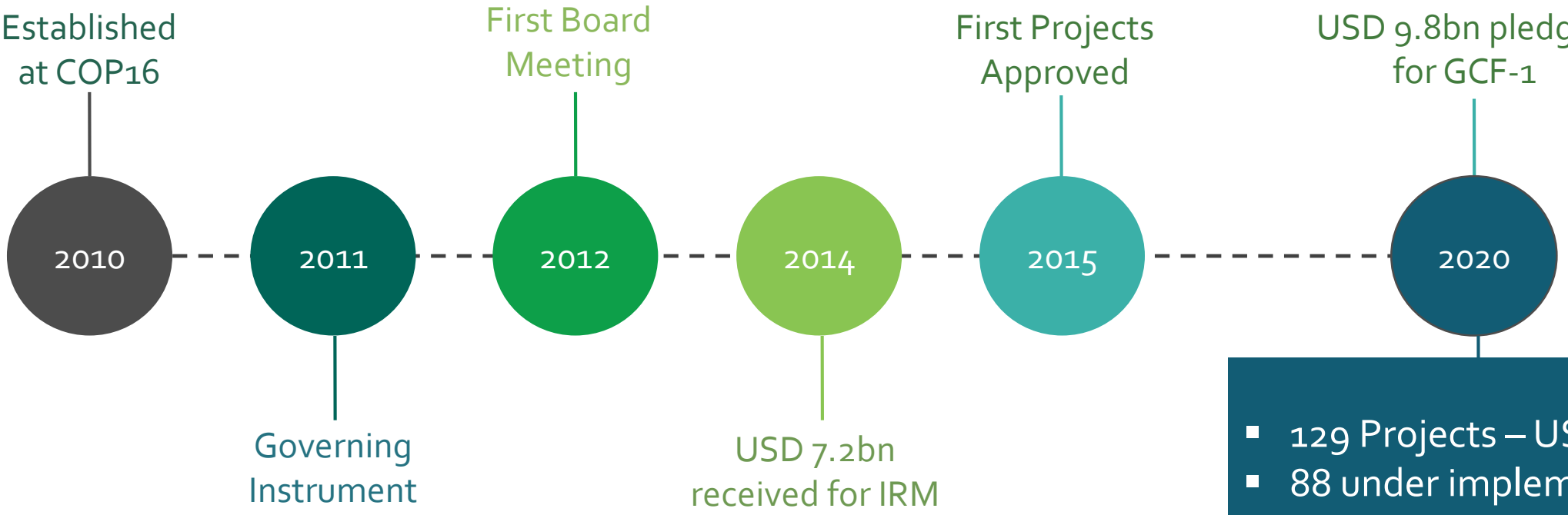
Emerson Resende | Climate Policy Specialist

UNEP-DTU Webinar, 30 June 2020

A QUICK HISTORY

A QUICK HISTORY

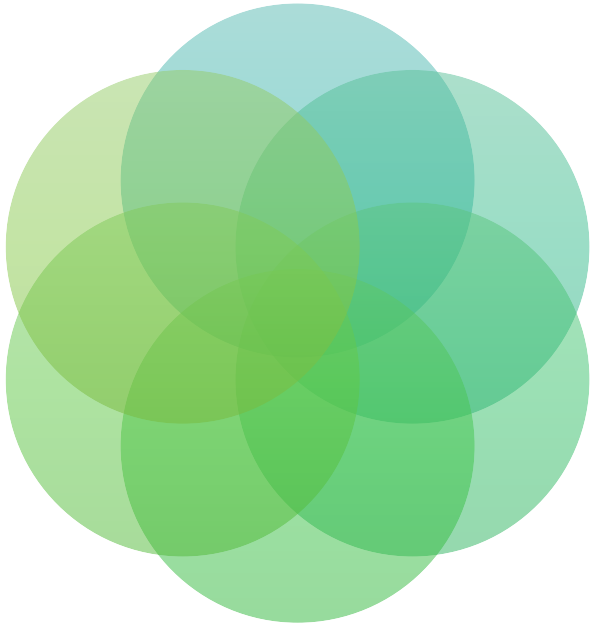
(As of 15 March 2020 – B.25)



- 129 Projects – USD 5.6bn
- 88 under implementation
- 95 Accredited Entities
- 108 countries reached

An **operating entity of the UNFCCC financial mechanism** fostering a **paradigm shift** to low-emission and climate-resilient development pathways in developing countries

COLLABORATIVE ADVANTAGES



Dedicated Climate Finance Entity

Capital Agnostic

Innovative & risk-taking

Balancing mitigation and adaptation

Country-driven: readiness and direct access

Partnership Institution

IMPACT AREAS

GCF makes investments within **8 strategic result areas**, in line with country priorities.

Reduced Emissions From:

Energy generation and access

Transport

Buildings, cities, industries and appliances

Forests and land use

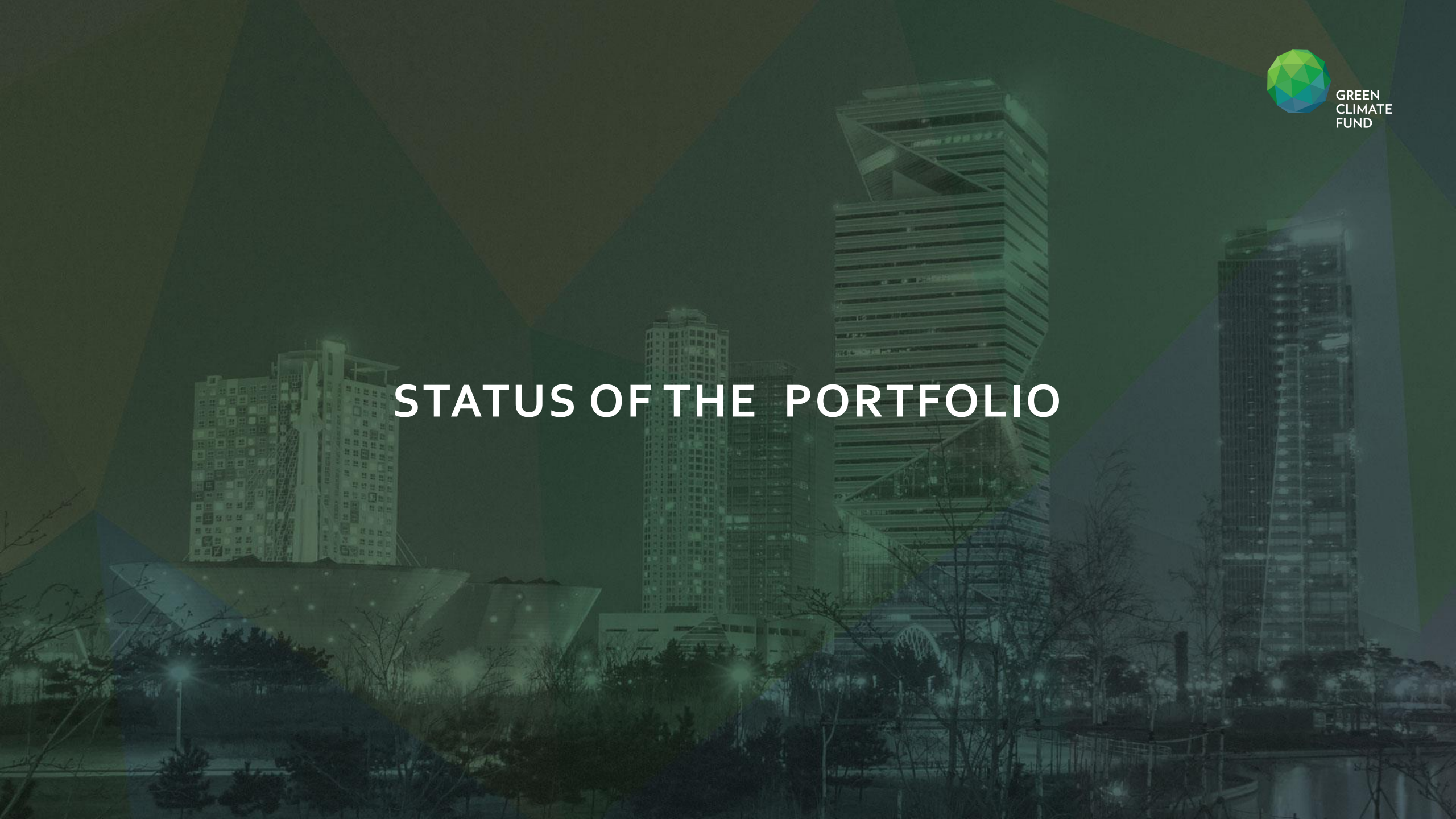
Increased Resilience of:

Livelihoods of people and communities

Health, food and water security

Infrastructure and the built environment

Ecosystems and ecosystem services



STATUS OF THE PORTFOLIO

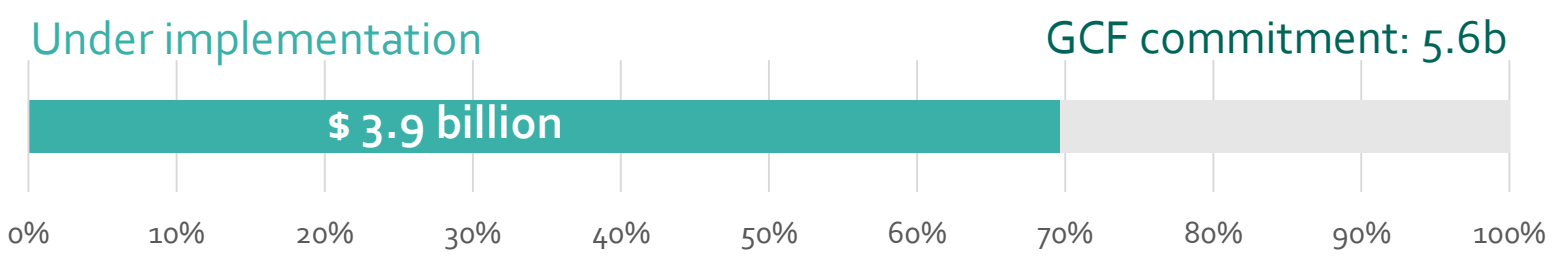
STATUS OF THE PORTFOLIO

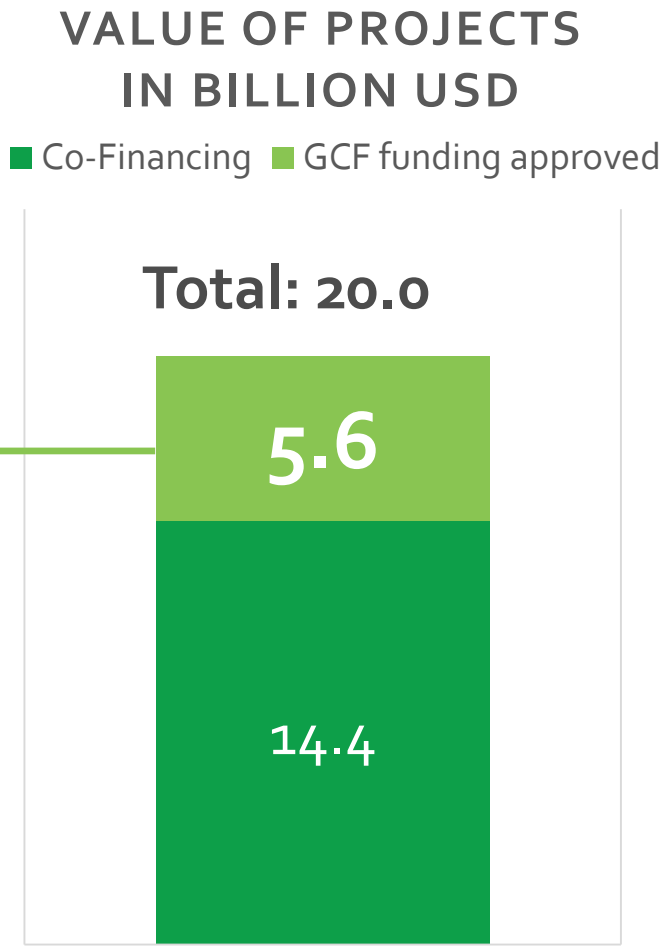
(As of 15 March 2020 – B.25)

129
Approved projects

88
Projects under implementation

3.9b of GCF funding
957.2m disbursed

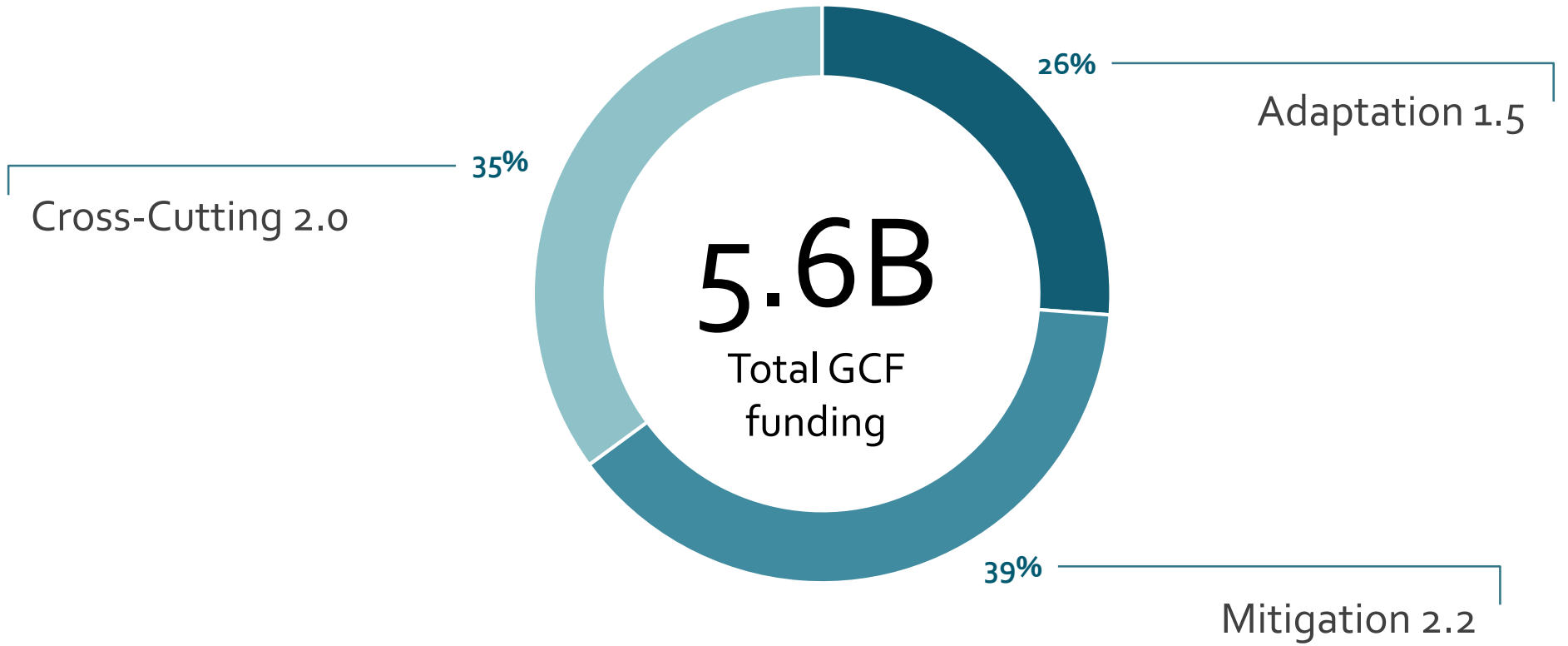




STATUS OF THE PORTFOLIO

(As of 15 March 2020 – B.25)

APPROVED PROJECTS VALUE BY THEME (billion USD)



STATUS OF THE PORTFOLIO

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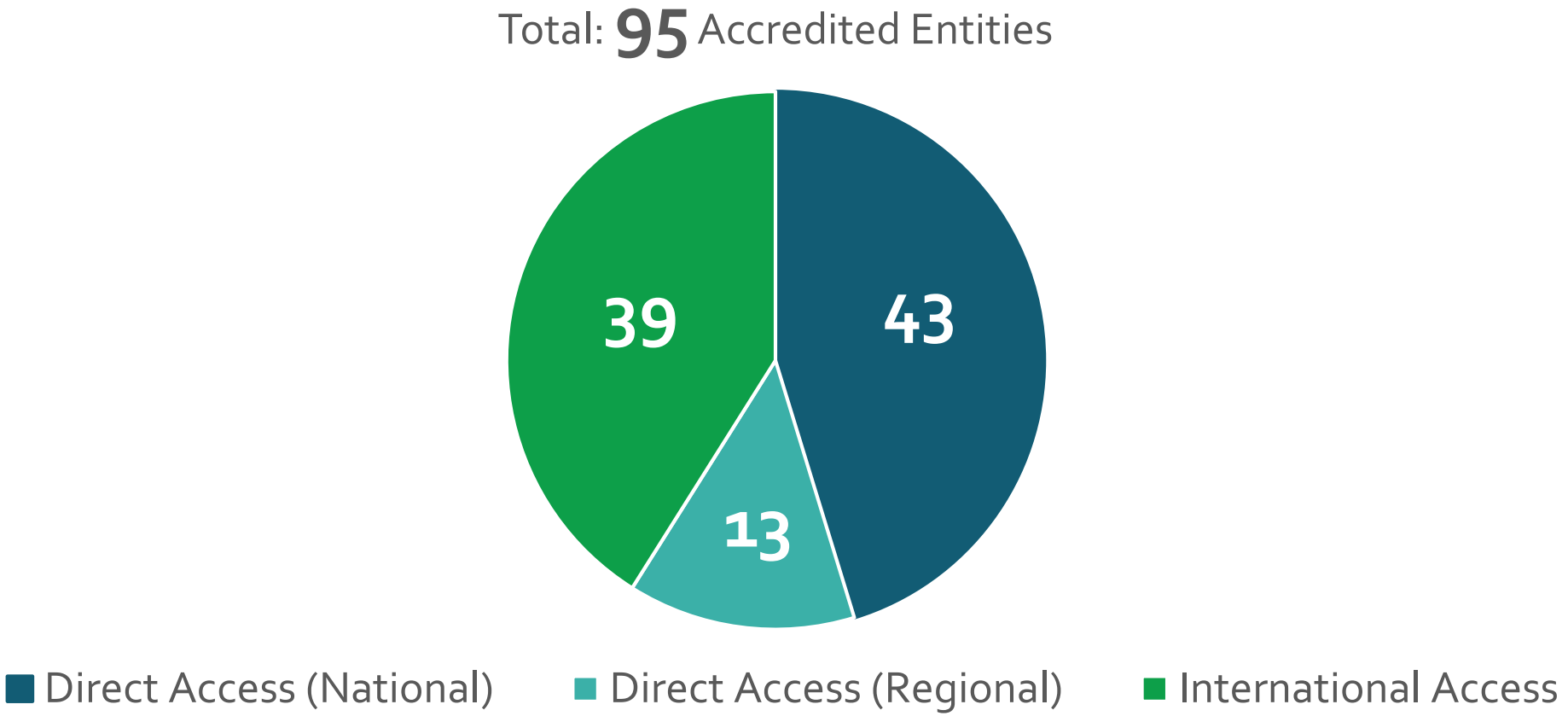
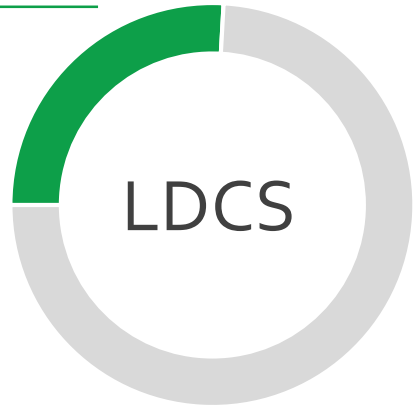


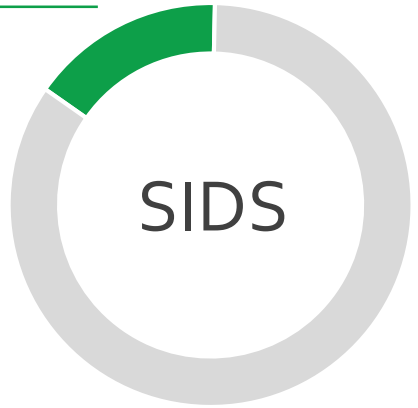
STATUS OF THE PORTFOLIO

(As of 15 March 2020 – B.25)

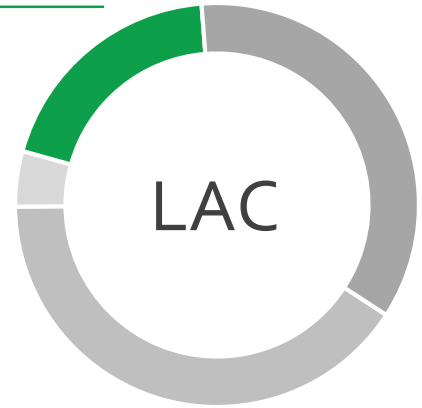
1.5B
26%



0.8B
16%



1.1B
20%



APPROVED PROJECTS IN LAC

(As of 15 March 2020 – B.25)

GCF FUNDING IN LAC (USD)

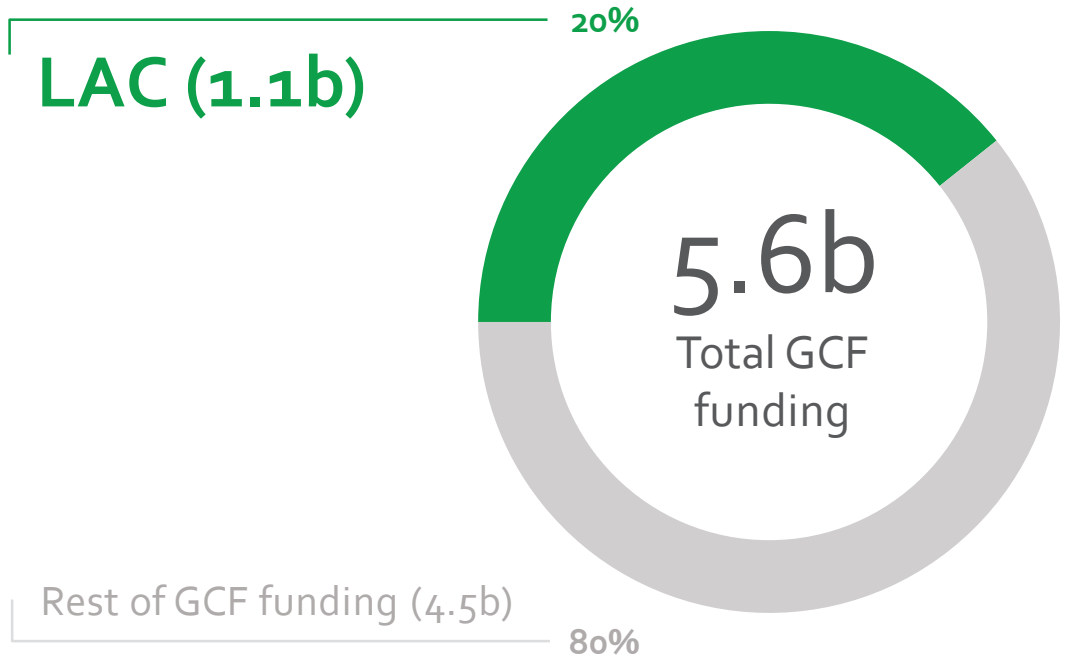
1.1b
GCF funding

2.4b
Co-financing

28
Total approved GCF projects

20
Projects under implementation

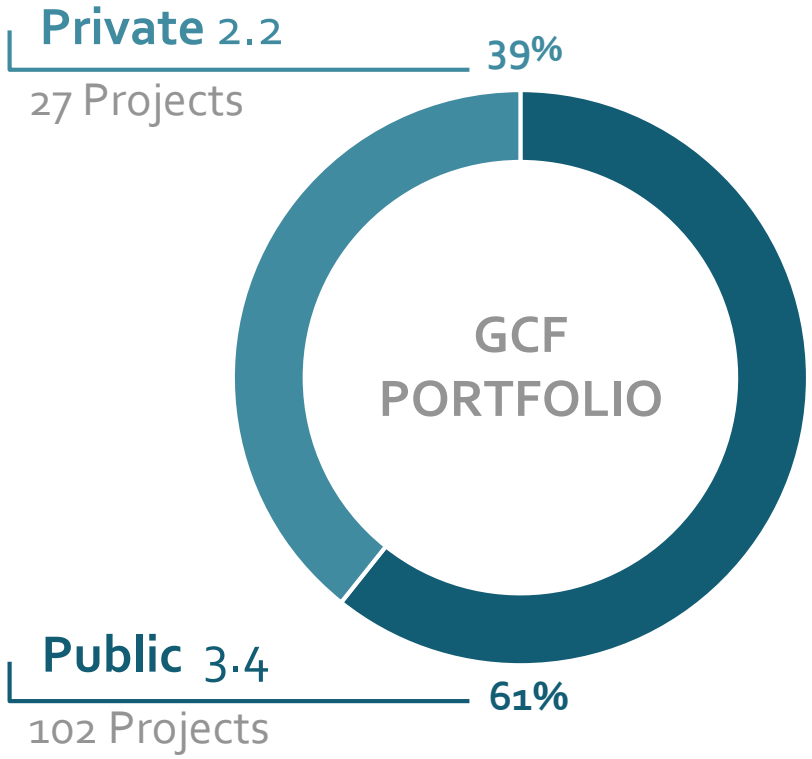
GCF GLOBAL PORTFOLIO (USD)



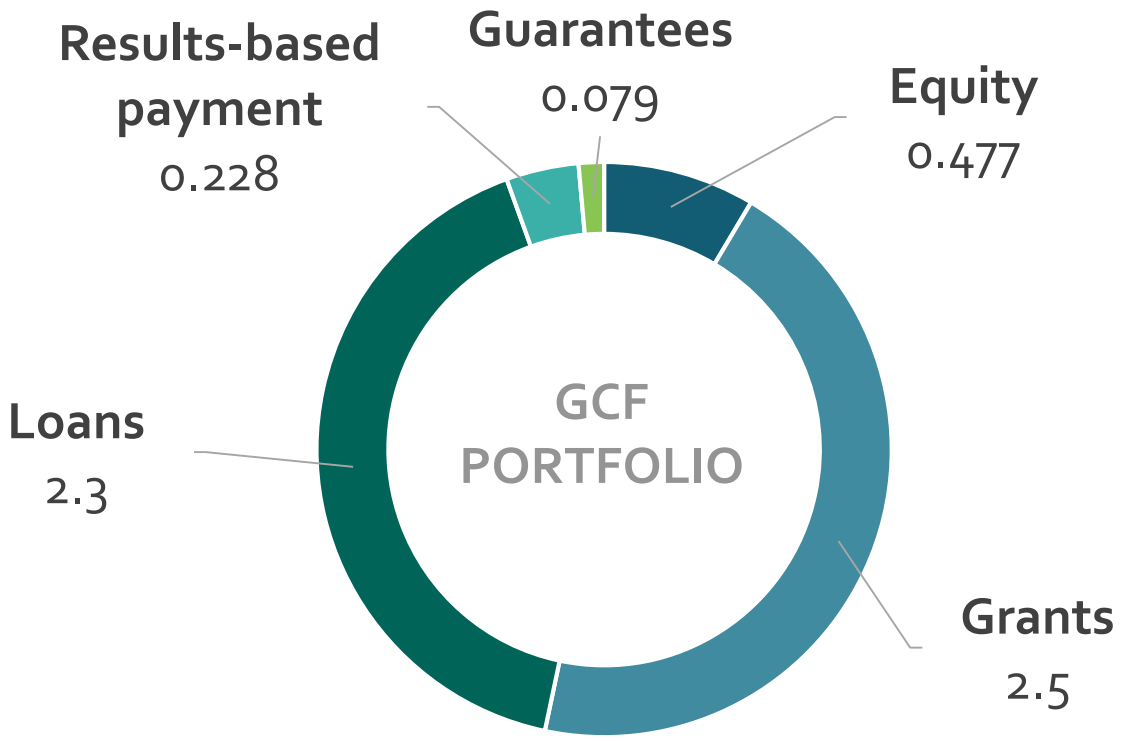
FUNDING AMOUNT

(As of 15 March 2020 – B.25)

BY SECTOR (billion USD)

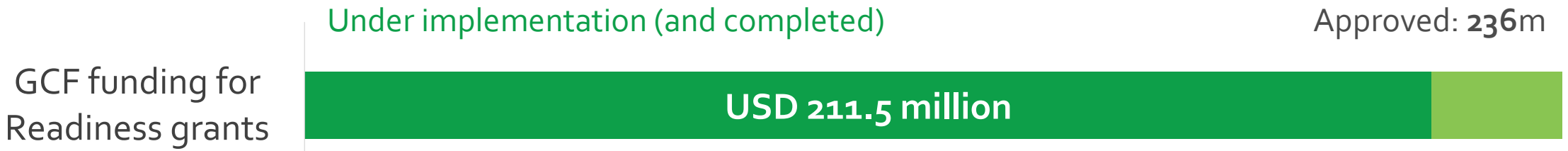


BY FINANCIAL INSTRUMENTS (billion USD)



READINESS AND PREPARATORY SUPPORT PROGRAMME (READINESS)

(As of 15 March 2020 – B.25)



138
countries targeted

GREEN CLIMATE FUND

SUPPORT TO CLIMATE TECHNOLOGIES

INCUBATORS AND ACCELERATORS

GREEN CLIMATE FUND

STAGES

WHAT

HOW

CLIMATE INNOVATION FACILITY - UNDER DEVELOPMENT

A market-oriented solution to support and accelerate early-stage climate innovations and technologies in developing countries

STAGE 1
Regional Innovation Hubs across Asia, Africa and LAC

- Climate centers of excellence (Incubation) → Pre-Seed Stage: Grants; Seed Stage: Reimbursable grants
- Early-Stage Innovation Fund → Early Stage: Series A: Equity

STAGE 2
Regional Climate Accelerators in Asia, Africa and LAC

- Private equity fund structure → Early & Late Stage: Series A,B,C: Equity/Debt

STAGE 3
Climate Growth Fund TBD

- Early-Stage Innovation Fund → Growth Stage Exits and IPO Equity/Debt

READINESS SUPPORT FOR TECHNOLOGY

Readiness

24

approved

Regions	15 Africa	7 Asia-Pacific	2 LAC
Delivery Partners	14 UNEP-CTCN	9 UNIDO-CTCN	1 UNEP
Type of Support	Energy Efficiency Appliances and Equipment	TNA's support	Others

USD

$8

MM

As of March 15, 2020 – B.25

CASE STUDIES OF GCF APPROVED SUPPORT FOR TECHNOLOGY IN LAC

GREEN CLIMATE FUND

Technology Needs Assessment for the Implementation of Climate Action Plans in Brazil

Approved $700,000	Strengthening country capacities by establishing an effective coordination mechanism for the implementation of the TNA process
Duration June 2018 – Nov 2020	Improving access to finance by identifying and prioritizing sectors and technologies for mitigation activities; elaborating roadmaps for the implementation of the priority technologies; and validating the technology action plan.

CLICK HERE for the details of this project

The Bahamas Power System Stability Study for Implementation of a Higher Renewable Energy Penetration Leve

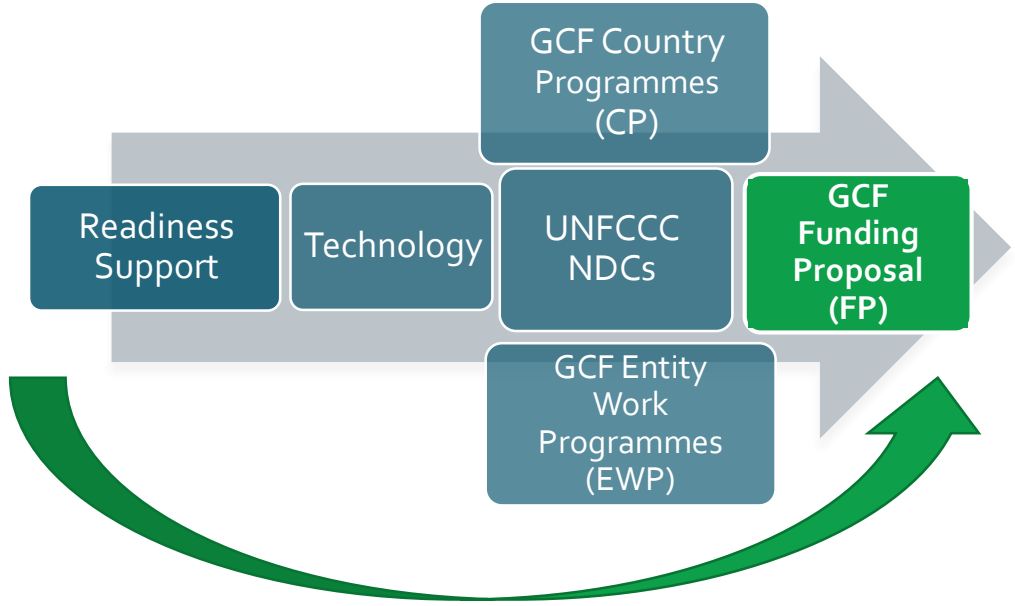
Approved $369,715	Provide a customized plan of recommended practices and technologies to improve The Bahamas grid's ability to accommodate significantly more clean energy
Duration Jan 2019 – Jan 2021 (Blanket extension)	CTCN gender mainstreaming tool will be used as baseline reference to assure that gender issues will be included since the early stage of the technology analysis

CLICK HERE for the details of this project

CONCLUSIONS

In respect to climate technologies, the GCF Readiness Programme must serve to:

1. Enhance coordination between NDE and NDA
2. Increase ambition for transformative technologies
3. Create long-term vision and linkage between NDC, CP, EWP, FP
4. Respond to specific and identified challenges of country ownership
5. Tailor approaches that are not one-size fits all
6. Ensure complementarity and coherence
7. Avoid duplication of effort
8. Link closely policy/planning and programming: TNA or TNA action **must link to actual climate finance investment**



GREEN CLIMATE FUND

Mr. Emerson Resende
Climate Policy Specialist
Office of Governance Affairs

THE UNIVERSITY OF THE WEST INDIES

REGIONAL CENTRE PERSPECTIVE ON TNA IN THE CARIBBEAN: CHALLENGES & LESSONS LEARNED

Donovan Campbell

30 June 2020

FOCUS

1 REGIONAL CENTRE

2 EMERGING INSIGHTS

3 LESSONS…SO FAR

DISASTER RISK REDUCTION CENTRE (UWI)

The UWI serves 17 Caribbean Territories and has over 7 decades of applied research experience across the region

The UWI is currently leading the Global University Consortium (GUC) on SDG-13

Disaster Risk Reduction Centre (DRRC) serves as the focal point for disaster risk reduction activities at the University of the West Indies.

The Centre and its core team have built relationships with a range of stakeholders at the local, national and regional levels.

A Regional Centre of Excellence

TNA TECHNOLOGY NEEDS ASSESSMENT

TNA INSTITUTIONAL STRUCTURE

	National Steering Committee	To provide high-level guidance and help secure political acceptance
	TNA Coordinator	Leader, focal point and manager of the overall process
	National Consultants (Experts)	Responsible for the research, analysis and synthesis of the entire process.
	Sectoral / Technical Working Groups	Representatives from relevant Ministries, Academia, Private Sector, Civil Society
	National TNA Team	National TNA Coordinator, National Consultants and Working Groups
	Regional Centres	Technical support
	UN Environment/UDP	Technical and process support

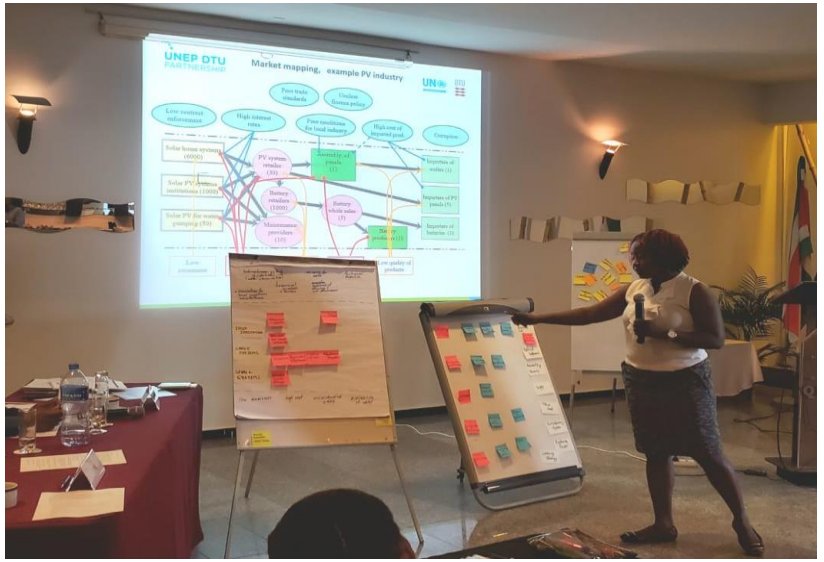
REGIONAL CENTRE

Coordinate the implementation of the project

Facilitate the implementation of the Technology Needs Assessment Tools and Methodology

Technical Assistance and Partnership development

- Regional training workshops
- Technical review of TNA reports
- Help desk to provide technical support



STAKEHOLDER ENGAGEMENT

Extensive stakeholder consultations

Country driven process

Caribbean TNA covers many sectors and technologies

Different individuals and groups involved

A broad spectrum of individuals and groups consulted across the countries

Trinidad & Tobago

Suriname

Jamaica

Dominica

Antigua & Barbuda

POLITICAL ACCEPTANCE

Interest and commitment at high levels

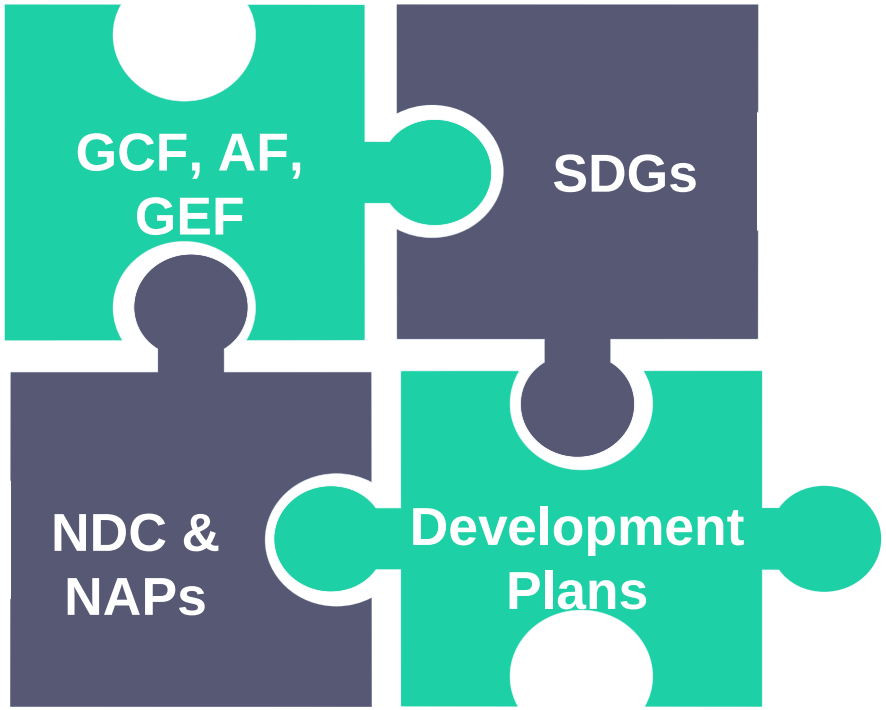
The TNA process is not an end in itself but a **process** that aims to integrate the climate technology concept into the national strategies and plans of the countries.

Consultations have included stakeholders **able to support** project ideas in the political arena.

The level involvement shows the relevance of the project for decision makers.

ALIGNMENT

Evidence of interlinkages with current & future and programmes



TNA synergies with climate policies & strategies

ALIGNMENT

GRENADA

TECHNOLOGY NEEDS ASSESSMENT

ADAPTATION REPORT

February 2017

UNEP DTU PARTNERSHIP

FUNDACIÓN BARILOCHE

libélula

GRENADA, CARRIACOU & PETITE MARTINIQUE

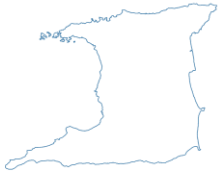
Second National Communication to the United Nations Framework Convention on Climate Change

The Government of Grenada

JULY 2017

TECHNOLOGY IS A GAME CHANGER…

Genuine belief…



Trinidad & Tobago

Suriname

Jamaica

Dominica

Antigua & Barbuda

TECHNOLOGY IS A GAME CHANGER…

Genuine belief…

State-owned Jamaica Urban Transit Company (JUCT) is to be diversified with the introduction of 45 electric buses (Feb. 2020)

Trinidad & Tobago

Suriname

Jamaica

Dominica

Antigua & Barbuda

LESSONS… SO FAR

Utilize existing institutions and networks

Build on existing technologies

Be patient, flexible & understanding

Identify capacity-building opportunities early

TNA Coordinators & consultants who appreciate science

MOVING FORWARD

THANK YOU

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CLIMATE TECHNOLOGIES AND TECHNOLOGY NEEDS ASSESSMENTS ACTIVITIES IN THE LATIN AMERICA & CARIBBEAN REGION

A Pathway to Resilience in Jamaica

June 30, 2020

UN environment programme

gef
GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

UNEP DTU PARTNERSHIP

THE UNIVERSITY OF THE WEST INDIES
MONA CAMPUS
JAMAICA, WEST INDIES

OUTLINE

- *The Climate Context*
- *Priority Sectors*
- *The Rationale*
- *Institutional Arrangements*

- *The TNA Process*
  - *Phase 1- Prioritization of Technologies*
  - *Phase 2- Barrier Analysis & Enabling Framework*

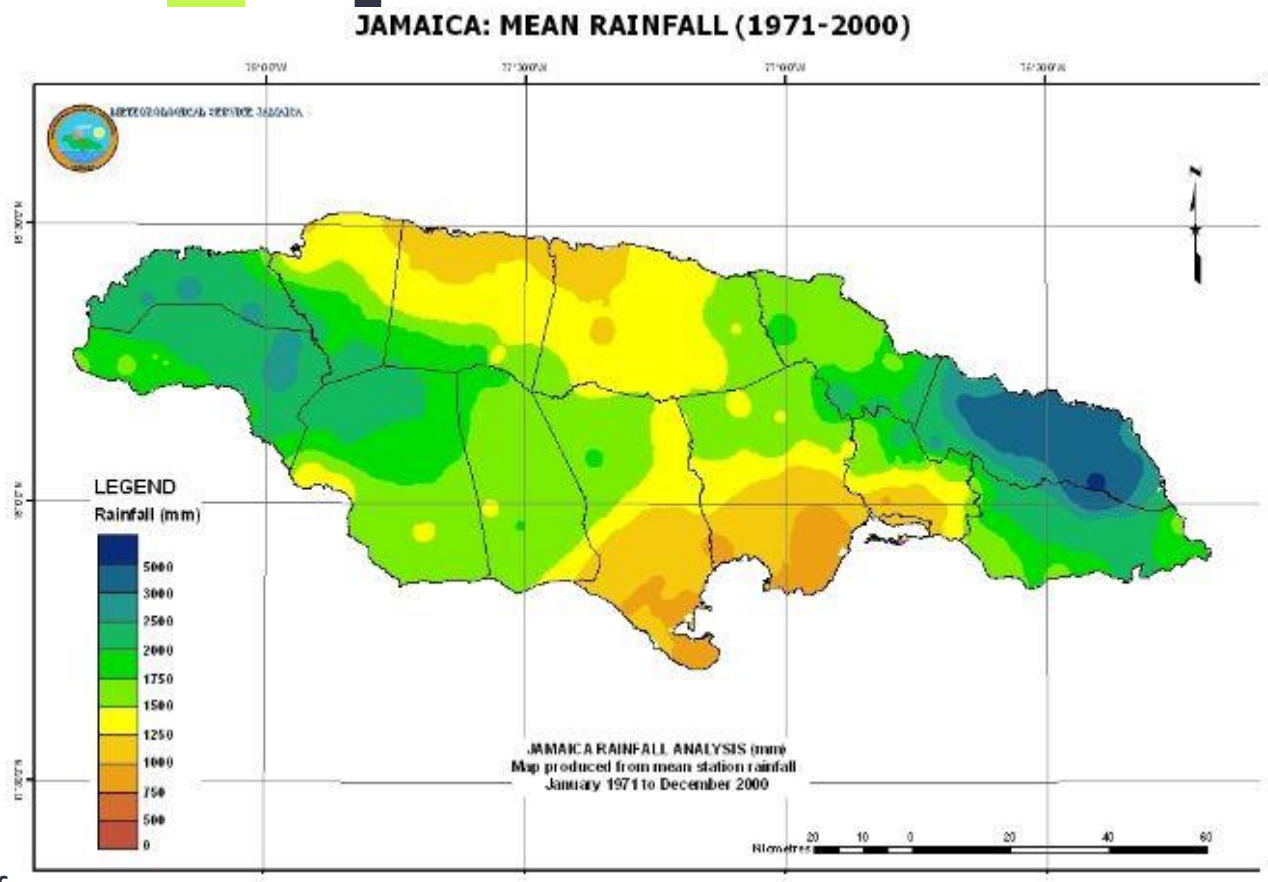
- *Good Practices*
  - *Communications*
  - *Stakeholder Engagement*
  - *Gender Considerations*

- *Lessons Learned & Next Steps*

Wigton Wind Farm, Manchester, Jamaica

CLIMATE CHANGE CONTEXT

- The mean annual temperature for Jamaica is projected to increase between 0.7˚C to 1.8˚C by the 2050s and 1.1 ˚C and 3.2 ˚C by the 2090s, based on existing models;
- Projected rainfall changes range from –44% to +18% by the 2050s and –55% to +1 8% by the 2080s;
- The likelihood of more severe hurricanes will increase, although the overall frequency of hurricanes remains uncertain;
- Sea level is projected to rise between 0.18 m and 0.59 m by 2100 relative to 1980–1999 levels;
- Beaches, including coastal lands, will be eroded as a result of sea-level rise and changing processes that affect the coastline (*NAMA ,2019).*



PRIORITY SECTORS

- Sectors were also highlighted as among the five most vulnerable to climate change in assessments conducted for Jamaica's Second National Communication (SNC) to the United Nations Framework Convention on Climate Change (UNFCCC)
- Assessment included the vulnerability of the sectors to climate change and would have taken into account the contributions to GDP from each sector
- Informed by and linked to the Third National Communication (TNC), the Nationally Appropriate Mitigation Action (NAMA), the Renewable Energy NAMA, and the Nationally Determined Contributions (NDCs)

Adaptation

- Agriculture sector
- Coastal Resources
- Water Resources

Mitigation

- Agriculture Sector
- Energy Sector

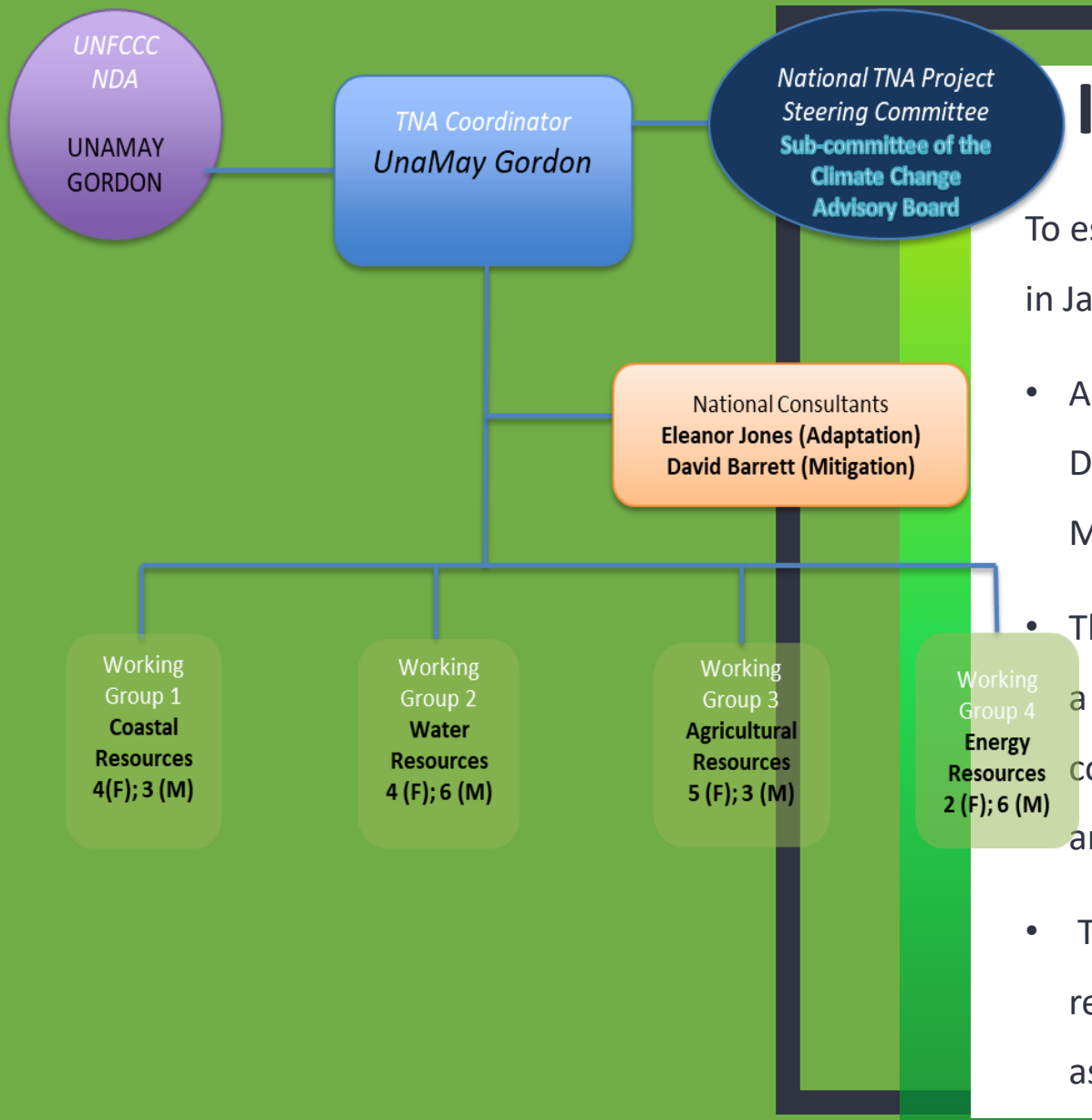
RATIONALE

Hurricanes, floods, landslides, storm surge inundations (fishing beaches overwashed with sand and debris or heavily eroded, changing the landscape), droughts, and bush fires have all caused significant damages to agricultural infrastructure, as well as losses in domestic and export crops, livestock production, fisheries and employment (Table1.1). Between 1994 and 2010, these events have incurred an estimated JA$14,390 million in agricultural losses (RADA, 2011)

An estimated 75% of economic assets including air and seaport facilities, urban centres, industries as well as tourism infrastructure are concentrated in coastal areas and are responsible for generating approximately 90% of the island's GDP (Met Office, 2010)

Groundwater supplies account for approximately 80% of Jamaica's water demands and represent 84% of the island's exploitable water (CSGM, 2010)

Jamaica's conditional NDC goals require abetment target of 1.124 MtCo2e by 2030 for the energy sector. This is expected to be achieved through potential and planned GHG reduction initiatives in the production and consumption of energy



INSTITUTIONAL ARRANGEMENTS

To establish the basic framework for the development of the TNA Project in Jamaica, the following institutional arrangements were set up:

- A TNA Coordinator (based at CCD), who also serves as the National Designated Authority (NDA) with respect to the UNFCCC Technology Mechanism in Jamaica, was selected.
- The CCD is further supported by a National Project Steering Committee, a sub-group of the Climate Change Advisory Board, and provides the consulting team with overall vision, leadership support, communication and guidance
- Two independent national consultants were contracted to develop the recommendations for climate mitigation and adaptation, vulnerability assessment and adaptation planning, guided by the TNA methodology

PHASE 1

PRIORITIZATION OF TECHNOLOGIES

- Regional workshop 1- March 2019, Jamaica
- Desktop research & document review
- Stakeholder mapping
- Stakeholder consultations
  - Multi-Criteria Analysis
    - Economic, social, capital, environmental &

1st Regional Capacity Building Workshop for the TNA Group of Caribbean countries in Kingston, Jamaica from 20–22 March 2019

Outcomes/Outputs

- Formation of Technology working Groups- 35 members
- Long list of Technologies (n= 187)
- Short list of Technologies (n= 32)
- Technology Fact Sheets
- Prioritized technologies (10)
- Report 1- Report on Prioritization of Technologies

MCA SCORES FOR SHORTLISTED TECHNOLOGIES

ADAPTATION

Rank	Technology Options	Score
1	Sprinkler and Drip Irrigation	7785
2	Rainwater Harvesting Systems	6813
3	Livestock Disease Management	6633
4	Agro-Economic Zones	6600
5	Reforestation/Afforestation	6180
6	Ecological Pest Management	6345
7	Early Warning Systems	5353
8	Mulching	4800

Rank	Technology Options	Score
1	Wetland Restoration	7550
2	Coral Reef Ecosystem Restoration	6100
3	Rock Revetments	5775
4	Beach Nourishment	4275

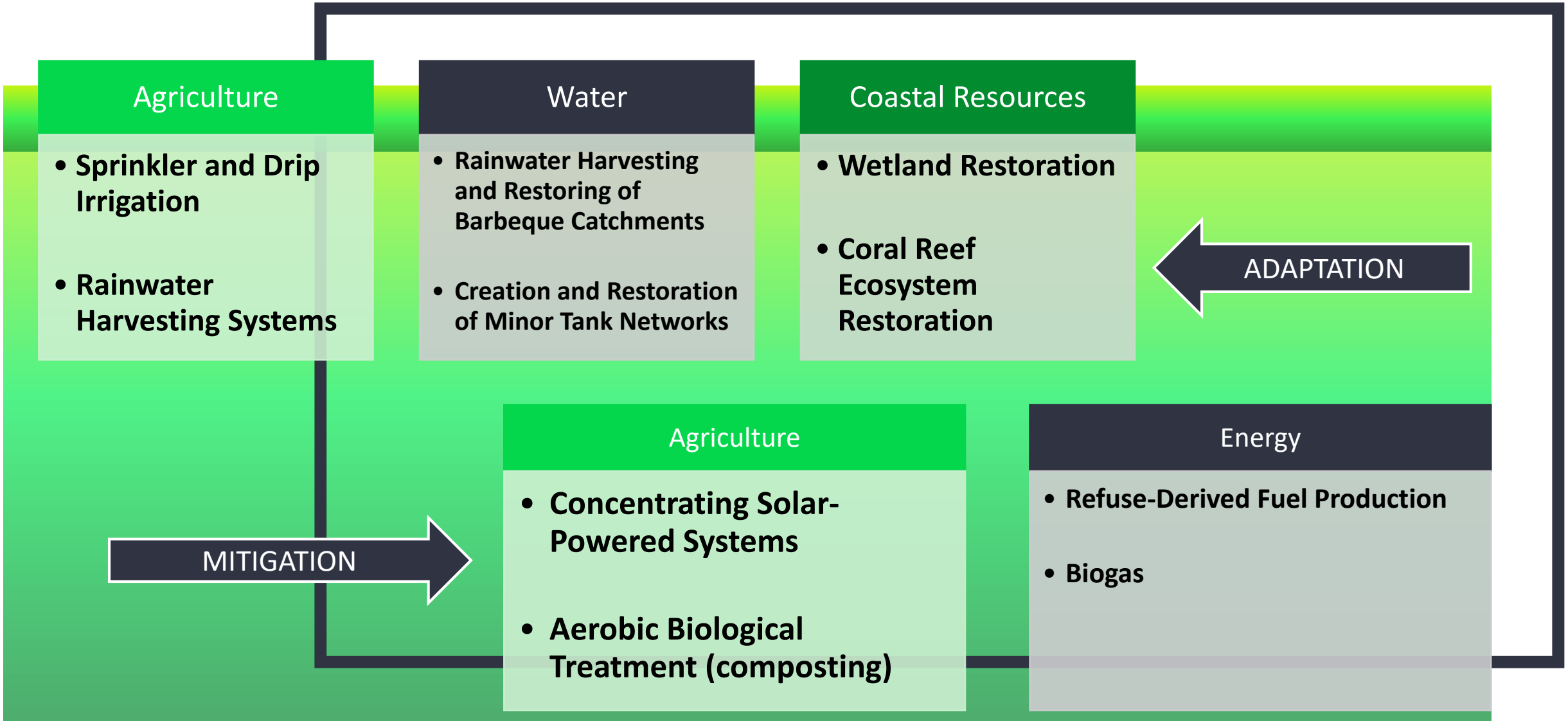
Rank	Technology Options	Score
1	Rainwater Harvesting and Restoring of Barbeque Catchments	7506
2	Creation and Restoration of Minor Tank Networks	6956
3	Water Reclamation and Reuse	6313
4	Artificial Recharge of Aquifers	6056
5	Desalination	4431

MITIGATION

Rank	Technology Options	Score
1	Concentrating Solar-Powered Systems	6575
2	Aerobic Biological Treatment (composting)	6500
3	Solar-Powered Irrigation and Cooling Systems	6400
4	Fodder Banks and Feeding Fields	6400
5	Irrigation	6350
6	Cropping Systems	6300

	Technology Options	Score
1	Refuse-Derived Fuel Production	5873
2	Biogas	6528
3	Seawater Air Conditioning (SWAC)	3205
4	Solar Air Conditioning	5250
5	Above-ground Light Rail	4060
6	Concentrated Solar Power	5675
7	Natural Refrigerants	6210

PRIORITIZED TECHNOLOGIES



PHASE 2

BARRIER ANALYSIS & ENABLING FRAMEWORK

- Prioritization of barriers
- Market categorization
- Problem Tree Analysis
- Market Mapping

2nd Regional Capacity Building Workshop for the Caribbean, Suriname- October 2019

BARRIERS IDENTIFIED

FINANCIAL BARRIERS	NON-FINANCIAL BARRIERS
Lack of capital to set up some systems	Traditional beliefs and approaches to doing things
High cost of operating and maintaining systems	Lack of awareness and limited access to information among some stakeholder groups
Lack of collateral for accessing financing through a loan arrangement- this may include, land titles, house titles or any hardware with significant value.	Limited know-how and technical capacity to initialize, operate and maintain certain systems
Competing development priorities nationally	Rate and magnitude of environmental change that inhibits effective response
	Absence of overarching policy framework
	Weak or non-existent institutional arrangements for implementation and management of

ENABLING FACTORS

Financial	Incentives and fiscal support should be provided to coastal developers who endeavor to avoid disturbance/destruction of the natural coastal, wetlands and the marine environment
	Increase funding initiatives for organizations that promote the sustainable use of coastal resources
	Government should create a tax or bond that businesses which receive with a permit or license to operate along the coast must pay on a yearly basis
Technical/Security	Training in the use of smart digital technology
	Government, Municipal Corporations, Local Police, Communities, and the Private Sector should create partnerships to allow for great security and safety of the community water
Institutional	Build institutional capacity of regulatory agencies
	Public-Private partnership to setup farm scale composting sites across Jamaica to be used as examples for teaching purposes
	Regional tertiary academic institutions could support scholarships for professional programmes
	Create a special water licencing scheme which will allow for private entities to setup rainwater

COMMUNICATIONS

- Use of traditional media and social media platforms to educate and engage stakeholders
- Inclusion of TNA updates in key education and public awareness activities of the Climate Change Division (CCD) – eg. flagship *event- Uncut Conversations on Climate Change*
- Use of Twitter to publicize activities and connect with stakeholders and partners- @UNEPDTU, @UWIMona, @RADAJamaica, etc
- International fora- COP25, Madrid, Spain

STAKEHOLDER CONSULTATIONS

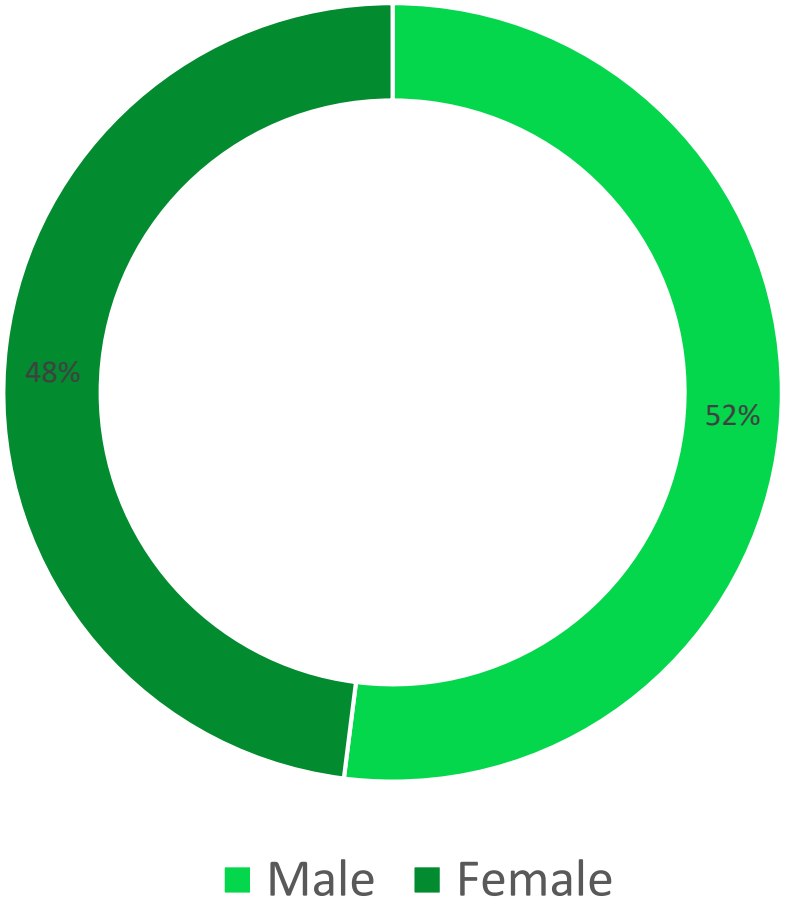
- Allowing for input from local experts and promote country ownership
- Targeting sector experts across a number of key organizations
- Government, NGOs and international development partners
- Use of various communication channels to expand consultations

Stakeholder meeting with marine and coastal experts

GENDER CONSIDERATIONS

- Gender balance in the composition of the Technology Working Groups
- Sex disaggregated data to establish baselines and conduct situational analysis
- Gender specific questions in prioritization of technologies and analysis of barriers and enabling factors
- Guided by the TNA Guidance for Gender-Responsiveness (2018)
- Alignment with national gender priorities – National Gender Policy & Jamaica Climate Change Policy Framework

Gender Composition of Sectoral Working Groups



LESSONS LEARNED

- Be guided by the prescribed procceses but remember country relevance and ownership are key- make it country-driven
- Important synergies across sectors were also highltighted which reiterated the need to look at cross cutting themes such as gender and governance.
- Stakeholder inclusion – technical input & country ownership
- Capacity building workshops provide well needed opportunities for knowlegde sharing and hands-on learning
- A continuous process of learning for all involved with opportunities for capacity building, learning by doing
- Opportunities to connect and reinforce exsiting and planned climate actions nationally and regionally

THANK YOU

Climate Technologies and **Technology Needs Assessments** activities
in **Latin America & the Caribbean**

Q&A session

Do you have any question?
Feel free to ask!

Climate Technologies and **Technology Needs Assessments** activities
in **Latin America & the Caribbean**

More information about the TNA: www.tech-action.org/ and https://unfccc.int/ttclear/tna

The webinar has been recorded and will be available on the TNA website in the coming days.

If you have any question on TNAs in Latin America and the Caribbean, please contact Lindy C. Charlery lincch@dtu.dk

If you have any other question for TNAs, please contact Global TNA Project Manager Sara Trærup slmt@dtu.dk