

**Accessing climate finance
for adaptation in agriculture
and mitigation in energy and transport**

Report on workshops held at the University of Havana
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1. Introduction to climate finance for Cuba

Marlén Sánchez: Architecture of climate finance: Complexities and challenges

1. Architecture of climate finance

Includes finance for capacity-building and technology and knowledge transfer and development, as well as finance for physical investment.

The ambition (COP23, 2016) is to increase climate finance to \$100bn per year by 2020.

This includes funds from governments and capital markets, and resources managed by governments, financial institutions (public and private, and domestic, bilateral and multilateral development banks) and corporations. Some of it is in the form of grants, some as debt finance instruments (at market and concessional rates), and some as 'green bonds'.

The projects can be managed by governments/inter-governmental organisations, or corporations (public and private, in developed and developing countries).

2. Trends in climate finance flows

The Climate Policy Initiative (CPI) reported that there are now 49 multilateral funds, 13 bilateral funds and 5 private funds. CPI data (see chart below) show that in 2015/16:

- Average annual flows of 'climate finance' reached around \$400bn.
- However, this includes multilateral development finance institutions and private sector loans, equity and balance sheet financing. As Cuba lacks access to these, the flows that are of interest for Cuba are only those from other international agencies, dedicated climate funds and official bilateral development institutions. Total global flows from these sources amounted to around US\$21bn.
- Of those flows, not all was concessionary financing (that is, grants or loans at low interest rates), which is the type that would be needed for Cuba's agriculture, energy or transport adaptation or mitigation projects. Global concessionary climate financing was around \$17bn (grants just \$2bn, and concessionary lending \$15bn), around half of which went to public sector recipients.

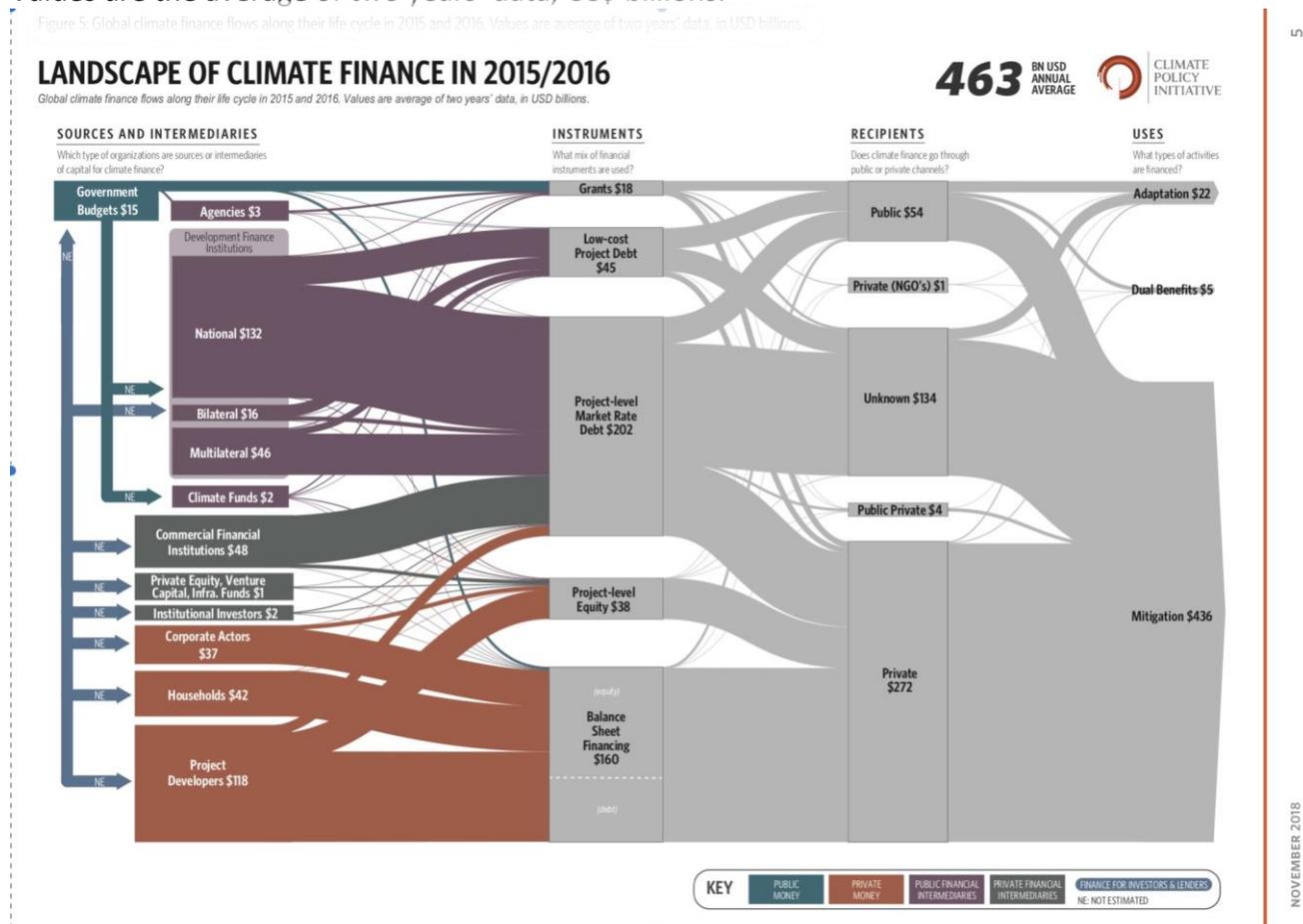
3. Findings

- **Lack of consensus on definitions** of climate finance, or on climate finance policy and its place in national development financing strategy. The CPI report includes non-concessionary flows.
- **Diversity of funds.** Duplication of activities; long lists of aims, objectives, and mandates; ill-defined key concepts in the design of requirements to access resources; mismatches between "universal" rules and specific conditions of each country.
- **Fragmentation of national process.** The proliferation of funds and funding channels results in a fragmented and decentralized model, with national authorities facing a number of uncoordinated funding sources, creating difficulties for management of resources.
- **Need to build capacities.** National agencies have little experience in presenting projects. Complexity of the requirements to access climate funds.
- **Slowness.** Access to resources can take around two years from development of the project idea to the provision of funds.
- **Concentration** of actors, sources, destinations, instruments and sectors (due to complexity, capacity constraints, etc.)
- **Additionality of resources.** Only a small portion of what is included in 'climate finance' data is truly additional overseas development assistance.
- **Mismatch between needs and opportunities.** Insufficient exploration of alternative financing opportunities that fit the country's needs.

Global climate finance flows along their life cycle in 2015 and 2016

Values are the average of two years' data, US\$ billions.

Figure 5: Global climate finance flows along their life cycle in 2015 and 2016. Values are average of two years' data, in USD billions.



Source: Climate Policy Initiative, Global Climate Finance Update 2018.

- **MRV.** Lack of consistency between systems for reporting resources received, authorised and disbursed (making rigorous comparison and analysis difficult).
- Inequality in distribution of impacts of climate change. Those most exposed and vulnerable are those with least historical and current responsibility for the rising concentrations of CO₂ in the atmosphere. That is, ***the scale of concessional climate finance is far too low to represent climate justice.***

Proposals for increasing Cuba's access to, and use of, climate finance

1. **Identify the main barriers** in terms of legal, regulatory and technical aspects.
2. **Strengthen the legal and institutional framework** for climate change response, to systematically integrate the issue of climate finance.
3. **Mainstream climate change response by sector**, and so generate synergies with other national and international agendas.
4. **Develop national portfolios** of climate change projects, to help to secure effective access to resources.
5. **Develop a strategy to align FDI policy with CC goals.**
6. **Establish alliances with the private sector.** This requires structuring the necessary incentives based on clear rules.
7. **Work on a unified methodology** to track, classify and measure financing associated with mitigation and adaptation actions, with a standardised MRV system at a national level.
8. **Diversify funding sources** and explore innovative financing mechanisms.

1. Cuba's priorities in adaptation and mitigation in response to climate change.

Climate change response is a high priority, and is integrated with national policy, including:

- **Conceptualization** of Cuba's Economic and Social Model of Socialist Development: 'Vision of the nation' is sovereign, independent, socialist, democratic, prosperous and sustainable.
- **Economic and Social Policy Guidelines of the Party and the Revolution 2016-21** includes climate change adaptation in agriculture, energy efficiency and a shift to renewables, improved mobility, road safety and air quality.
- **National Plan for Economic and Socialist Development through 2030**: 'natural resources and the environment' is one of the six main axes, and includes climate change adaptation and mitigation.
- **National Environment Strategy 2016-20** (prepared by CITMA), with sectoral plans and based on science, and in particular, Project Life: State plan to combat climate change which features 11 initiatives including:
 - No. 8, Adaptation and mitigation: To implement and manage measures for climate change adaptation and mitigation outlined in sectoral policies, plans and projects linked to food security, renewable energy, energy efficiency, urban planning, fishing, agriculture and livestock production, health, tourism, construction, transport, industry and integrated forest management
Adaptation is Cuba's main priority; support for mitigation is recognised as an opportunity.
 - No. 11 International finance; includes Cuba's international commitments to provide:
 - National report to the UNFCCC¹ (every 4 years)
 - Biennial Update Report² to the UNFCCC (every 2 years)
 - Nationally Determined Contribution (NDC)³ for mitigation and adaptation (every 5 years)
 - Transparency Framework, with MRV, periodic national reports and goals.

2. Opportunities for access to international finance, and instruments.

Financing entities require justifications including

- Environmental (resilience for adaptation; GHG emissions reduction for mitigation)
- Economic/financial, with pre-feasibility and feasibility studies
- Environmental and social safeguards

In order to access international finance, requirements are:

- Establish and refine guidelines
- Identify potential projects and their possible outcomes
- Create MRV systems
- Establish indicators
- Define methodology
- Research supporting projects that comply with technical and legal norms

1 United Nations Framework Convention on Climate Change (UNFCCC)

2 Biennial Update Report (BUR)

3 Nationally Determined Contribution (NDC)

The following Cuban projects have been initiated so far (these are discussed further in the following presentation):

- READINESS project: strengthening the national designated authority.
- Development of a plan for adaptation/environmental protection for the north coast of Havana
- Mi Costa project: adaptation to climate change in Cuba's most vulnerable coastal zones, based on ecosystems
- Sustainable agroforestry production
- Mitigation: renewable energy and use of biogas from pig farm effluent.

Climate finance agencies accredited in Cuba so far:

- United National Development Program (UNDP/PNUD)
- UN Food and Agriculture Organization (FAO)
- Agence Francais de Developpement (AFD)
- Banco Centroamericano de Integración Económica (BCIE; Central American Bank for Economic Integration, CABEL).

Next steps for Cuba

To strengthen capacities and create appropriate conditions:

1. Increase knowledge about the opportunities, financing channels and application procedures of the various climate finance funds.
2. Preparation of human resources in the appropriate tools (financial, safeguards studies, etc.)
3. Preparation of clear financing strategies, priorities by sectors, and project portfolios.
4. Strengthen and accredit national entities in the management of these funds.

Adriana Ortigón and Emily Morris, University College London UCL: International climate funds workshop introduction

Securing access to climate finance is a complex process. In the short time available, the workshop's aims are:

1. To survey sources of climate funds available to Cuba;
2. To gain a greater understanding of key methodological aspects for preparation of an application for climate finance;
3. To consider a selection of projects; and
4. To understand how to determine their viability.

International funds available for climate change mitigation and adaptation for Caribbean countries

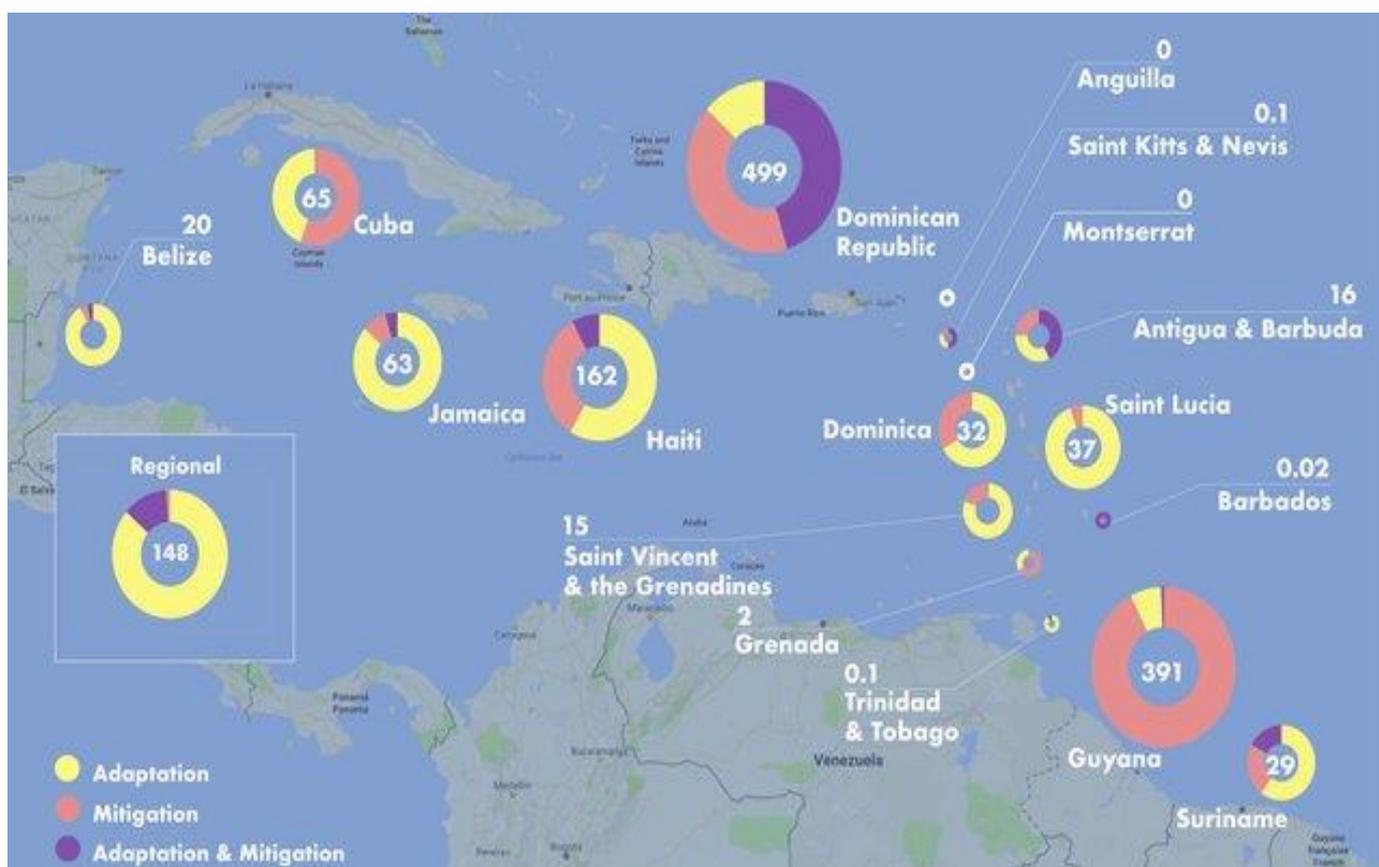
Concessionary climate funds present an underexploited opportunity for Cuba. According to a 2017 study of official development assistance (ODA, i.e. grant and concessional lending) for climate change projects in the Caribbean in 2011-15⁴ (figure (i) below), Cuba secured \$65m. With a population of 11.2m, that is less than \$6 per head, only around one quarter of the amount committed to Jamaican projects, and just one eighth of the amount committed to the Dominican Republic.⁵

Figure (ii) provides some of the explanation for Cuba's relative lack of access to climate finance. Of the \$1.48bn of ODA committed in 2010-15, \$561 (almost 40%) was channeled through multilateral development banks. US sanctions have blocked Cuban access to these sources. Cuba's largest flow was via the small share of funds channeled by a 'UN entity', with most of the rest coming from bilateral support.

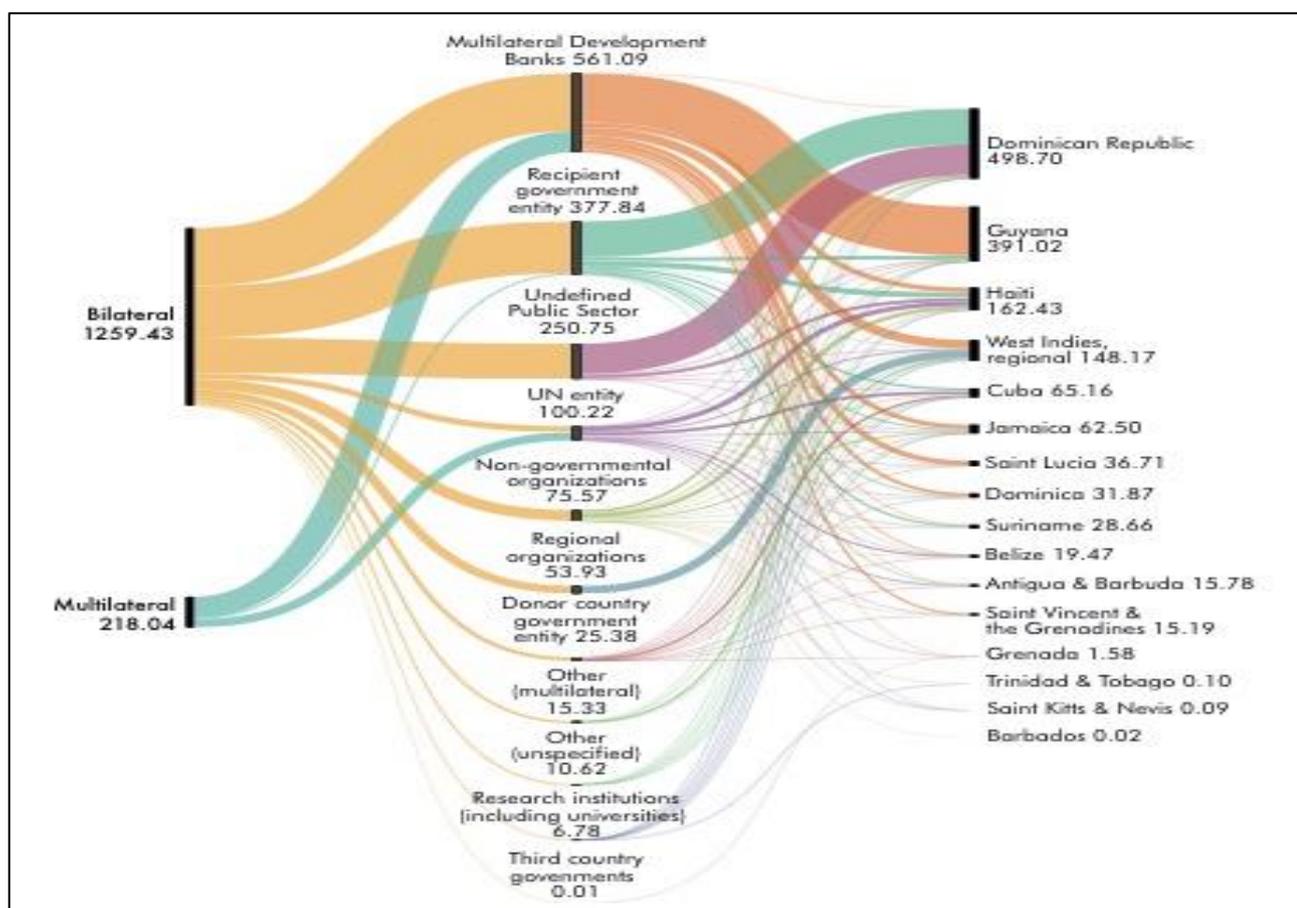
4 Aaron Atteridge, Nella Canales and Georgia Savvidou, 2017, Climate finance in the Caribbean region's Small Island Developing States. Stockholm Environment Institute, Working Paper 2017-08.

5 Jamaica's population is 2.9m and so secured \$22 per head; and the Dominican Republic's population is 10.8, securing \$46 per head.

(i) Summary of climate finance in the Caribbean, 2010–2015 (committed amounts, US\$ million)



(ii) First recipients of climate finance from bilateral and multilateral sources, 2010-15 (US\$ million)



Source for both figures: Aaron Atteridge, Nella Canales and Georgia Savvidou, 2017, *Climate finance in the Caribbean region's Small Island Developing States*. Stockholm Environment Institute, Working Paper 2017-08.

Cuban access to international climate funds⁶

The OECD's 'CFI database' provides full list of climate funds. Below is an overview of the main sources, and their relevance for Cuba:

- **Multilateral development banks.** An important reason for Cuba's relatively low inflows of climate finance is US sanctions, which block Cuban access to the World Bank or the main regional development banks, the Inter-American Development Bank, Caribbean Development Bank and Corporación Andina de Fomento (CAF). In 2018 Cuba was incorporated as a member of the Central American Bank for Economic Integration - CABEI (BCIE in Spanish) as a non-regional country. No project proposals have yet been submitted by Cuba to CABEI, which will offer loans, credit lines, guarantees etc., but no grants.
- **Green Climate Fund.** The Green Climate Fund was created in 2010 by the UNFCCC to support climate change adaptation and mitigation in developing countries. Financing started 2015. Cuba has just two projects listed on the website, <https://www.greenclimate.fund/countries/cuba>, both with UNDP as delivery partner: (i) a 'Readiness' activity, 'NDA Strengthening and Country Programming', approved 14 September 2018; and (ii) a Concept Note, 'Coastal Adaptation to Climate Change through Ecosystem Based Adaptation', dated 6 April 2018. For comparison, the Dominican Republic has eight GCF projects: two 'Readiness' activities, two Projects in execution and four Concept Notes.⁷
- **Global Environment Facility.** An important source for Cuba. Provides funds (from 39 donor countries) for: 'enabling activity' (preparation of plan, strategy or report to fulfill UN CC Convention commitments); medium-sized project (up to \$2m); or full-sized project (over \$2m).

Cuban climate change projects from the GEF:

- 'Low-carbon transport systems in the City of Havana', concept (document circulated) approved 5 July 2018, total projected project cost \$17.4m (\$1,959,132 grant, \$15.4m cofinancing). Implementing agency UNDP, executing agency DGTPH as lead partner, in collaboration with MITRANS and DPPF.
- 'Enhancing Cuba's Institutional and Technical Capacities in the Agriculture and Land-use Sectors for Enhanced Transparency under the Paris Agreement', concept approved May 2018, total cost \$1.46m (\$50,000 project preparation grant, \$863,242 GEF grant; \$550,000 co-financing). Implementing agency, FAO, executing agency, MINAG.
- 'Creation of Additional Biosafety Capacities that Lead to Full Implementation of the Cartagena Protocol on Biosafety in Cuba', project approved July 2017, total cost \$3.75m (\$1.8m grant, \$1.9m cofinancing). Implementing agency UNEP, executing agency National Center of Biological Safety (CSB).
- 'Third National Communication and First Biennial Update Report to the UNFCCC', project approved April 2017, total cost \$1.828m (\$852,000 grant, CUC/\$976 cofinancing (cash 562,000; in kind 414,000). Implementing agency UNDP, executing agency CITMA
- 'Strengthening of National Capacities for the Development of Solar Photovoltaic (PV) resources in Cuba', project approved 2017, total cost \$5.7m (\$811,000 grant, \$4.9m cofinancing). Implementing agency UNIDO, executing agency Unión Eléctrica de Cuba (UNE).
- 'Clean Energy Technologies for Rural Areas in Cuba (CleanEnerg-Cuba)', project approved 2013, total cost \$22.7m (\$2.7m grant, \$19.9m cofinancing). Implementing agency UNDP, executing agency Estación Experimental Indio Hatuey (EEIH), Matanzas, Cuba.

⁶ This section has been elaborated after the workshop, with additional information.

⁷ Dominican Republic projects in execution are: one small regional one with CABEI as accredited entity ('Productive Investment Initiative for Adaptation to Climate Change (CAMBio II)') with six other countries (project total \$28m, GCF \$12.5m loan plus \$3m grant); and one large 'fund of funds' with the European Investment Bank as accredited entity ('Catalysing private sector investment for renewable energy and energy efficiency projects across the developing world') with 28 other countries (project total \$765m, GCF \$250m equity, \$15m grant), approved April 2017; 5 years, no funds yet disbursed.

- **Bilateral funds.** The largest flows of concessional financing for climate change mitigation and adaptation in the Caribbean in recent years have been from two large bilateral projects: from France, support for mitigation and adaptation in urban transport in the Dominican Republic; and from Canada, support for adaptation in Guyana.

The NAMA registry is a dynamic web-based platform launched by the UNFCCC secretariat in 2012. It provides information on nationally appropriate mitigation actions (NAMAs) seeking international support. Potential recipient countries voluntarily submit this information to the registry, and bilateral donors are able to choose projects from it. The registry's purpose is to facilitate the matching of financial, technological and capacity-building support for these actions and to track and recognize the NAMAs being undertaken.

Cuba has only one project on the NAMA registry: project no. 267, 'Reducing greenhouse gases in Cuban pig production'. The website lists the project as 'under development', 'seeking financing' <https://www4.unfccc.int/sites/PublicNAMA/layouts/un/fccc/nama/NamaSeekingSupportForPreparation.aspx?ID=178&viewOnly=1>. Its objective is 'to reduce GHG emissions in Cuban pig production through the promotion of technologies for the capture and use of biogas (heat and electricity) obtained as a result of the treatment of pig wastewater.' The submission is to support the cost of preparing the NAMA (updating baseline, evaluation of technologies, design of MRV system, preparation of feasibility study, studies of environmental and social safeguards with a gender perspective) total cost \$531,000 of which a grant of \$431,000 is being sought. So far the project has received \$145,000 other support (UNDP, PNUMA, OLADE). No start date is given for the Cuban NAMA project.

For comparison, the Dominican Republic has six projects listed on the registry, including a similar project, which was started in 2015.

- **Euroclima.** The website, <http://euroclimaplus.org/index.php/en/countries>, mentions that Cuba has two Euroclima-funded projects but provides no information on the amounts involved and no links to project documents. The Cuban projects are:
 - Disaster Risk Reduction & Climate Change Adaptation: Flooding and drought in Cuba's north-central region affected by Hurricane Irma.
 - Havana Sustainable Urban Mobility Project & Pilot Protect in Havana (Project proposal document circulated).

Madelaine Martínez, BANDEC: domestic finance: Cuba's green development bank

Sectors. BANDEC's activities have traditionally (since its establishment in 1997) been focused on the agricultural sector (including sugar), providing credit to cooperative and private farmers. 60% of its assets are in this sector, but it is empowered to operate in all sectors.

Capacities. With 200 branches nationwide, it provides finance for investment in productive capacity and associated infrastructure (including in the Mariel Special Development Zone), with more than 10 'trust funds' (fondos en fideicomiso) that allocate funds from the state budget. Among its staff are specialists in agricultural engineering.

International network. BANDEC is Cuba's representative in the Asociación Latinoamericana de Instituciones Financieras para el Desarrollo (ALIDE), and participates in some agricultural development projects (PRODECOR and PRODEGAN). It holds balances in both CUP and CUC.

Challenges for the future. BANDEC has been identified as a future 'green bank' to develop a portfolio of green loans, for environmental protection and climate change adaptation and mitigation. The bank is currently working to establish procedures and methodologies to become green. This means identifying existing and new eligible green projects, thus making the transformation from a classical bank to a green one.

2. Climate finance for adaptation

Luis de Castillo, University of Havana: Climate projects and their potential to attract financing

The presentation reviews some examples of adaptation projects and asks three questions:

- How can we develop socially beneficial projects that attract climate change adaptation finance?
- How can we make the project sustainable in the long term, once the finance is finished?
- How can we attract more finance, and combine different sources?

Examples of rural development funds in Latin America:

Mexico: FIRA. Provides funding for infrastructure, biodiversity protection, energy efficiency/renewables, water management. Funding covers up to 80% of project costs, and includes institutional support and green credit guarantees. It also provides preferential and streamlined access to international carbon markets.

Peru: Agrobanco. Provides funding for agroforestry (cacao and coffee), irrigation, agricultural practices favouring adaptation to climate change and environmental protection.

Colombia: Fondo para el Financiamiento del Sector Agropecuario (FINAGRO). Second-tier bank providing finance to state and private banks, including providers of rural microfinance (through the Fondo de Microfinanciamiento Rural, FMR) that provide credit to the agricultural sector. In 2012, FINAGRO signed a 'Green Protocol', an agreement between national government and the financial sector, to create conditions for financing projects that bring social and environmental benefits.

Colombia: Certificado de Incentivo Forestal (CIF). Covers 75% of the costs of establishing sustainable forestry, plus 50-75% of net maintenance costs for the first five years.

Costa Rica: Economía Verde. In Costa Rica, 26% of land is protected forest, with human settlement forbidden on half of this area. This has provided a rich resource for ecotourism, with annual income of over \$5m in 2015).

In **Cuba**, there is also a useful precedent: the UNDP's Local Human Development Programme (PDHL), launched in 1998 with total funding in the first 10 years of \$50m, includes a microcredit scheme with Revolving Funds for Local Development Initiatives (FRIDEL).

The PHDL-FRIDE project design requires a business plan (the presentation includes the list of questions to be addressed) with a clear explanation of the current situation, and of how the project will bring improvements, and demonstration that the project is sustainable institutionally, socially (number of beneficiaries, employment, work conditions, gender perspectives) environmentally and financially. The latter requires a feasibility study, with full costings including labour, inputs, capital costs and depreciation, output, prices, timeline, net present values, and evidence-based market forecasts, with customers and competitors identified.

The initiative shows that development, management and control requires: a core project team, with specialist work teams, links with relevant agencies, knowledge sharing, multidisciplinary approach, learning-by-doing. Project design must take into account production and commercialisation activities as well as related services and indirect activities.

The PHDL involves many 'cooperation actors': UN agencies UNICEF, WFP, OPS/WHO, UNESCO, FAO, UNIFEM, UNOPS, UN-Habitat, ILO, UNFPA UNEP; and bilateral cooperation from Belgium, Brazil, Canada, UK, Italy, Spain, Sweden, Switzerland.⁸

An example: Proyecto Casa de Cultivo Protegido, Los Palacios, Pinar del Río (2006). Highly profitable investment in protected cultivation (under shade nets), employing 17 people (12 women). Includes agroecological methods, biocontrol, recycling waste, composting etc.

⁸ http://www.ideassonline.org/public/pdf/brochures/PDHL_PROGRAMME_CUBA.pdf

For Cuba, the UNDP is the accredited entity through which GCF finance is channelled. For the 2015-18 cycle, \$10.3bn of contributions have been committed by donor countries, of which \$5.8bn has been signed and \$4.6bn approved for projects. Of total financing, 50% is to be allocated to mitigation and 50% to adaptation. Half of the adaptation budget is reserved for Small Island Developing States (SIDS).

Investment framework. The criteria are:

- Potential impact
- Potential to change paradigms
- Potential to benefit broader sustainable development
- Needs of the recipient
- Degree of national ownership and implementation capacity
- Efficiency and effectiveness

Current Cuban projects with the Green Climate fund are: a 'readiness' project to strengthen the national designated authority (18 months, \$333,000, CITMA); and two adaptation projects, one for the north coast of Havana province (\$3m, 4 years, Agencia del Medio Ambiente, CITMA) and another encompassing the two most vulnerable regions on the southern coast (8 years + 22 years maintenance, GCF provides \$29m and Cuba \$79m = \$108m total project cost).

The Green Climate Fund website, <https://www.greenclimate.fund/countries/cuba> has details on the 'NDA Strengthening and Country Programming' (known as 'Readiness'), dated 14 September 2018, and 'Coastal Adaptation to Climate Change in Cuba through Ecosystem Based Adaptation', Concept Note dated 6 April 2018 https://www.greenclimate.fund/documents/20182/893456/19860_-_Coastal_Adaptation_to_Climate_Change_in_Cuba_through_Ecosystem_Based_Adaptation.pdf/a6f46777-3e8b-62a0-4d95-98040491a7c4

Alexander Girvan, Association of Caribbean States: Climate Change Finance – adaptation for agriculture

To access climate funds we need *clear* objectives, justification, description of activities, key results and budget

Things to note when building the proposal narrative:

- Use existing research, including studies that have been carried out by CITMA and INSMET modelling of the impact that climate change is likely to have in on Cuban agriculture. This wealth of scientific resources is very valuable for the preparation of proposals.
- Consider which institutions need to be involved. Cuba has strong resources to draw on within CITMA and other ministries.
- The budget can be complicated in Cuba. Cost all the items that will be purchased *and* provided 'in kind'. This can be challenging, but it is essential that these costs are included.
- Decide who to bring into the project team and to be willing to collaborate effectively.

Steps:

1. Agree on a project concept. What is the key problem you are trying to solve? 'This project will address XXX problem by using YYY method'.
2. Provide a clear and full justification. Why is your problem more important to fix than others?
3. List the components/activities. What are the main steps you will take to solve these problems?
4. Specify the main results/benefits. For each activity, what is the main result? Results combined should achieve the stated objective.
5. Budget. Think about how you would cost every activity: number of researchers and time spent on the project; items of equipment that will be needed; materials required. *Do not omit any project costs.*

3. Project proposals: Adaptation in agriculture

Proposal 1. Sustainable livestock production

Aim

To develop agro-silvo-pastoral systems (ASPS) for sustainable livestock production in the Antero Regalado Agricultural Cooperative (CPA)

Justification

Cuba needs to take action to combat the impact of climate change on its agricultural sector. This can be done by diversifying its agricultural system and creating socially, economically and environmentally sustainable mechanisms of livestock production by maximizing the use of local ecosystems and prioritizing new technologies to fully exploit the available land and existing resources.

Activities

1. Identify production systems
2. Strengthen capacities (workshops, conferences, seminars, technical assistance)
3. Implement ASPS
4. Evaluate economic, social, environmental and technological indicators

Results

1. Guidelines of the project set
2. Training for directors of the CPA and all those involved in the process
3. Creation and implementations of ASPS
4. Indicators evaluated
5. Results presented

Budget

Includes: salaries, transport, equipment, supplies, training, travel, human resources over a period of 5 years.

Cost of the project over 5 years 1.5 billion CUP

1. TIR – After three years
2. Sustainability.

Activity	Year 1	Year 2	Year 3	Year 4	Year 5
1. 50 researchers, 25 laptops, 50 USBs, specialized equipment, feasibility studies	200,000				
2. 50 professors, 30 researchers, 20 technicians and specialists	15,000	15,000	15,000	15,000	15,000
3. 40 farmers/ livestock producers, 15 researchers, 20 technicians, equipment, incl. 10 trucks...			1,125,000		
4. 10 researchers...					100,000

Human capital: livestock producers, forestry workers, fruit growers, economists, sociologists, consultants, communications personnel, National Association of Small Farmers (ANAP in Spanish).

Discussion. *This project idea is an existing one, which is positive, as it builds on existing research and planning activity, but it is not new. It would be useful, as a next step, to identify appropriate sources of funds, and clearer specification of activities and benefits needed. Note that all bids require analysis of gender aspects. (How many women will participate in the project? How will it affect men and women differently?) How is research time costed? Which of the expenses of research institutes should be included?*

Proposal 2. Coffee production on flat lands

Aim

To establish coffee production on Cuba's non-mountainous regions that is both resistant to climate change and economically and sociably sustainable

Justification

- The impact of extreme weather events has led to a decline in coffee production in mountainous regions
- Proven levels of adequate coffee production in non-mountainous areas
- Job creation, especially for women
- Need to meet domestic and external demand for coffee
- Cost effective - guaranteed supply to a close market (Mariel Special Development Zone)

Activities

- Preparing and raising awareness among producers
- Training (technical assistance, exchanges, courses, workshops)
- Assemble and implement irrigation systems
- Apply new Vietnamese technology (Hoyado).
- Set up plant nurseries
- Plant 2,500 hectares of coffee
- Assess crop resistance capacities

Results

1. Strengthening of the capacities of Cuban coffee growers
2. Greater yields in flat land areas with ecosystems resistant to climate change
3. New sources of employment for women and youth

Budget: \$ 6,000,000 over 8 years, includes:

- Irrigation systems
- Training workshops
- Plant nurseries
- Logistics
- Transport to collect, distribute and monitor coffee yields
- Tools and machinery
- Laboratory equipment for quality control

Discussion. A key issue for the justification is whether these lands are best used for coffee or crops that might either provide a higher return in terms of export earnings or meet more urgent needs for food production (and therefore also import substitution). The activities seem to be clearly defined, maybe suggesting that this proposal has been under consideration already. Further analysis of the budget items required: How was the \$ 6 million figure reached? Does it include all direct and indirect labour? How is labour costed?

Aim

To strengthen Cuba's ability to control agricultural pests and diseases exacerbated by climate change, by increasing production of biological control agents. Location: Mayabeque province.

Justification

- Increase in pests and emergence of other plant diseases due to climate change (rising temperatures, prolonged droughts, less rain fall)
- Rise in pesticide residues and growing resistance to these chemically engineered control agents
- High cost of chemical pesticides on the international market (import substitution)
- Obsolete technology and dilapidated infrastructure

Steps

- Training and communication
- Investments
- Execute and begin operations
- Implement best practices
- Assess, control and feed back results of the project

Key results

- Training for directors, technical personnel and producers
- Job creation, especially for women
- Substitute use of chemical pesticides
- Substitute imports for 7,000 hectares of crops
- Use of state-of-the-art technology
- Environmentally sustainable project
- Contributes to ensuring food security

Budget

- US\$ 3.2 million.

Discussion. *The justification is clear and the link to substantial previous research is positive, as it builds on a Cuban strength in this area. The steps need further specification in terms of categories of activities. In the results section, it would be a useful exercise to consider the magnitude and timeline for the economic benefits described. How quickly would the project repay the original investment? If it is a short time, might it be possible to consider concessionary loans rather than grants? For the budget, there is no breakdown in costs.*

4. Climate change finance for mitigation

Faye McAnulla and Adriana Ortegon, University of Leeds and University College London: Climate finance for mitigation: Energy and transport

Low carbon options for energy and transport that can be financed by climate funds:

- Energy. Lower carbon/more efficient energy generation, including transmission and distribution systems, power plants, industrial, commercial, public administration, domestic users, public utilities and services
- Transport. Low carbon transport, including vehicle fleet technologies, in urban public transport, shift towards non-motorised transport, regulatory measures, urban development planning, modal shift from road to rail or waterways, infrastructure for low-carbon transport.

The CPI⁹ reports that, of total global spending on mitigation in 2015/16, the largest share was for energy (around 40%), while the share of 'sustainable transport' has grown to 22%. However, as noted above, the CPI data include private sector financing, and the report notes that the rise in spending in this category is mainly due to a strong increase in purchases of electric and hybrid vehicles (54% per year from 2011 to 2017, with China representing 40% of the global fleet at end-2017). Less than 30% of investment in BEVs is by the public sector.

The project proposal must include feasibility studies with:

- Total cost, of fixed capital, inputs, human resources, sources of income, long-term business model and projections,
- Impact on greenhouse gas (GHG) emissions, using available (national and international) research/norms, as well as co-benefits.
- From this, calculate the cost per tonne of reduction of GHG,
- Describe and quantify total co-benefits: net contribution to climate change adaptation, air pollution, technology innovation, knowledge transfer, reduction in import costs, employment creation, health impacts, quality of life, safety, and number of people affected.
- Specify project risks, throughout project development, including financial, institutional, and long-term viability.

Sources of finance for climate change mitigation

International climate finance for mitigation should be available from the various funds as described above: the Green Climate Fund, Global Environment Facility, bilateral funds, the EU, and CABEL.

The OECD database of flows of official development assistance (ODA) reveals that Cuba received total ODA flows for transport of \$23m in 1990-2017, mostly small technical assistance/research funding. This is far less than the \$1.4m flows to the Dominican Republic over the same period. So it appears that there should be scope for Cuba to increase its share of total ODA for mitigation projects from OECD countries by stepping up its submission of bids.

Comments on proposals developed by participants

Both proposals are new, but built on existing discussions and research programmes. They highlight some of the environmental benefits from climate change mitigation in energy and urban transport. Although Cuba is not a major contributor to greenhouse gas emissions, these proposals highlight the important economic advantages of reducing energy consumption and dependence on fossil fuel imports through transport and urban planning policies.

⁹ Global Climate Finance Update 2018.

5. Project proposals: Mitigation: Energy and transport

Proposal 1. Replacing public transport fleet with low-emission vehicles

Team includes: Mitrans (Yordelis), DGT (Lupe), CIMAB (Julio), CUJAE (Rodolfo), FLACSO (Daniel), UH (Elena)

Justification

- Havana's fleet of buses run on fossil fuels, which emit some of the highest levels of CO₂ and other pollutants. Cuba has limited access to fuel sources which make it impossible for the island to reduce emissions to Euro 3 levels. However, with pollution levels in Havana disproportionately higher than traffic volume, we need a solution.
- A study by research centers linked to the ministries of Transport and Energy show that electric buses could cut pollution by 43%.
- The initiative is in line with government policy (Tarea Vida, CITMA, Guidelines, Conceptualization etc.)

Steps

- Decide on how and where the system will be used
- Design a solar park/panel production facility to power buses
- Decide on the types of buses that will be used
- Create new sources of local employment

Tasks

- Secure the participation of relevant actors (DGTPH, provincial government etc.)
- Analyze existing routes and conduct mobility studies
- Undertake cost-benefit analysis of electric and hybrid buses on the market
- Define design of solar park
- Undertake pilot study
- Share information with communities benefiting from the project
- Monitor emission levels

Projected outcomes

- Replace existing fleet with low-emission and more efficient vehicles
- Reduce greenhouse gas emissions¹⁰
- Reduce air pollution produced by moving vehicles
- Increase MRV capacities.

Co-benefits

- Energy security and sovereignty
- Use of new and more efficient technologies
- Improve health indicators (directly, by reducing pollution levels and indirectly, by improving the public transport system and thus reducing private transport)
- Employment, including the production of solar panels in Pinar Del Rio (although it might also be necessary to import panels).
- A better quality of life through improved mobility via the public transport system and a reduction in the use of private cars.
- Training in electric battery technology

Financing

- Source: foreign capital GEF, GCF.
- Solar park – 1 billion, vehicle purchase – 3 billion, infrastructure 1 billion
- Total: 5 million

Potential reduction

- 40% over the life cycle of the vehicle (12 years)

¹⁰ According to the CPI, lifecycle greenhouse gas (GHG) emissions from battery-only electric vehicles (BEV) are estimated to be 28% less than conventional vehicles even if electricity generation is carbon-based; if generation is low carbon, the reduction can be as much as 72%.

Proposal 2. Green corridor (from parque de la fraternidad (Monte) to Cuatro Caminos)

Team includes: CUJAE (Joiselen), FANJ, Minag, Cubaenergia, UH, DGT (Guadalupe and Reynier)

Objectives (all in line with official policies)

- Strengthen non-motorized mobility and active transport
- Promote low-emission public transport
- Prioritize bioclimatic urban-architectural works
- Work to promote urban solid waste recycling
- A comprehensive multi-faceted project that feeds into other development initiatives

Steps (over 5 years)

- Control the speed of vehicles.
- Introduce public system of bike lanes
- Increase space for pedestrians
- Reduce private transport
- Clear public spaces of problematic, unnecessary or hazardous elements
- Diversify basic and community services
- Introduce low emission vehicles
- Create public and green spaces in vacant lots
- Undertake total or partial repairs of buildings using bioclimatic solutions
- Explore the use of green roofing
- Implement classified waste disposal and spaces for urban solid waste recycling
- Make pavements more permeable
- Introduce 'bio-ecological' urban infrastructure

Potential mitigation

- 220,000 tons of CO2 annually – 50% along the green corridor
- Improve the health and quality of life of some 13,000 residents
- ~1,000 non-residents

Complementary actions

- Create a team to coordinate with the municipal government
- Provide workshops and training for those involved
- Specific studies (vehicles, road use, urban mobility, economic activity)
- Urban and architectural projects
- Update norms and regulations (urban, transport)
- Pilot schemes and trials in selected zones along the route

Co-benefits

- A decline in the rate and frequency of respiratory illnesses = reduction in the costs of healthcare
- Reduction in fuel costs
- Improved quality of life for the population
- Increased road and pedestrian safety
- Greater access and social inclusion
- Job creation and diversification
- Serves to generate knowledge which can be applied in other areas and places

Budget

- Low emission public transport vehicles – 9 billion
- Road infrastructure – 3 billion state financed
- Salaries
- Construction
- Public spaces – 1% state financed
- Training workshops (awareness)

6. Conclusions, results, and what next?

The workshop closed with final words of thanks for all participants, presentation of certificates, and brief conclusions, summarised (and slightly elaborated) as follows.

Policy. The Cuban government has a strong commitment to climate action (adaptation and mitigation) and to environmentally sustainable development. With the country's acute need for external finance, and its strong technical capacities, Cuba deserves to be a leading recipient of international climate funds. So it is important to identify all the potential sources of, and procedures for gaining access to, climate funds.

Sources of finance. Cuba's access to international finance is extremely restricted. That includes the types of international development finance – grants, concessionary loans and guarantees – that Cuba's neighbours have been able to use. The emergence of climate finance is an opportunity, because at least some of the channels for obtaining these funds are not obstructed by the US. Cuba has already begun to secure financing from: the Green Climate Fund, Global Environment Facility, and the EU (including Euroclima). There is potential for increasing this activity, and also for exploring possible further sources, from bilateral funds, and the Central American development bank (CABEI).

Practice. The funds are disbursed on a project basis. The active participation of institutions, and actors at all levels, from each of these sectors, will be needed in order to develop projects that can maximise benefits from the available funds. This collective effort needs to be applied to (i) developing ideas for projects that are appropriate to Cuban conditions; (ii) making a strong case for those projects; and (iii) managing the projects efficiently and effectively. The availability of climate finance is of particular relevance for the development of agriculture, energy, and transport infrastructure.

Results of the workshop. As well as disseminating information to key actors in agriculture, energy and transport (in presentations and in the memories distributed to participants) the workshop has enabled experts and officials from the agriculture, energy and transport sectors to begin to work together to generate and develop project ideas. Each of the five project proposals developed here has the potential to be developed further, to be submitted as a bid for climate finance. There is still a lot of work to be done on all of them, and as the proposals are refined and developed further, their focus and scope might would to be adjusted in order to comply with the demands and requirements of the specific fund from which financing is being requested.

What next?

But whether or not these proposals are developed into successful projects will depend on the commitment and capacities of the participants in this workshop, and on Cuba's progress in creating the national capacity for accessing and applying climate finance. With the support of the Green Climate Fund, a project for 'National Designated Authority Strengthening and Country Programming' is being developed in Cuba. So now is the right time to be putting together concrete proposals. Each of those who have participated in this workshop have a part to play, to ensure that Cuba achieves real economic, social and environmental benefits through climate change adaptation and mitigation.

We hope that this report serves as a reminder of the work that we did together over those two days – and of the further work that needs to be done to turn some of these ideas into realities.