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The AILEG Project

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ACRONYMS

5Cs	Caribbean Community Climate Change Centre
AAU	Assigned Amount Unit
ACP	African, Caribbean and Pacific Group (under the EDF)
AEE	Association of Energy Engineers
AF	Adaptation Fund
AFI	Approved Financial Institution
AILEG	Analysis and Investment for Low Emissions Growth
AOSIS	Alliance of Small Island States
AWG/ADP	Ad Hoc Working Group on the Durban Platform for Enhanced Action (under the UNFCCC)
BAP	Bali Action Plan
BJCMNP	Blue and John Crow Mountains National Park
BOJ	Bank of Jamaica
CAF	Corporación Andina de Fomento
CANF	Climate Adaptation Note Fund (of The Nature Conservancy)
CCBA	Climate, Community and Biodiversity Alliance
CBO	Community-based organization
CCA	Climate Change Adaptation
CCB	Climate, Community and Biodiversity (Standards)
CCD	Climate Change Division (of the MWLECC)
CCM	Climate Change Mitigation
CDB	Caribbean Development Bank
CDM	Clean Development Mechanism
CEB	Ceylon Electricity Board
CER	Certified Emission Reduction
CFL	Compact fluorescent lightbulb
CFP	Carbon Finance Project
CI	Conservation International
CIF	Climate Investment Funds
CM	Carbon Market
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
COP	Conference of the Parties (of the UNFCCC)
CPA	Component Project Activity (of a PoA)
CPEIR	Climate Public Expenditure and Institutional Review
CTI-PFAN	Climate Technology Initiative Private Financing Advisory Network
CTF	Clean Technology Fund
DBJ	Development Bank of Jamaica
DFI	Development Finance Institution
DOE	Designated Operational Entity
DNA	Designated National Authority
DSM	Demand side management
EbA	Ecosystem-based Adaptation
EC-LEDS	Enhancing Capacity for Low Emissions Development Strategies

EE	Energy Efficiency
EE TTF	Environment and Energy Thematic Trust Fund
EDF	European Development Fund
EFJ	Environmental Foundation of Jamaica
ERPA	Emission Reduction Purchase Agreement
ERU	Emission Reduction Unit
ESCO	Energy Services Company (or Energy Savings Company)
ETS	Emissions Trading Scheme
EU	European Union
FCPF	Forest Carbon Partnership Facility
FDI	Foreign direct investment
FI	Financial institution
FIP	Forest Investment Program
GCCA	Global Climate Change Alliance
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEEREF	Global Energy Efficiency and Renewable Energy Fund
GEF	Global Environmental Facility
GEEF	Green Energy Efficiency Fund
GFA	Guarantee Facility Agreement
GhG	Greenhouse Gases
GIS	Geographic Information Systems
GoJ	Government of Jamaica
GS	Gold Standard
HEECP	Hungary Energy Efficiency Co-Financing Program
ICF	International Climate Fund (of the UK government)
ICFI	International Forests and Climate Initiative (of the Norwegian government)
ICI	International Climate Initiative (of the German government)
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IMF	International Monetary Fund
IP	Investment Plan (of the SPCR, see below)
IP3	Investment Program 3 (of the Jamaican government)
IPCC	International Panel on Climate Change
IRR	Internal rate of return
IUCN	International Union for Conservation Nature
JAS	Jamaica Agriculture Society
JCM/BCOM	Joint Crediting Mechanism/Bilateral Offset Credit Mechanism
Jl	Joint Implementation
JMA	Jamaica Manufacturers Association
JNCF	Jamaica National Climate Fund
JNR	Jurisdictional and Nested REDD+
JPS	Jamaica Public Services Company
JSEA	Jamaica Solar Energy Association
KfW	Kreditanstalt für Wiederaufbau
LDCs	Least Developed Countries
LoA	Letter of Approval
MDGs	Millennium Development Goals
MDG-F	Millennium Development Goals Achievement Fund (of the Spanish government)
MFI	Microfinance institution

MIE	Multilateral Implementing Entity
MOF	Ministry of Finance
MRV	Measurement, Reporting and Verification
MSME	Micro-, small- and medium-sized enterprises
MSTEM	Ministry of Science, Technology, Energy and Mining
MWLECC	Ministry of Water, Land, Environment and Climate Change
NAMA	Nationally Appropriate Mitigation Action
NAPA	National Adaptation Program of Action
NCCAT	National Conservation and Climate Adaptation Trusts
NCF	National Climate Fund
NEPA	National Environmental Protection Agency
NGO	Non-Government Organization
NIE	National Implementing Entity
NMM	New Market Mechanism
NWC	National Water Commission
OBF	On-bill financing
ODA	Overseas Development Assistance
PCJ	Petroleum Corporation of Jamaica
PDD	Project Design Document (of the Clean Development Mechanism)
PIOJ	Planning Institute of Jamaica
PoA	Program of Activities (of the Clean Development Mechanism)
PPCR	Pilot Program for Climate Resilience (of the Strategic Climate Fund)
PPP	Public-Private Partnership
PROFOR	Program on Forests (World Bank)
PV	Photovoltaic
RCB	Royal Caribbean Bank
RE	Renewable Energy
REP	Rural Electrification Program
REDD+	Reducing Emissions from Deforestation and Land Degradation Plus
RMU	Removable Unit
SBL	Standardized Baseline
SCF	Strategic Climate Fund
SCCAT	Seychelles Conservation and Climate Adaptation Trust
SCCF	Special Climate Change Fund (of the Global Environmental Facility)
SD	Sustainable Development
SGP	Small Grants Program (of the Global Environmental Facility)
SIDS	Small Island Developing State
SME	Small- and medium-sized enterprises
SPCR	Strategic Program for Climate Resilience
SPREP	Secretariat of the Pacific Regional Environment Programme
SWH	Solar water heater
TA	Technical Assistance
TFCA	Tropical Forest Governance Act
TGA	Transaction Guarantee Agreement
TNA	Technology Needs Assessment
TNC	The Nature Conservancy
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

UTech	University of Technology
UWI	University of West Indies
VCS	Voluntary Carbon Standard
VER	Voluntary Emissions Reductions
VER+	Voluntary Emissions Reductions Plus
WB	World Bank
WWF	World Wildlife Fund

I. EXECUTIVE SUMMARY

The AILEG climate finance task focuses on two main objectives: (i) the identification of existing climate finance flows in Jamaica; and (ii) an assessment of potential for access to new climate financing, including from carbon markets as well as transformative private and public climate finance vehicles and mechanisms.

About ninety-eight percent of the ninety-five past and current climate finance flows into Jamaica projects are channelled through the Government of Jamaica (GoJ) and total approximately USD 200 million. Moreover, eighty percent of the amount is dedicated to climate change adaptation (CCA).

For future climate finance, there are many types of projects that can show strong co-benefits (adaptation and mitigation) and that could tap funding sources focused on both areas, thus increasing successful access to climate finance. This report adopts the broader concept of all financing destined to climate change activities, including carbon finance coming from voluntary and compliance carbon markets.

There is a marked lack of local capacity to access carbon markets (with notable exceptions including the Clean Development Mechanism (CDM) Wigton Wind Farm Projects I and II). There could be demand for Jamaican voluntary offsets, but the price of carbon assets is too low as of October, 2013 and is likely to remain so in the short to medium-term. Therefore, Jamaica should devote efforts to the Reducing Emissions from Deforestation and Forest Degradation (REDD+) readiness process. Given the high cost of REDD-readiness, it only makes sense if grant funding can be obtained through one of the several existing international sources. At the programmatic level, this mechanism has synergies with Nationally Appropriate Mitigation Action (NAMA) design.

Many public funds and programs could be tapped for both adaptation and mitigation initiatives, but the GoJ has to be realistic. The public funds are limited and there is a lot of competition for the available amount. Private funds are likely to comprise eighty percent of the USD 100 billion commitment made at COP 16 by developed countries in Cancun in 2010.¹

As a Small Island Developing State (SIDS), Jamaica is one of the most vulnerable countries. Until now, the GOJ has focused on adaptation finance and strategies. Climate Change Mitigation (CCM) projects can generate income streams or savings, whereas CCA projects often constitute public goods with the exception of private sector autonomous adaptation. While adaptation will continue to be a higher priority for Jamaica, to transform its economy to a low-carbon, climate-resilient pathway, Jamaica needs to broaden its climate finance access to CCM, particularly aiming at initiatives that have collateral adaptation benefits.

International sources of climate finance are shifting from project-focused interventions to programmatic ones (e.g. NAMAs), which capture the opportunity to catalyse larger amounts of funding from both public and private sources. Moreover, financing vehicles such as the Green Climate Fund (GCF), Global

¹ According to the UNFCCC, developed (Annex I) countries must help developing (non-Annex I) countries with climate change activities. Annex I countries are responsible for providing the USD 100 billion/year of support by 2020.

Environmental Fund (GEF), etc., are moving toward direct access to the funds by countries through National Implementing Entities (NIEs). Jamaica has to show it is ready for direct access.

A program design to increase lending by local financial entities to small-scale energy efficiency (EE) and renewable energy (RE) investments should consider a two-pronged approach, tackling the existing barriers to supply and demand for clean energy credits through (i) optimization of the existing Credit Enhancement Facility by the Development Bank of Jamaica (DBJ), and (ii) design and implementation of Energy Services Companies (ESCOs) to tap into the potential demand with sufficient technical expertise (to ensure bankability). This institutional ESCO should have a sunset clause for when the local private sector were sufficiently developed. Development of a local ESCO market needs to be pursued to reap the 'low hanging fruit' of EE.

The climate finance strategy for the GoJ should focus on funds for CCM. It will also be necessary to develop the institutional capacity to access, deploy and track climate finance in alignment with national plans and priorities and ensure accountability and anticipating international requirements around transparency, monitoring and evaluation and safeguards. Thus, the strategy's design should take into account the following recommendations:

- To attract climate finance, whether for adaptation and/or mitigation, the first step is to assess and improve the capacity of the GoJ to receive and manage it. This implies (i) showing that the GoJ is committed and has developed a good long-term plan with clear priorities and a dedicated budget, and (ii) quantifying in detail the GoJ's spending in CCA and CCM activities to obtain funding through co-financing instruments such as NAMAs;
- Tap mitigation climate finance. The GoJ should focus on development of a NAMA policy and strategy by sectors, following Colombia's example, aligning it with Jamaica's development priorities and plans, and focusing first on EE;
- Establish a national climate trust fund to centralize the management of climate finance by the GoJ and provide transparency and confidence to foreign funders and investors. Ideally, this would be set up as a Public Private Partnership (PPP) with the private sector (national and international);
- Engage the private sector. As part of national planning and investment priority-setting processes, the private sector should be engaged in order to avoid policy changes or programs that might crowd out private investments, distort local markets and result in unnecessary subsidies. This is needed in order to make the financial instruments work effectively and to build trust in the public sector regarding private sector involvement;
- A Ministry of Water, Land, Environment and Climate Change (MWLECC) Climate Change Division (CCD) that is able to fulfill its mandate. The newly created CCD within MWLECC should hire a climate finance/resource mobilization expert with a solid knowledge of CCM finance sources and procedures and develop capacity of a local professional for NAMA design and implementation.

2. BACKGROUND

Jamaica has been focusing almost completely on obtaining CCA financing from international donors. To transform its economy into a low-carbon, climate-resilient pathway Jamaica needs to broaden the scope of its climate finance access to include CCM, particularly initiatives with collateral adaptation benefits.

AILEG's focus overall is on building capacity of governments and stakeholders to analyze low-emission development scenarios and integrate them into strategic planning and implementation and conduct economic analysis to promote investment in low emission technologies and projects. In Jamaica, AILEG focused on three priority areas of assistance:

- Climate Finance Analysis
- Economic Modeling for Low-Emission Development
- Integration of Low-Emission Planning into National Development Planning
 - Second Energy Action Plan 2013-2016
 - Community Renewable Energy and Energy Efficiency Action Plan

This report focuses on the findings, conclusions and recommendations of the Climate Finance Assessment on:

- Identification of existing climate finance flows in Jamaica;
- Assessment of potential for access to new climate financing:
 - The country's ability to access voluntary and compliant carbon markets;
 - Transformative private and public climate finance mechanisms;
 - Evaluation of opportunities to increase lending for small-scale energy efficiency and renewable energy projects by local banks;

3. METHODS

The following methods were used in this study:

- Gauging climate finance flows in Jamaica
 - Desk review of Jamaican projects developed under each major carbon reduction credit standard;
 - Interviews with relevant Jamaican stakeholders such as the Jamaica Agricultural Society (JAS), Environmental Foundation of Jamaica (EFJ), Planning Institute of Jamaica (PIOJ), National Environmental Protection Agency (NEPA) and MWLECC for an initial inventory of

- the existing climate finance projects, other than carbon finance.² This inventory included planned CCA and CCM projects as well as those that are underway. The information is broken down by funding, type of technology, sector and – if applicable - carbon finance standard;
- Assess Jamaica’s ability to tap carbon markets (CMs):
 - A desktop review of current carbon markets (national, regional, and international);
 - A desktop review of requirements at country level to access the major carbon markets (compliance and voluntary markets);³
 - Survey a sample of Carbon Finance Project (CFP) developers and carbon credit brokers’ position on the potential for Jamaica to tap the carbon markets (especially the voluntary one);⁴
 - Interviews with GoJ agencies, potential carbon finance project developers and consulting firms potentially involved with the process to access carbon finance in Jamaica.⁵
 - Identify and analyze transformative climate finance sources, vehicles and mechanisms:
 - Desk study of examples of overlapping adaptation and mitigation projects worldwide, with an emphasis on the Caribbean region;
 - Desk study of the major international public climate finance funds and programs to analyze how they could be tapped for both adaptation and mitigation. Examples include the United Nations Environment Program (UNEP), the European Union (EU), the United Nations Framework Convention on Climate Change (UNFCCC), and voluntary schemes/mechanisms and Development Finance Institutions (DFIs);
 - Desk study of existing private climate finance sources and key characteristics;
 - Comparative, qualitative analysis for Jamaica.
 - Define a program for increased lending to small-scale clean energy projects by local banks:
 - A sample of local financial institutions was interviewed during the first mission in Jamaica;⁶
 - A brief survey was carried out via email with a broader sample between the first and second missions. The questionnaire is in Annex I.

² Climate finance in this report refers to all funds (international as well as domestic) for supporting low-carbon, climate-resilient development activities, including private sources. It includes carbon finance (cash flow associated with carbon offsets), other climate finance not related to carbon offsets, and financing for climate change mitigation and adaptation projects. Further detail is provided in section 4.1.2.

³ Compliance markets are developed and regulated by mandatory national, regional or international carbon reduction regimes, which issue Certified Emission Reduction (CERs). Voluntary markets operate outside the realm of compliance markets where entities voluntarily purchase Verified or Voluntary Emission Reductions (VERs).

⁴ Carried out via phone interviews, email communications and attendance to the 10th Carbon Expo in Barcelona (in May 2013). The consulted players that answered were the following: myClimate, Climate Friendly, Climate Care, CAF, Bunge and Mercuria. Moreover, the following stakeholders didn’t respond to the Consultant’s queries: CDC Climate, Shell, GDF Suez, MGM International, Offsetters, Blue Source, First Climate, Sustainable Carbon, South Pole and Climate Change Capital.

⁵ Conversations were held with Mrs. Nicole O’Reggio (acting DNA), Mrs. Susan Otuokon (JCDDT), Mrs. Carol Lue (CaribShare Biogas), Ms. Michelle Chin Len (Wigton Wind Farm Ltd), Mr. Roger Chang (JSEA) and Mrs. Chinyere Nwaogwugwu (EcoTec Ltd of Jamaica).

⁶ The Bank of Nova Scotia (BNS), First Caribbean International Bank, the Royal Caribbean Bank (RCB) and St. Thomas Coop. Credit Union.

4. ASSESSMENT OF CLIMATE FINANCE OPTIONS FOR JAMAICA

4.1. INTRODUCTION

Previously, the emphasis of international funding for climate change for developing countries was almost exclusively on mitigation. However, in more recent times and due to the evidence showing urgent adaptation challenges, many developing countries (particularly SIDS) have focused on accessing funds for adaptation. In Jamaica, CCA projects and initiatives have garnered most of the financial and technical support. The potential for accessing additional adaptation funds in the short to medium-term is limited but relatively large amounts of mitigation funds are available and mitigation projects may have potential adaptation co-benefits, Jamaica could indirectly garner additional funding for adaptation by tapping into mitigation finance sources.⁷ Although external funding used to be the most appealing reason for project developers and governments to include CCM attributes in adaptation projects, funding potential may now be the most appealing reason for including adaptation benefits in mitigation projects.

Jamaica has generally not focused on mitigation efforts. The Enhancing Capacity for Low Emissions Development Strategies (EC-LEDS) initiative in Jamaica emphasizes including mitigation into development policies and programs in Jamaica, including access to finance. It is thus very relevant to identify types of projects that have co-benefits as well as adaptation funding sources that might finance mitigation as well.

4.1.1. Scope of the Climate Finance Assessment

This assessment of climate finance options for Jamaica has two main components:

- A. Assessment of the existing climate finance flows in Jamaica;
- B. Assessment to identify Jamaica's ability to access new climate finance options:
 - Voluntary and compliance carbon markets, including an outline of the foundational actions that need to occur for Jamaica to access international markets or set up a domestic market;
 - Transformative private and public finance sources, vehicles and mechanisms for climate finance (e.g., public climate funds, green bonds, private equity investment funds) that could be tapped by Jamaica; and recommendations on how to tap into public and private finance, particularly for CCM projects that can achieve goals in both climate adaptation and mitigation. Review how financing for financing, which is currently available in much greater amounts for adaptation than for mitigation in Jamaica, could be used for both purposes. In addition, the assessment explores ways to reach out to equity providers.

⁷ Jamaica has recently accessed funds from the main adaptation sources: Adaptation Fund (AF), Pilot Program for Climate Resilience (PPCR) and the Global Climate Change Alliance (GCCA).

4.1.2. Definition of Climate Finance

There is no standard definition of climate finance. There are many different approaches to what constitutes climate finance.⁸ In any case, the term is most frequently used in the context of international political negotiations on climate change financing and is used to describe the resources developed countries will provide to developing countries for CCM and CCA activities. The Cancun Agreement recognizes the need for “new and additional” funding for the “full incremental costs” of addressing climate change. Under this, more narrow definition, only those financial commitments that represent investments beyond business-as-usual case would qualify to be categorized as climate finance. However there is yet little agreement on what qualifies as “additional” or how to calculate the “full incremental costs.”

Other definitions of climate finance are broad, and include all financial flows relating to CCM and CCA, such as sources that are not ‘additional’ (such as aid money), private finance, and total capital investment (rather than just ‘incremental costs’). Counting capital investment means including market-rate loans as well as *equity* investments. Proponents of a broader definition argue that the private sector already provides three times more money than the public sector, and that an emphasis should be placed on encouraging and leveraging even more money from the private sector. Non-additional finance in this total would have happened anyway due to its profitability for private entrepreneurs.

It is not the aim of this report to take sides in the climate finance definition debate, but rather, to choose a definition that is workable and helps in getting useful information at this point to the GoJ. Given the difficulties in evaluating additionality and incremental costs, climate finance in this report refers to the broader concept that includes all international and domestic funds for supporting low-carbon, climate-resilient development activities, including private sources:

- Carbon finance: Cash flow associated with carbon offsets. Carbon offsets are economic assets obtained through the development of greenhouse gases (GhG) emission reduction projects (e.g. wind farm, methane capture at landfills, etc.). These offsets can be traded in different national, regional and international carbon markets.
- Other Climate Finance: includes any cash flow different than that related to carbon offsets, such as
 - Grants
 - Concessional loans
 - Technical assistance (TA)
 - Private equity
 - Private debt
 - Other less traditional financing instruments (such as debt for adaptation swaps)

Financing in climate change related areas:

- Energy efficiency
- Renewable energy
- Climate-smart agriculture
- Afforestation and reforestation
- Avoidance of deforestation

⁸ See Annex 2 for alternative approaches from different organizations.

- Water scarcity
- Flood/extreme weather mitigation
- Coastal protection

4.2. ASSESSMENT OF EXISTING CLIMATE FINANCE FLOWS IN JAMAICA

There are two broad categories of climate finance:

- Flows linked to carbon offsets or under carbon credit standards
- Other climate finance not linked to carbon offsets

4.2.1. Projects Under Carbon Credit Standards

There are six main carbon credit-related standards(Annex 3): CDM, Gold Standard (GS), Voluntary Carbon Standard (VCS), Voluntary Emissions Reductions Plus (VER+), Climate, Community and Biodiversity (CCB) and SocialCarbon.⁹ All of the standards relate to cash flows generated as carbon finance linked to carbon offsets. A review of the publicly accessible registers for each of the standards was completed to determine whether there are any Jamaican projects already registered or in process.¹⁰ Only two project developers have been involved in carbon finance in Jamaica to date:

- Wigton Wind Farm Ltd. This public company (owned by the Petroleum Corporation of Jamaica (PCJ)) has registered its two-phase wind farm as a CDM (first twenty-three MW phase in 2006 and second eighteen MW phase in 2011). It sold its first phase-generated credits as Certified Emission Reductions (CERs) to the Dutch government (only for the first ten years).
- Ecological Technologies Ltd. (Eco Tec). Eco Tec is the first company to sell carbon credits as Voluntary Emissions Reductions (VERs) in the Caribbean. Its project, developed in 2001, focused on EE in the tourism sector through replacement of incandescent lighting with compact fluorescent lights (CFLs). It sold its VERs to the Carbon Neutral Company from 2002 to 2008, at a price of USD 6.5/ton CO₂ avoided.¹¹

4.2.2. Projects or Programs Receiving Other Forms of Climate Finance

Annex 4 describes the projects not linked to carbon finance that were channelled through the GoJ and other entities such as NGOs. The data are not all encompassing, but represents information from projects that were documented already and readily available. Moreover, some gaps in the available data need to be clarified among the different GoJ departments involved. In summary, we have the following

⁹ The VER+ standard was developed by TÜV SÜD, a Designated Operational Entity (DOE) for the validation and verification of CDM projects. It was designed for project developers with projects that cannot be implemented under CDM who want to use procedures similar to those under the CDM.

¹⁰ Through the Markit registry platform (<http://www.markit.com/en/products/environmental/markit-environmental-registry.page?>). This platform is one of the leading providers of registry services for environmental asset transactions.

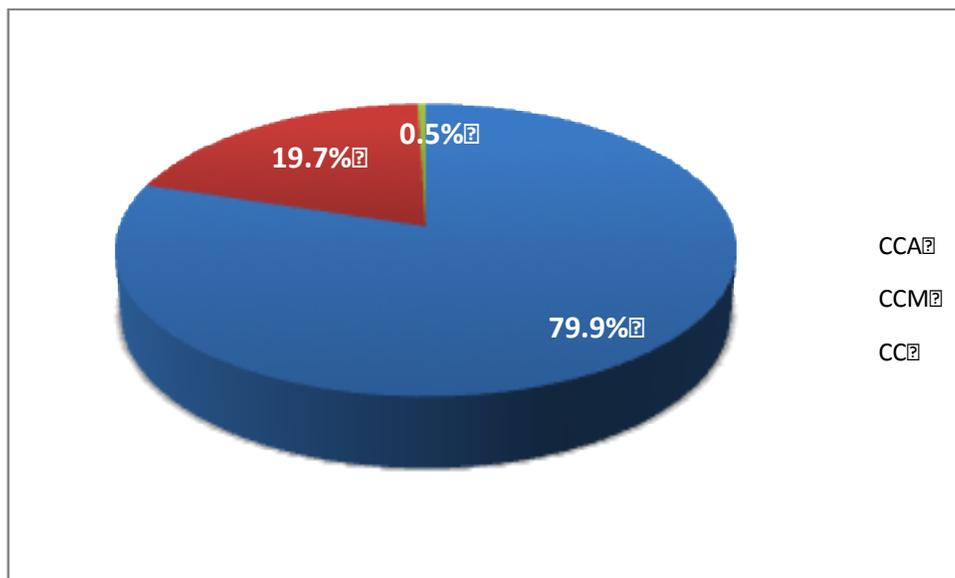
¹¹ According to the project sponsor, EcoTec Ltd., the hotels stated purchasing the CFLs by themselves and that caused the verbal agreement to fall through since they could not guarantee the integrity of the emissions reductions.

amounts of climate finance flowing into Jamaica with close to ninety-eight percent channelled via the GoJ:¹²

- GoJ-managed: There are thirty-six projects amounting to almost USD 197 million in grants and loans. This amount includes USD 112 million (close to sixty percent) from two large CCA infrastructure projects: the Palisadoes Peninsula Shoreline Protection and Rehabilitation (USD 61.3 million, funded by the Government of China) and Tropical Storm Nicole Rehabilitation Project (USD 50.4 million, funded by the Caribbean Development Bank (CDB)).
- Non-GoJ-managed climate finance flows: There are sixty-one projects amounting to a little more than USD 5 million in grants, mostly by GEF Small Grants Program (SGP) and EFJ. These figures assume that the regional, Caribbean Project ‘Support to the Global Climate Change Alliance (GCCA) under the 10th European Development Fund (EDF) Intra-ACP financial framework’ dedicates 15 percent of its budget to Jamaica.

As shown in Figure 1, eighty percent of the GoJ-managed climate finance not linked to carbon finance is dedicated to CCA. This compares to 69 percent for non-GoJ-managed projects.

Figure 1. Thematic Focus of Total GoJ-Managed Climate Finance Projects (in USD)



Although this report does not quantify domestic financing (budget allocations, local commercial debt), this should be included to show Jamaica’s commitment and capacity to track financial flows for climate change activities. As a standard definition emerges, the GoJ should dedicate resources to more accurately identifying the climate finance flows that are additional and covering incremental costs.

4.3. ASSESSMENT OF JAMAICA’S ABILITY TO ACCESS CARBON MARKETS

Jamaica’s ability to access voluntary and compliant CMs will depend on the following actions:

¹² At an exchange rate of USD 1.30 per Euro.

- Identifying regional or national CMs that are accessible to offsets in general;
- Reviewing the GOJ prerequisites for access to carbon finance under the different market standards;
- Assessing the potential demand for Jamaican CFPs and/or carbon credits and the types of CFPs that may be of interest to investors, project developers, and corporate clients; and
- Assessing local capacity of the public and private sectors.

4.3.1. Carbon Markets Review

The international carbon market associated with the Kyoto Protocol, which includes the CDM, is currently under review and it is not clear whether there will be a second phase. In the meantime, other market and non-market mechanisms are being developed and are mentioned below in this and other sections of the report.

The uncertainty created by the review of the CDM and the over-supply of the EU Emissions Trading Scheme (ETS), the main demand driver for CERs, has caused a drastic drop in the price of carbon to a little above zero. There is no prospect in sight of this situation changing significantly. Even the High Level Panel of the CDM Policy Dialogues recently recommended that member states, “Actively consider the establishment of one or more funds to purchase carbon credits.” Carbon market participants are exploring this idea as a way to revitalize climate action in the interim period before new mechanisms are established and the potential market impact.¹³

It seems that going forward the opportunity is for the CDM and carbon finance to move to mitigation actions at scale and link with NAMAs and New Market Mechanisms (NMMs). The CDM’s Program of Activities (PoA) and Standardized Baseline (SBL) can be important starting points for sector-wide activities. Parties at the COP 17 in Durban in December 2011 decided that a NMM should be established under the UNFCCC that will complement the CDM and Joint Implementation (JI). The details of how a NMM will work are currently being developed and negotiated. Developing countries can gain bottom-up, direct experience with PoAs and SBLs that can then serve as building blocks in developing the NAMAs and NMMs of the future.

Figure 2 illustrates the continuum of current and evolving carbon market and other climate finance mechanisms and shows how existing standards, oversight frameworks and experience of the CDM can be used in the design of next generation instruments.

¹³ The UNFCCC has recently published a paper that responds to the recommendation made in 2012’s report by the High Level Panel on the CDM Policy Dialogue (‘A Call to Action’) to consider establishing a CDM capacity fund. It is intended to contribute to on-going dialogue with policymakers on the market impact of a CDM capacity fund, (Vivid Economics, 2013).

Figure 2. Evolution of Carbon Market and Climate Finance Instruments



Source: UNDP's MDG Carbon Facility, 2013

The left-hand side of Figure 2 shows a reformed CDM. This mechanism previously focused on discrete project activities, but the CDM PoA takes a step forward in achieving scale by allowing multiple methods and technologies to be combined under the same project. The CDM's SBL is likely to serve as a key link to next-generation approaches since it further reduces complexity and transaction costs by standardizing the demonstration of additionality and data collection procedures and indicators. Standardised baselines can be developed for a whole sector or country and for broad applicability in CDM projects and Measurement and, Reporting and Verification (MRV) measures for NAMAs or NMMs (UNDP, 2013).

The right hand side of Figure 2 represents new scaled-up mitigation instruments. Sector-wide approaches may include NAMAs, NMMs, or other program designs. While a sector-wide approach can conceivably take many different forms, one configuration may involve combining policy measures (e.g., the implementation of a liberalized domestic energy market) with standardized quantification and monitoring approaches or financial transfers based on emission reductions. There is also an opportunity to establish emission-trading schemes in developing countries, covering installations in one or more domestic sectors (UNDP, 2013).

Deforestation accounts for approximately twenty percent of all greenhouse gas emissions that are causing global warming. Each year, seven billion tonnes of carbon dioxide (CO₂) are released into the atmosphere as thirty-five million acres of forest are destroyed. The REDD+ mitigation mechanism is now a major focus of the international climate change negotiations. Climate scientists generally agree that the environment cannot be stabilized without protecting threatened forests.¹⁴

¹⁴ Source: Adapted from Wildlife Works (<http://www.wildlifeworks.com>). Wildlife Works is the Voluntary Carbon Market's leading REDD+ project development and management company and the first company in the world to develop a REDD+ project that achieved the core objectives of REDD+ envisioned by the United Nations and did so under the carbon market's most rigorous third-party verifications for REDD+. Wildlife Works is currently developing a portfolio of high-quality REDD+ projects to mitigate twenty-five million tonnes of CO₂ emissions annually with projects in Africa, Central America, South America and Asia.

REDD+ was included in the Cancun Agreements at the UNFCCC Conference of Parties (COP) 16 in December 2010. It includes reducing emissions from deforestation;

- Reducing emissions from forest degradation;
- Conservation of forest carbon stocks;
- Sustainable management of forest; and
- Enhancement of forest carbon stocks;

REDD+ projects provide financial incentives to maintain carbon stocks in forests by providing benefits to local communities for protecting forests for an initial period of thirty years. A REDD+ project generates offsets or carbon credits that can pay for the cost of leaving a forest standing. For these schemes to work in the long-term broad local engagement is key in the design process and the proceeds from the sale of carbon credits have to be shared with resource owners or users and the community.

REDD+ projects range from small community scale to large regional initiatives. To be economically feasible, smallholdings and community-based initiatives are usually structured as a group of several forest lots.¹⁵

The latest development in the design of REDD+ projects at the country level is the Jurisdictional and Nested REDD+ (JNR) of the Voluntary Carbon Standard (Annex 5). The JNR Framework establishes standards for implementing and reporting on existing and new subnational jurisdictional activities and projects to be integrated (or “nested”) within broader (higher-level) jurisdictional REDD+ programs. Some pilot projects are already being implemented.

The estimated proportion of global GhG emissions due to forest-related activity will still remain significant and it is unlikely that REDD+ will drop off the global climate change agenda (IPCC, 2013). REDD+ is confirmed as a part of the Ad Hoc Working Group on the Durban Platform for Enhanced Action (AWG-ADP) discussions, and there is a clear program of REDD+ topics for the year leading up to COP 19 in Warsaw, Poland.¹⁶ The UN-REDD program is moving into a significant new phase in several countries around the world. The World Bank’s (WB) engagement in REDD+ readiness, through both the Forest Carbon Partnership Facility (FCPF) and the Forest Investment Program (FIP), is likely to progress significantly in 2013, with national initiatives in several countries around the globe.

REDD+ readiness is the process by which developing countries get ready to qualify for participation in the future international compliance mitigation mechanism that is currently being negotiated, in particular for forestry-based GHG emission reductions. As will be explained in the next chapter, bilateral or multilateral public funds, such as USAID, the Norwegian Government’s International Forests and Climate Initiative (IFCI), the UN-REDD Collaborative Program or the Forest Carbon Partnership Facility (FCPF) and the Forest Investment Program (FIP) of the WB are financing ‘REDD+ readiness’ activities by countries.

¹⁵ Following either the modalities and procedures for small-scale projects for bundling or the PoA method of the CDM.

¹⁶ The AWG/ADP is a subsidiary body that was established by decision 1/CP.17 in December 2011. The mandate of the ADP is to develop a protocol, another legal instrument or an agreed outcome with legal force under the Convention applicable to all Parties, by 2015 to be adopted at the twenty-first session of the Conference of the Parties (COP) and to be implemented from 2020 on. The COP also launched a work plan on enhancing mitigation ambition to explore options for ensuring the highest possible mitigation efforts by all parties.

Key findings of existing experiences in other SIDS, such as Fiji, include the following:

- Climate change adaptation is currently the highest policy priority for SIDS. Therefore, it is difficult for smaller SIDSs to justify the costs of developing ‘readiness’ to participate in international mitigation mechanisms;
- Although REDD+ is often primarily considered a mitigation mechanism, it can also help build countries’ resilience to the effects of climate change;
- In SIDS, REDD+ may provide financial and other benefits that strongly support climate compatible development – thereby justifying the costs of achieving REDD+ readiness;
- Forest conservation in SIDS can be viewed as a climate change adaptation effort, supported by both adaptation and mitigation funding channels and technical expertise. This dual role of forests is being recognized in REDD+ initiatives at the national and regional scale.
- With funding and technical support from the international community, even small countries can make significant progress in creating policies and strategies for REDD+.¹⁷

Table I explores the pros and cons of REDD+ for Jamaica.

Table I. Pros and Cons of REDD+ for Jamaica

PROS	CONS
Even though relatively small in terms of carbon emission reduction, REDD+ financing can help conserve forests for disaster risk reduction, sustainable land management, biodiversity conservation, and building livelihoods for reducing poverty.	Cost of REDD+ readiness, to participate as a country in the future compliance REDD+ mechanism (including detailed forest inventories and design of an MRV mechanism meeting international standards).
It can also help build Jamaica’s resilience to CC, being viewed also as a CCA effort that could be supported by both adaptation and mitigation funding channels and technical expertise.	Fragmentation of forest property into many smallholdings.
With funding and technical support from the international community, t other SIDS (e.g. Fiji, Solomon Islands) have achieved significant progress in creating policies and strategies for REDD+.	Low economic feasibility of voluntary projects due to high cost of CFP development, especially for small holders (even if bundled or aggregated into a larger CFP).
Existence of large protected public forest – the Blue and John Crow Mountains National Park (BJCMNP).	Low price of VERs in the short- to mid-term.
Existence of bilateral and multilateral facilities to finance REDD-readiness activities by developing countries (including USAID).	The payments for forest conservation ecosystem services already stipulated under Jamaican law have not yet been delivered to forest owners.

¹⁷ Source: Murray Ward (October 2012). ‘Going after adaptation co-benefits: A REDD+ program in Fiji’, CDKN newsletter.

Potential linkages with NAMAs from a forestry CFP.	Potential oversupply of REDD+ VERs in the mid-term. ¹⁸
Security of tenure through transparent and effective property rights.	

4.3.1.1. Potential Demand for Offsets from Jamaica: Compliance Markets

Annex 6 reflects the rules of each identified carbon market to accept foreign offsets (including those of Jamaica). Emerging markets were not included in Annex 6 since compliance market offsets were still in the inception phase in these countries.

¹⁸ Source: “REDD+ Market: Sending Out an SOS” by Conservation International (2013).

Box I. Shenzhen Emissions Trading Scheme (ETS)

China launched its first pilot emission-trading program in June 2013. This development is potentially a major marker in the country's efforts to reduce GhG emissions. The Shenzhen ETS program will cover some 635 industrial companies from twenty-six industries. This is the first of seven pilot GhG cap-and-trade schemes in China that the country has been developing since 2011. The four the other pilots are expected to start trading this year. In 2010, these 635 industrial companies emitted 31.7 million tons of carbon dioxide and contributed fifty-nine percent of the industrial value added and twenty-six percent of Shenzhen's Gross Domestic Product (GDP). While most experts agree that the ETS will not be a major driver of global carbon reductions in the immediate future, these pilots are an important capacity-building mechanism for the government, companies, and third parties to test relevant methods and procedures.

The Shenzhen ETS has an ambitious target compared to existing national or local commitments. The companies will be given a 100 million metric ton CO₂ emission allowance for free over the next three years. If the companies only emit their allotted amount, this would be equal to a thirty-two percent reduction in their carbon emission to GDP intensity. China is committed to reduce its carbon emission intensity by forty to forty-five percent by 2020. Shenzhen's carbon intensity reduction target during the current Five-Year Plan period (2011-2015) is twenty-one percent. These allowances are determined by emissions intensity rather than in absolute terms, meaning the government will review the companies' industrial value added annually and adjust the absolute emission allowance to maintain a fixed emissions-to-GDP ratio. Intensity-derived allowances are a novel concept and could hold lessons for other developing countries.

The main challenge that the ETS pilots face is legal since they are based on ordinances from local legislatures. Ensuring that there are strong, enforceable penalties for non-compliance will be important for the success of the program. Data quality is another challenge. The national government has not yet mandated a unified method to account and report GhG emissions. Although the ETS pilots are adopting internationally recognized GhG accounting and reporting frameworks, each one could develop slightly different method, making it more difficult to link between pilots or scale them up to the national level. Furthermore, the ETS pilots are often hesitant to put stringent data-quality requirements in place out of the fear that companies do not have enough capacity. The fact that caps are derived from intensity targets adds another layer of uncertainty, as economic data area subject to manipulation. The pilots will provide an opportunity for China to address data quality issues. The political will to reach the ambitious reduction target is yet to be tested. The Government has estimated China's emissions will peak between 2030 and 2040. However, some experts are advocating for a 2025 timeline for peak emission intensity, and at least one ETS pilot is studying the possibility of a 2015 peak. Support for the ETS pilots may depend on demonstrating that they are compatible with economic growth. In 2012, Shanghai's GDP grew 7.5 percent, the slowest economic rate among the proposed pilot sites. Four of the seven pilot sites had double-digit GDP growth. While these are some of the obstacles to overcome, the ETS projects can offer a strong starting point for a market-based approach to constrain emissions in China. If successful, these pilots can then be scaled up nationally, and will help show that China is serious about tackling its emissions and addressing the growing threat of climate change.

Source: Ranping Song, 2013.

According to Ecosystem Marketplace "...Some suppliers are focusing on connecting with emerging compliance programs – in California, Australia, South Africa, China, and various jurisdictions in Latin America. Here, offset infrastructure providers and market participants are working to bridge the gap between voluntary and compliance programs." Moreover, as some offsetting activities in these regions shift from voluntary "pre-compliance" preparations to full-compliance market participation, market size and its composition will change substantially.

In any case, the planned carbon market will not be able to compensate for the slump in demand provoked by the excess supply of credits in the EU market.

4.3.1.2. Potential Demand for Offsets from Jamaica Voluntary Markets

The voluntary markets have no requirement for any government approval or oversight process (Annex 3). By comparison, the CDM process requires a Letter of Approval (LoA) from a Designated National Authority (DNA).

A high-level review of voluntary market and discussions with a small sample of key players indicates the following key trend:

VER Price

The voluntary carbon market prices in 2013 ranged from USD one to seven per ton of CO₂.¹⁹ After the collapse of the EU carbon price and exclusion of a host of CDM projects, many compliance carbon credits are going to be channelled into the voluntary market, exerting further downward pressure on the price of VERs.²⁰ In the current market, it is CFP developers should identify a buyer or sponsor before starting a project.

Key Demand Characteristics

In general, many international CFP developers or buyers of voluntary carbon credits are open to the idea of Jamaican VERs with flexible contract conditions. Typically, this market has preferred credits from energy projects, but REDD project credits are also growing in popularity. Some large REDD projects have already issued high quality VERs.²¹

End users are considering offsetting more as a supply chain management issue than a carbon neutrality issue. Many companies are interested in their broader ecological footprint, not just their carbon

¹⁹ In 2012, the range was 0-12 USD t/CO₂ whereas the volume-weighted average was approximately USD 6 t/CO₂ (Forest Trend, 2013). In general, micro and small projects can fetch a higher price per unit of carbon dioxide equivalent emission reduction than larger projects.

²⁰ In 2012, Ecosystem Marketplace tracked less than 1 MtCO₂e of CDM offsets ("CERs") sold to voluntary buyers – typically from single projects at prices similar to those paid to traditional voluntary projects.

²¹ On 21st May 2013 the Madre de Dios Amazon REDD Project achieved verification under the VCS Standard, emitting four million VCUs + CCB Gold from 2009-2012 vintages. On the other hand, Wildlife Works' REDD+ projects in Kenya and the Democratic Republic of the Congo (DRC) - where Wildlife Works currently manages the protection of 1.2 million acres of threatened forest - generate five million tons of REDD+ carbon credits on behalf of landowners and 150,000 people from the local communities.

impact.²² More importantly, companies are increasingly taking greater ownership of carbon mitigation projects throughout their lifecycle, engaging directly with project developers to support tailor-made projects.

End buyers are also most likely to sign forward contracts for emissions reductions that have not yet occurred but will be delivered in future years (compared to offset retailers). In 2012, most forward contracts spanning multiple years were primarily negotiated between project developers and offset end users (Ecosystem Marketplace, 2013)

Project Profile

VER buyers normally prefer small projects and those with many sustainable development attributes and input and social co-benefits for local communities. Box 2 provides a case study on the types of community projects that can generate VERs while providing health and environmental co-benefits through the adoption of more fuel- and time-efficient cook stoves.

Carbon Project Development

Projects in the range of 10,000 emission reductions (ER)/year are normally developed under adapted methods that have lower transactions costs, such as the GS Micro Scale Scheme. Potential projects should plan from the start how many markets and standards the carbon credits may be able to access.

The development cost of a CFP that relies on international consulting companies can be USD 40,000-80,000 for clean energy projects and up to USD 240,000 for a large REDD+ project, depending on the workload and complexity of the project, how well developed the projects are, and the inputs required (such as guidance on local stakeholder consultation, Project Design Document (PDD) writing, support on validation and first verification, and preparation of the first monitoring report).²³

Small-scale projects could end up on the CDM market through inclusion in component project activities (CPAs) for already registered multi-country PoAs (i.e. stoves, biogas, small RE technologies for rural households, efficient lighting). The CPAs may obtain support from Annex I (OLADE, 2013).

International or regional organizations, such as Corporación Andina de Fomento (CAF), can help CFP developers sell carbon credits, either through intermediation with back-to-back Emission Reduction Purchase Agreements (ERPAs) (in which CAF does not have an exposure of price because they always have a final buyer secured), or a service fee in cash or a percentage of the emission reductions.²⁴

²² An ecological footprint compares the total resources people consume with the land and water area that is needed to replace those resources. A carbon footprint also deals with resource usage but focuses strictly on the greenhouse gases released due to burning of fossil fuels. Greenhouse gas calculations make up a portion of an ecological footprint, but are not used in the same way as in a carbon footprint. Both calculations illustrate the impact of human activity on the environment. Source: <http://homeguides.sfgate.com/difference-between-carbon-footprint-ecological-footprint-78732.html>

²³ Maximum price quotation provided to the BJCMNP/FR for the whole VER project cycle (source: Personal communications Ms Carol Lue, CaribShare Biogas).

²⁴ Source: Personal communications with Mr. Ubaldo Elizondo; CAF. The CAF, headquartered in Caracas, Venezuela, currently has 18 member countries within Latin America, the Caribbean and Europe, and 14 private banks.

In today's market, brokers will not normally forward-purchase VERs. Instead, they will offer their voluntary markets desk (with global reach to voluntary buyers) so that the project can maximize the selling price on issued VERs. This works on a VER marketing mandate on which they market the project's VERs on behalf of the project owner and earn a small fee for success.

Box 2. VER project case study: The Katete Improved Cook Stove Project, Zambia (The Carbon Neutral Company)

Katete was one of the first carbon projects in Zambia. This project reduced emissions while facilitating sustainable development through the distribution of free, fuel-efficient cook stoves to households in rural and semi-rural areas. The more efficient stoves significantly reduced the amount of biomass fuel needed, alleviating pressure on forests.

The Katete project contributed to Zambia's overall development goals by saving money or time for low-income people who depend on biomass fuel, and reducing exposures to harmful air pollutants that cause respiratory and other health problems in households. Carbon financing overcomes a crucial financial hurdle by making the stoves available for free to rural and semi-rural communities, where poverty rates are high.

The majority of Zambian families in rural areas cook using the traditional method of heating pots on three stones placed in an open fire. Wood fuel is usually taken from surrounding forests and burned in this inefficient method. The new "rocket stove," specifically adapted for the project, has a durable metal alloy liner surrounded by an insulating layer and an additional metal container. The metal stove is attached to a brick enclosure, which minimizes the opportunity for theft and improves safety, because the stove is more stable and cannot be kicked over and is not hot to the touch. The improved efficiency and higher burning temperature of the new stoves means that less biomass is needed for cooking. Small twigs can be used rather than the sizeable logs used with the 'three stone technique, reducing the time families spend gathering fuel.

Distribution and Installation



The project's goal is to scale the stove distribution across the entire country, making it the first Program of Activities (PoA) in Zambia. Currently the project has installed about 25,000 stoves in villages near the town of Katete and has started installing an additional 50,000. **Carbon finance is the project's only revenue stream** so it is critical to its implementation.

The households are expected to provide help and some materials during the construction and installation process. The local Zambian teams responsible for the installations build a brick enclosure around the stove liner in situ. The installation teams also assist on collection of monitoring data. Each stove is assigned a unique reference number and geographic coordinates that are stored in an electronic data management system along with other basic information from the installation. **The project has created over sixty jobs so far.**

4.3.2. Local Capacity to Access Carbon Finance

The institutional framework to facilitate access to carbon finance in Jamaica includes:

- A National Policy for the Trading of Carbon Credits, drafted by the Ministry of Science, Technology, Energy and Mining (MSTEM), which sets the stage for the development of carbon trading capacity in Jamaica; and
- A DNA for the CDM currently housed within the Environment Department of MWLECC, which is mainly in charge of assessing and approving CDM project activities (extending the necessary LoA to any prospective CFP).

Jamaica's 2010 emission trading policy has not served its purpose or met its goals and there is no indication that it will be a top priority of the current government. However, it did identify institutional and regulatory gaps and potential solutions. The most relevant policy issues for carbon trading concern tax treatment and property rights to the credits.

The Jamaican DNA has had very little activity since its creation in late 2010 and will now change location within the GoJ structure. It is expected to be moved soon to MWLECC's newly created CCD, where it will continue to perform its functions. This relocation should reinforce the DNA's efficiency and effectiveness in carrying out its tasks, since up to now it has been the officer in charge of Environmental Pollution who was also responsible for DNA duties.

Local clean energy and environmental management professionals could serve as carbon finance experts in Jamaica, but most did not have specific capacity in this area. According to the few professionals with experience in carbon finance, most potential new providers of carbon finance services have followed a "wait-and-see" strategy, not wanting to be the first ones to incur the risks of developing the sector in Jamaica. On the other hand, developers of potential CFPs have very little knowledge about the potential opportunities and pitfalls of carbon finance and would need a lot of TA.

4.3.3. Conclusions

Given these findings on the context in the CMs and local capacity to access them, the main conclusions regarding the opportunity for carbon finance in Jamaica are summarized below:

- Even though there is a potential demand for voluntary carbon credits from Jamaican CFPs, it is not economically feasible to develop them at the current price of VERs. The transactions costs are too high relative to the potential benefits from carbon finance, even when smaller projects (the most common type in Jamaica) are bundled into larger ones. The uncertainty surrounding the future of the compliance market mechanisms (CDM and REDD+) only reinforces this conclusion. Under current and expected prices, it would only be recommendable to develop a CFP if the developer can obtain advance financing for the carbon asset development process as a through grant or forward purchase and payment of the carbon offsets at a reasonable price; and this is not very plausible. This conclusion is even more relevant for REDD+ projects, which normally depend almost entirely on the revenues from the sale of the carbon credits.
- It is not yet clear whether there will be a REDD+ mitigation funding mechanism in the future. Nevertheless, it may make sense for Jamaica to achieve REDD+ readiness if it can access financing for the process. Foreign donors are often willing to finance the costs of developing a REDD+ policy and the necessary institutional architecture. Jamaica's Forestry Department should lead this initiative in close collaboration with the CCD.
- However, it might not be worthwhile to develop carbon finance capacity in the country at this time, because of the limited supply and demand for carbon financing services. However, the new CCD should keep abreast of CM developments and, in any case, provide access to information to interested stakeholders. This could be done through setting up a virtual (web portal) support center for finding qualified legal, technical and financial advisors, and potential financing sources for CFP.

- The team recommends that Jamaica not set up a domestic cap-and-trade system for GhG credits, because the market is too small.

4.4. TRANSFORMATIVE CLIMATE FINANCE VEHICLES AND MECHANISMS

There are many potential private and public sources, instruments, and mechanisms that Jamaica could use to finance policies and programs for a low-carbon, climate-resilient economy. However, the country should select a cost-effective strategy for climate finance. The team recommended some promising sources of equity, debt or grants for carbon financing. These sources are not listed in order of priority and are not mutually exclusive. While some of these sources have been tested successfully in similar countries, they have not yet been tapped in Jamaica, although some are in an advanced stage of design for Jamaica, for example, the debt for adaptation swap in preparation by The Nature Conservancy. Detailed analysis of each source should be done in the future to check the adequacy of its implementation in Jamaica.

The following sources, instruments and mechanisms were analyzed:

- Public sources of international climate finance (multilateral and bilateral);
- Private sources: equity funds and networks, private debt and grant funds;
- New funding and investment mechanisms and vehicles
 - NAMAs
 - Debt for climate swaps
 - Green and Climate bonds
 - Joint Crediting Mechanism/Bilateral Offset Credit Mechanism (JCM/BCOM)

Since Jamaica has focused almost entirely on adaptation, it should now take a broader look at climate finance including mitigation and, particularly, synergies between adaptation and mitigation. This approach has the main advantage that it maximizes the benefits of what climate finance can be tapped by Jamaica and also allows the country to tap into more sources. Annex 7 contains examples of projects that have both mitigation and adaptation co-benefits.

International Panel on Climate Change (IPCC) (2001) noted that

“The main difference between adaptation and mitigation lies in the objective that each option pursues. While mitigation focuses on the causes of climate change by increasing greenhouse gases in the atmosphere or enhancing the sinks of greenhouse gases, adaptation addresses the impacts of climate change through an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.”

In the past, mitigation and adaptation have largely evolved along different pathways. However, addressing climate change challenges through only one lens (either mitigation or adaptation) can lead to trade-offs and conflicting purposes. Even if strong efforts are put on mitigation, the climate will still continue changing in future decades; hence, adaptation efforts are also greatly needed. However, if the focus is only on adaptation, all the negative impacts will not necessarily be reduced and mitigation actions will still be needed to limit changes in the climate system (Klein *et al.*, 2007; Locatelli, 2011).

Great potential exists for synergies between mitigation and adaptation options and policies that can increase cost effectiveness, especially in agriculture, forestry and energy supply. Some progress has been

made in this regard in low-carbon development, climate-smart agriculture, water-energy-land nexus, bioenergy, and blue carbon.²⁵

Box 3. Climate Change Adaptation and Mitigation Co-Benefits

According to FAO (2009),

Integrating adaptation and mitigation in agriculture and forestry projects and policies would maximise local co-benefits and contribute to increased capacity to cope with the risks associated with climate change. In the agriculture and forestry sectors, many of the technical options are readily available to reduce emissions of greenhouse gases and could be deployed immediately through

- Reducing emissions of carbon dioxide through reduction in the rate of deforestation and forest degradation, adoption of improved cropland management practices;
- Reducing emissions of methane and nitrous oxide through improved animal production, improved management of livestock waste, more efficient management of irrigation water on rice paddies, and
- Sequestering carbon through conservation farming practices, improved forest management practices, afforestation and reforestation, agroforestry, restoration of degraded land.

Mitigation projects can facilitate or hinder local people's efforts to adapt to climate change. Similarly, and adaptation projects can affect ecosystems and their potential to sequester carbon (CIFOR, 2010). Forests contribute to adaptation by providing local ecosystem services that reduce societies' vulnerability to climate change. Mangroves protect coastal areas against storms and waves. Forest products provide safety nets for local communities when crops fail. Hydrological services (such as base flow conservation, storm flow regulation, and erosion control) are of utmost importance for buffering the impacts of climate change on water users (CIFOR, 2010).

A large proportion of the mitigation potential in agriculture (in addition to bioenergy) arises from soil carbon sequestration, which has strong synergies with sustainable agriculture and reduces vulnerability to climate change (IPCC, 2007).

- Value to farmers: Carbon sequestration improves agricultural yields through soil quality enhancement and may reduce input costs by reducing irrigation requirements.
- Value to communities: Carbon sequestration increases cropping systems and watershed climate shocks resilience (adaptation).
- Value to society: The mitigation potential of agriculture arises from carbon sequestration (local and global carbon value).

FAO (2009) stated that, "The agriculture and forestry sectors have great mitigation potential. About 89 percent of this potential can be achieved by soil carbon sequestration through cropland management, grazing land management, restoration of organic soils and degraded lands, bioenergy and water management. Soil carbon fixing as a quick winner with immediate impact."

²⁵ One of the most promising new ideas to reduce atmospheric CO₂ and limit global climate change is by conserving mangroves, sea grasses and salt marsh grasses. Coastal vegetation has been called "blue carbon." It can sequester carbon up to 100 times faster and more permanently than terrestrial forests.

4.4.1. Public Sources of International Climate Finance

International public funds for climate finance are bilateral and multilateral. Some funds are targeted at adaptation while others emphasize mitigation or both. Annex 8 lists key aspects of the main multilateral and bilateral climate funds. The main categories of international sources of climate finance come from DFIs, whether bilateral (single governments or associations of countries) countries or multilateral (WB and regional development banks). In many cases, the funds provided by single countries or regional organizations are channelled through specific-purpose funds managed by the DFIs.

UNEP and the United Nations Development Program (UNDP) are the two major multilateral implementing agencies (MIEs) that channel funds to developing countries.²⁶ UNDP has established environmental facilities that provide access to new sources of environmental market financing: the Green Commodities Facility, Millennium Development Goals (MDG) Carbon Facility, as well as UN/UNDP multi-donor trust funds such as UN-REDD and the UNDP Environment and Energy Thematic Trust Fund (EE TTF). Moreover, international NGOs also provide climate financing.

Jamaica has already some the most relevant sources of public, multilateral climate finance specifically focused on adaptation such as the Adaptation Fund (AF), the Pilot Program for Climate Resilience (PPCR) and the EU's Global Climate Change Alliance (GCCA), as well as funds from bilaterals such as the Government of China and USAID.^{27, 28} It might not be possible to tap these sources again soon for large amounts of funding other than TA. If implemented successfully, some current funding could be extended. The GoJ should expand its reach into other, untapped sources for CCA (Table 2) and identify adaptation co-benefits from mitigation financing (Annex 7 comprise the bulk of public sources of financing).²⁹ Funders are increasingly looking at performance-based mechanisms in financing carbon mitigation in developing countries.³⁰ NAMAs are one such mechanism that is relatively advanced. However, Jamaica has tapped few of the potential sources for mitigation finance to date (mainly through recent EU, the Inter-American Development Bank (IDB) and WB project grants, loans and TA amounting to slightly less than USD forty million). Table 2 shows the wide array of funding sources yet to be tapped by the GoJ that that could help the country achieve transformational changes toward a low-carbon, climate-resilient economy.

²⁶ UNEP, for example, as a MIE of the various funds managed by the GEF (Global Environment Facility, Least Developed Countries Fund, Special Climate Change Fund), assists vulnerable countries - in particular Least Developed Countries and SIDS - to access adaptation finance for implementing adaptation priorities and measures identified through National Adaptation Programs of Action (NAPAs), National Communications and Technology Needs Assessments (TNAs).

²⁷ Jamaica is one of the five PPCR pilot countries in the Caribbean region (the others are Grenada, Haiti, St. Vincent and the Grenadines and Saint Lucia).

²⁸ For the Jamaica Rural Economy and Ecosystems Adapting to Climate Change (JaREEACH) Project.

²⁹ This is supposed to change in the future, once the GCF is up and running, leading to a fifty-fifty balance between CCA and CCM finance.

³⁰ Annex 10 describes a KfW-funded performance based facility for Latin America.

Table 2. Summary of Most Relevant Public Sources of Climate Finance for Jamaica

Thematic Focus	Already Tapped	Not Yet Tapped
CCA	<ul style="list-style-type: none"> • AF • PPCR 	<ul style="list-style-type: none"> • GEF's Special Climate Change Fund (SCCF)
CCM - NAMAs ³¹		<ul style="list-style-type: none"> • UK's and Germany's NAMA Facility • WB's Scaling Up Renewable Energy Program in Low Income Countries (SREP)
CCM – REDD+ readiness		<ul style="list-style-type: none"> • USAID REDD Readiness Program • USAID BIOREDD+ Program • Norway's International Forests and Climate Initiative (ICFI) • UN-REDD Collaborative Program • FCPF – Readiness Fund • WB's Forest Investment Program (FIP) • WB's BioCarbon Fund
Other CCM	<ul style="list-style-type: none"> • IDB and WB programmatic and project loans, grants and TAs • USAID EC-LEDS 	<ul style="list-style-type: none"> • Clean Technology Fund (CTF) • Global Energy Efficiency and Renewable Energy Fund (GEEREF)
CCM and CCA	<ul style="list-style-type: none"> • EU-GCCA • CDB loans (for CCA) • Government of China (for CCA) • GEF 3 (2002-2006) and 5 (2010-2014) fund replenishment cycles – Environment and CC 	<ul style="list-style-type: none"> • GCF • UNDP's EE TTF • UK's International Climate Fund (ICF) • Germany's International Climate Initiative (ICI) • Spain's Millennium Development Goals Achievement Fund (MDG-F) • Green Commodities Facility • International Development Association (IDA) loans and grants • WB's Program on Forests (PROFOR)

4.4.2. Private Sources of Climate Finance

Private-sector finance has generated a lot of attention in discussions the design of the [Green Climate Fund](#) as well as the larger commitment of developed countries to raise USD 100 billion annually by 2020 to support climate actions in developing countries.

³¹ Currently, few sources are specifically targeted at NAMAs, but will gradually focus on this new mechanism. Some of the sources listed here do not mention NAMAs directly but refer to them implicitly (trans-formational, low-carbon development pathways).

In particular, the debate has focused on mitigation of GhG emissions and low-carbon development, but the priority for many developing countries is to reduce people's exposure to adverse climate change impacts. The private sector has played an important role in financing mitigation and renewable energy. However, if developing countries are expected to rely heavily on private finance to support their adaptation efforts, the implications for poor, vulnerable communities need to be considered.

The first step is to define what we mean by "private finance." Amid the rhetoric on leveraging and scaling up, there has been almost no nuanced analysis of what kinds of finance are needed: equity investments, bank lending, bonds, finance, or grants. Each of these has different qualities from the point of view of recipients.

Foreign direct investment (FDI) and international bank lending are unevenly distributed among developing countries. Large emerging economies such as China, Brazil, Mexico and India attract significant interest, while the Least Developed Countries (LDCs) struggle to attract to developing countries despite having fifteen percent of the developing world by population. Climate policy instruments to date have not changed this pattern. India and China have attracted most of the CDM investment, while more than half the LDCs have not seen a single CDM project.

4.4.2.1. Private Equity Funds and Networks

Private equity is mainly a source of funding for the private sector. There are two main types of private sources of equity for climate change projects: 1) impact investing (also called "patient" or "social" capital) combines for-profit as well as broader socioeconomic goals, and 2) "traditional" clean energy capital funds and investors. There are also private-public partnerships (that work as platforms that facilitate access to capital for clean energy projects in developing countries /SIDS (such as the Climate Technology Initiative Private Financing Advisory Network (CTI-PFAN) and SIDS DOCK).

Impact Investing (Patient Capital) Funds and Vehicles

Patient Capital: Markets alone cannot solve the problems of poverty; nor are charity and aid enough to tackle the challenges faced by over the greater than two-thirds of the world's population living in poverty. Patient capital is an alternative that seeks to bridge the gap between the efficiency and scale of market-based approaches and the social impacts of pure philanthropy.

These equity funds seek to earn moderate returns over longer periods of time than traditional investment capital in projects with high social and environmental co-benefits. A typical benchmark return on investment would be five percent. Some of them are constituted as public-private partnerships. Box 4 describes a sample patient capital source for climate change projects under two categories: 1) sustainable land-use, sustainable energy and biodiversity; and 2) small- and medium-sized enterprises (SME) development. More detail can be found in Annex 11.

Box 4. Patient Capital Funds

Sustainable Land-Use, Sustainable Energy and Biodiversity Focus

Athelia Ecosphere pays special emphasis on sustainable land-use, biodiversity and ecosystem services. Its vision seeks to leverage investment to simultaneously catalyse a range of positive impacts, including reduced greenhouse gas emissions, sustained or enhanced biodiversity and ecosystem function and conservation of endangered species

Terra Global Capita: combines remote sensing based measurement methods with carbon finance it aims to lower costs and increase accuracy for carbon from afforestation, reforestation agro-forestry, changes in agricultural practices, and avoided deforestation projects globally

Carbonica Capital is an alternative investment manager specializing in large forestry assets in South America, an investment area currently experiencing rapid growth although with a smaller clean energy infrastructure portfolio. The minimum expected yield is five percent (not including carbon finance assets).

C-Quest Capital seeks profitable investments in carbon-reduction programs that provide access to clean, efficient energy appliances and climate-smart small-scale agriculture and forestry services for poor families. The Quality Carbon Programs provide carbon credits that meet investors' needs for quality, cost, scale and long-term reliability.

SME Development:

Acumen Fund's motto is "patient capital that dares to go where markets have failed and aid has fallen short." Acumen offers debt or equity investment in an early-stage enterprise providing low-income consumers with access to healthcare, water, housing, alternative energy, or agricultural inputs.

Omidyar Network's invests in economic advancement and individual participation, which it pursues through five initiatives: Consumer Internet and Mobile, Entrepreneurship, Financial Inclusion, Government Transparency, and Property Rights.

Clean Energy Capital Funds and Investors

There are also private sources of capital that expect to gain normal market returns without out social or environmental goals. Some of these funds invest in clean energy projects that can achieve their normal rate of return. Over the past decade, there has been increasing interest on the part of many private financing sources (including private equity funds, venture funds and pension funds) in providing financing for climate change mitigation.

There are three main types of these financing sources: 1) Special funds created to mobilize and/or leverage private capital for mitigation finance, such as the Institutional Investors Group on Climate Change; 2) funds established by venture capital and private equity sources to target profitable investments related to climate change, including the China Environment Fund, FE Clean Energy Fund,

FIDEME and EUROFIDEME II, MMA renewable Ventures, NEFCO Nordic Climate Facility, etc.; and3) pension Funds, such as the ATP fund in Denmark.^{32, 33}

FE Clean Energy Group, Inc.

The FE Clean Energy Group Inc. focuses on investments in the middle market energy efficiency services, renewable energy, and in return-driven sustainable development. Its geographic focus is emerging markets in Asia, Central and Eastern Europe, and Latin America. Its current portfolio includes private companies in Poland, Hungary, Mexico, China, India, Thailand, and Philippines in the following areas:

- Small hydropower
- Energy efficiency
- Cogeneration
- District heating
- Street lighting
- Biofuels
- Waste to energy

MMA Renewable Ventures

MMA Renewable Ventures is a U.S.-based firm that coordinates the financing, installation, and operation of renewable energy systems and energy efficiency projects. Its activities include:

- Identify qualified customers (250-300 kW or more systems for solar, three MW for wind)
- Perform site evaluation and initiate system approval process
- Source and install equipment
- Provide finished, fully operational system
- Provide ongoing operations and maintenance services under contract

MMA finances, owns and operates energy efficiency assets on behalf of its customers. Payments are based on an agreed portion of the energy cost savings. At the end of the contract, the customer can choose to renew the contract or buy the energy assets. MMA's portfolio is about \$500 million. While most of the portfolio is in developed countries, the company is seeking opportunities to invest in developing countries and will finance US companies that invest in renewable energy projects in developing countries.

ATP Pension Fund

Pension funds are now getting increasingly interested in financing climate change mitigation projects. One such example of pension funds active in this field would be ATP.

³² EUROFIDEME 2 is a Greenfield infrastructure fund, managed by Mirova Environment and Infrastructure. The Fund strategy is to be among the leaders in the financing of the renewable energy industry and its investment focus is in European renewable energy infrastructure.

³³ NEFCO: Nordic Environmental Finance Corporation

The ATP Pension Fund is Denmark's largest Pension Fund. Its investment department is responsible for managing assets worth more than USD 63.6 billion. Its strategy is ensuring the highest pension benefits attainable while avoiding needless risks. ATP it has started investing in renewable energy infrastructure and companies.

Long-Term Investors Club

The Long-Term Investors Club brings together sovereign wealth funds, public sector retirement funds, private sector pension funds, economists, financial policy makers, and regulators to assert their common identity as long-term investors. It seeks to foster greater cooperation and create conditions for long-term investment will be an important element in promoting sustainable growth and economic stability.

The Long-Term Investors Club is now focusing on investments in improved transportation infrastructure, climate change, energy efficiency, renewable energy and urban development.

International Clean Energy Capital Networks/Platforms to Facilitate Access to Capital

These platforms match project sponsors in developing countries needing capital with equity investors looking for profitable projects that meet sustainable development or climate change adaptation goals.

PFAN³⁴

The CTI-PFAN is a multilateral, public-private partnership initiated by the CTI in cooperation with the UNFCCC Expert Group on Technology Transfer. PFAN bridges the gap between investments and clean energy businesses. It identifies promising clean energy projects at an early stage and provides mentoring for development of a business plan, investment pitch, and growth strategy, significantly enhancing the possibility of financial closure. Projects may be proposed for inclusion in the PFAN development pipeline at any time.

PFAN screens business plans, selects the most economically viable and environmentally beneficial projects, and provides extensive coaching and guidance before projects are presented to investors at Clean Energy Financing Forums hosted across Asia, Latin America and Africa. PFAN develops partnerships in each new country to build and expand a local in-country presence for its services.

SIDS DOCK³⁵

SIDS DOCK is an initiative of member countries of the Alliance of Small Island States (AOSIS) to provide the SIDS with a collective institutional mechanism to help them transform their national energy sectors into a catalyst for sustainable economic development and help generate financial resources to address adaptation to climate change. Adapting to the changing climate and rising sea level is already a major economic cost to SIDS. Additional changes in climate and increases in seal level rise will require increasing amounts of financial resources. With many SIDS already highly indebted, reducing outflows energy imports represent the best option of generating additional resources to address climate change.

³⁴ Adapted from: <http://www.cti-pfan.net>

³⁵ Adapted from: <http://sidsdock.org/what-is-sids-dock>. This center is commonly referred to as the '5Cs'.

SIDS DOCK is a “DOCKing station,” that connects the energy sector in SIDS with the global market for finance, sustainable energy technologies and with carbon markets, the European Union (EU) and the United States and able to trade the avoided carbon emissions in those markets.

SIDS DOCK was jointly developed by the Caribbean Community Climate Change Centre (5Cs) and the Secretariat of the Pacific Regional Environment Programme (SPREP), the two regional government institutions with foremost responsibility for assisting the SIDS in the Pacific and Caribbean regions to address the impacts of climate change, working in cooperation with AOSIS. SIDS DOCK will be structured but flexible, allowing it to respond to national situations; it will be internationally and regionally supported. The functions of SIDS DOCK are to:

- Assist SIDS with developing a sustainable energy sector by increasing energy efficiency and developing renewable energy resources.
- Provide a vehicle for mobilizing financial and technical resources to catalyze low-carbon economic growth.
- Provide a mechanism for connecting with the global financial, technology, and carbon market taking advantage of the resource transfer possibilities that will be afforded.
- Help SIDS generate the financial resources to invest in climate change adaptation.

SIDS DOCK offers the following service

- A mechanism to generate financial resources to support adaptation, by helping SIDS capture and realize the “energy dividend” from phasing down of high-cost petroleum fuels;
- Institutional capacity to collaborate across regions on issues of common interest in sustainable energy development and climate change adaptation;
- An organizational infrastructure through which others, private and public, can invest in sustainable energy;
- A means to pursue collective technology development/transfer for common abundant renewable energy resources like ocean energy, and;
- Assistance in converting carbon allowances into funds for investing in renewable energy and energy efficiency for SIDS that wants to take fossil fuel emission caps.

The GoJ has been in touch with SIDS DOCK to look at ways to collaborate. However, the reality is that there hasn’t been much activity, if at all, by SIDS DOCK in the Caribbean region. In fact, the 5Cs are currently searching for a program manager / project officer to manage this facility.³⁶

4.4.2.2. Private Donors and NGOs

Private grant funds will normally not be a source of funding for governments. Private grants usually are only available to community-based organizations (CBOs) such as local NGOs. Thus, they are not of strategic interest for the GoJ.

Jamaican Funds and Donors

Some key sources of financing for energy projects in Jamaica include Scotiabank Foundation, Digicel Foundation, and the Jamaica Public Services Company (JPS).

³⁶ Source: Personal communications with Professor Al Binger of the Caribbean Community Climate Change Centre (5Cs).

International Donors and NGOs

Table 3 describes some private international funds and NGOs active in climate change in the Caribbean.

Table 3. Examples of Private International Donors in the Caribbean Region

Donor	Brief Description
Clinton Climate Initiative	The Clinton Foundation has a specific program for islands vulnerable to climate change. Its Diesel Replacement Program for islands supports renewable energy projects as tailored for small island nations. for - See http://www.clintonfoundation.org/our-work/clinton-climate-initiative/programs/islands-energy-program#sthash.vAQOfGJl.dpuf http://www.clintonfoundation.org/our-work/clinton-climate-initiative/programs/islands-energy-program#sthash.vAQOfGJl.dpuf
Fundación AVINA	<ol style="list-style-type: none"> 1. Creates a transparent public debate on the long-term vision for energy and generates conditions favoring more sustainable policy decisions. 2. Strengthens energy security and diversification of by incorporating renewable energy sources into the grid and increasing energy efficiency. 3. Promotes universal access to high quality, clean energy.

Table 4. Sample of Relevant International NGOs in the Caribbean Region

Organization	Type	Administrating Entity	Areas of Focus ³⁷
The Nature Conservancy (TNC)	Grant	Local NGOs	Ecosystem-based Adaptation (EbA)
World Wildlife Fund (WWF)	Grant	Local NGOs	EbA
International Union for Conservation of Nature (IUCN)	Grant	Local NGOs	EbA

³⁷ Including mitigation-oriented programmes such as REDD+.

4.4.3. New Mechanisms and Vehicles for Climate Finance

4.4.3.1. NAMAs³⁸

The UNFCCC 2007 Bali Action Plan (BAP), called for nationally appropriate mitigation actions by developing country parties for sustainable development, supported by technology, financing and capacity-building, in a measurable, reportable and verifiable manner. The UNFCCC emphasised that mitigation actions by countries should be in accordance with their “respective capabilities and their social and economic conditions”, and “take into account different socio-economic contexts.” A NAMA is a mitigation action tailored to the national context, characteristics and capabilities, and embedded in national sustainable development priorities.

Unlike the CDM, NAMAs do not need to be project-based or funded by the private sector. NAMAs do not necessarily address point-sources of emissions or result in carbon credits. A NAMA is simply any action that ultimately contributes to greenhouse gas emission reductions while addressing the development needs of a country. It may include a specific project or measure to reduce emissions or policies, strategies and research for long-term emission reductions. National governments may finance the development and implementation of NAMAs from domestic resources, bilateral agreements, development banks or multilateral funds, including the Green Climate Fund. Public financing can be used to leverage investment from the private sector.

There are three types of financing for NAMAs with different requirements for MRV:

- Unilateral: Domestic financing and MRV following guidelines developed under the climate convention.
- Supported: International financing for technology and/or capacity building following international guidelines for MRV developed under the climate convention.
- Credited: Private sector funded through carbon credits with MRV based on CDM experience.

The UNFCCC has created a registry to list NAMAs seeking funds at different stages: 1) for preparation of the NAMA, 2) for implementation, and 3) recognition.³⁹

4.4.3.2. Debt for Equity Climate Swaps

A debt for equity swap is a refinancing deal in which a debt holder gets an equity position or new debt in exchange for cancellation of the old debt. A swap is generally done to help a country or company improve a negative financial situation or take advantage of favorable market conditions. Debt-for-climate mitigation or debt-for-adaptation swaps are being implemented by at least eight Caribbean country governments, with private sector and civil society participation. At the time of this study, legislation was being drafted and with negotiations and fund raising was underway for Belize’s USD 130 million debt swap for adaptation to climate change in marine ecosystems.

³⁸ Adapted from ‘Understanding the Concept of Nationally Appropriate Mitigation Action’ UNEP RISO Centre (May 2013) and GIZ’s ‘NAMA fact sheet’ (2012).

³⁹ https://unfccc.int/cooperation_support/nama/items/6945.php

Debt-for-adaptation swaps build resilience -- the capacity to recover after a shock. It is prudent for governments to plan how to minimize or avoid economic, social, and environmental shocks. Debt-for-adaptation swaps give national governments capital for a human or natural adaptation.

TNC proposed a wholly owned Climate Adaptation Note Fund (CANF) that will serve as an umbrella institution allocating funds to national trust funds to buy debt and execute swaps. Investors have already expressed interest in the CANF vehicle, but the business plan was waiting approval within TNC before the CANF could be legally established. The CANF focuses on small island nations because of their high public debt levels and urgent need to adapt to climate change impacts and finance private capital for EbA at scale. Box 5 provides a TNC debt swap case study.

Box 5. The Forest Conservation Fund (FCF)

The Forest Conservation Fund is the result of a Debt-For-Nature Swap Agreement signed in 2004 by the Governments of Jamaica and the United States of America. The Agreement followed enactment by the US Government of the Tropical Forest Conservation Act (TFCA) to offer eligible developing countries, options to relieve certain debt owed to the US in 1998. The payments supported local tropical forest conservation.

The United States Government forgave USD 6.5 million of Jamaican public debt. With the USD 1.3 million paid by the TNC, this resulted in approximately USD sixteen million worth of debt paid into the Forest Conservation Fund by the GOJ. The payments will be made over nineteen years, and will fund tropical **forest conservation** activities in Jamaica.

The financial model for TNC's debt-for-adaptation swaps in SIDS follows the conventional financial framework for three-party debt-for-development swaps. The program aims at creating a standardized mechanism modeled after the Tropical Forest Conservation Act (TFCA) with respect to having a geographical focus (i.e. SIDS) and a topical focus (i.e. EbA). National Conservation and Climate Adaptation Trusts (NCCAT) will execute the debt swaps by receiving loans from CANF and grant money from foundations etc. TNC's objective is to include a policy agenda that ensures the long-term results of both the debt relief and cash flows directed at adaptation activities. Furthermore, these policy commitments define the initial suite of activities financed under the NCCAT (i.e. EbA and disaster risk reduction). Three international conservation organizations, all of which are based in the U.S., have been the most active in orchestrating these swaps: Conservation International (CI), TNC, and WWF. Measured by either the face value of the debt or by the amount of funds to the conservation organizations, Costa Rica, Ecuador, the Philippines, and Madagascar, have been the countries most heavily involved.

Box 6. Debt for Adaptation Swap in the Seychelles

The enabling conditions for the Seychelles adaptation swap were partly met. The Government of the Seychelles was willing to engage in the debt swap and has been working closely with TNC over the last year in order to implement policy commitments as well as enact national trust funds. The ‘seller’ was the Paris Club, an informal group of official creditors with twenty permanent member countries. Although the Paris Club members do not have to accept the swap in theory, the likelihood of being willing to sell is high. The reason for that is based on two factors: (1) the majority of governments holding the debt under the Paris Club (France, Germany etc.) have a history of doing debt swaps, and (2) accepting a swap today rather than in the future is economically more attractive based on the net present value (NPV) analysis.

Several parallel processes were carried out in the Seychelles -- negotiating the terms sheet and policy commitments with the government, designing of the trust fund, passing enabling legislation e.g. related to policy commitments, making the national trust fund operational and raising loan and grant money at the same time.

Figure 3 explains in more detail the financial structure of the proposed debt-for-adaptation swap in the Seychelles. Of note, while the numbers used are actual numbers, it could be possible that they will change in the process of the project and thus they should be regarded as exemplary rather than deterministic.

Currently, the Government of the Seychelles (debtor) makes annual debt payments to the Paris Club (creditor) on a USD eighty million debt at face value.

Figure 3. Analysis of the Seychelles, Debt for Adaptation Swap

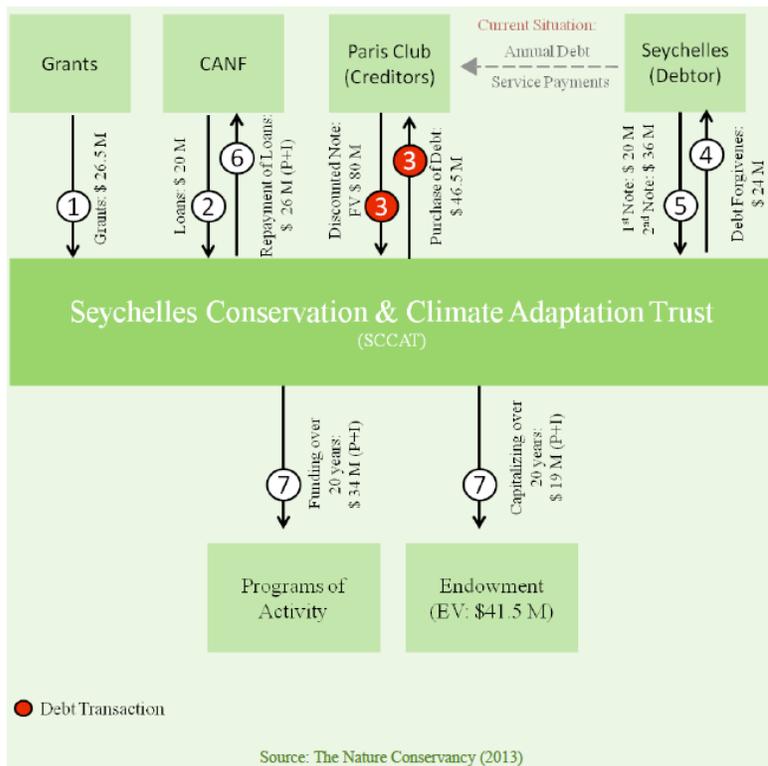


Figure 3 shows the steps being undertaken for this swap.

- Step 1: Establishment of the Seychelles Conservation and Climate Adaptation Trust (SCCAT) to receive funds channeled through the CANF. The original debt is currently trading at a discount of 41.88 percent and thus can be purchased at USD 46.5 million. Step 1 dictates the receipt of grants, of which slightly more than half of the funds to purchase the debt are coming from (USD 26.5 million).
- Step 2: Receipt of loans to the SCCAT, which amounts to approximate USD twenty million from impact investors.
- Step 3: SCCAT purchased debt with a face value of USD eighty million from the original creditors for USD 46.5 million.
- Step 4: Out of the original haircut of USD 33.5 million (USD eighty million – USD 46.5 million), the Seychelles was forgiven USD twenty million, approximately 2.4 percent of GDP.
- Step 5: In exchange, the Government issued two new promissory notes equal to the new value of the debt. The Government will repay the new debt over twenty years.
- Step 6: The SCCAT used the first promissory note of USD twenty million to repay the investors through CANF over ten years at an interest rate of five percent, a total of USD twenty-six million.
- Step 7: The second promissory note of USD thirty-six million at four percent over twenty years was used to fund ecosystem-based adaptation activities. The SCCAT will allocate the funds by an open and transparent process. An annual call for proposals will allow civil society and government entities to apply for funding from the national trust. The initial focus of the projects will be guided by the policy commitments and activities specified in the debt swap agreements. In the future, the priorities will be identified by the trust's board consistent with national priorities. Two-thirds of the proceeds will fund activities over twenty years. The total will be around USD thirty-four million (thirty-three percent of the deal cash flow) in local currency. One-third of the proceeds (USD nineteen million) will capitalize an endowment starting in year twenty. Assuming seven percent annual management expenses, the endowment would have an end value of USD 41.5 million.

Debt-for-adaptation swaps are potentially relevant for Jamaica because the country is a small island state that needs to restructure its national debt and address its extreme vulnerability to climate change. The fact that Jamaica may need to restructure its debt encourages creditors to search for acceptable alternatives, because of the high probability of default. However, these deals are time consuming and complex; and require political buy-in from a government with enough resources and capacity to structure the deal; and a willing buyer, in this case the GoJ,

4.4.3.3. Green and Climate Bonds

Between 1995 and 2008, multilateral development banks raised USD 1.35 trillion on the capital markets. The International Bank for Reconstruction and Development (WB) and International Finance Corporation (IFC) accounted for approximately USD 235.4 billion. WB bonds and debt products provide investors with the reassurance of an AAA credit rating, a wide choice of products, and strong secondary market performance for liquid benchmark bonds.

Some bilateral donors have raised funds on their domestic capital markets through their national development banks, to fund aid programs. Germany and France have made substantial use of loans as part of their Overseas Development Assistance (ODA). For instance, Kreditanstalt für Wiederaufbau (KfW) has sought to “expand the scope of development cooperation by combining federal budget and capital market funds.”

Bonds and other debt products are increasingly being used to finance climate change mitigation projects. The WB Green Bonds provide some earmarking for specific WB projects supporting climate change mitigation and adaptation.

Annex 12 describes some private bond initiatives to raise funds earmarked for CCM investments.

4.4.3.4. Joint Crediting Mechanism/Bilateral Offset Credit Mechanism⁴⁰

There is no successor agreement to the Kyoto Protocol yet, but there has been some discussion about the “New Market Mechanisms.” Also, Japan’s JCM/BCOM is already working in its early stages. Purpose of the JCM/BCOM:

- Facilitating diffusion of leading low-carbon technologies, products, systems, services, and infrastructure as well as implementation of mitigation actions, and contributing to sustainable development of developing countries.
- Evaluating contributions to GhG emission reductions or removals from Japan in a quantitative manner by applying MRV methods to achieve Japan’s emission reduction targets.
- Contributing to the ultimate objective of the UNFCCC by facilitating global actions for GhG emission reductions or removals, complementing the CDM.

Operational approach:

- Ensuring the robust methods, transparency and the environmental integrity;
- Maintaining simplicity and practicality based on the rules and guidelines;
- Promoting concrete actions for global GhG emission reductions or removals;
- Preventing uses of any mitigation projects registered under the JCM for the purpose of any other international climate mitigation mechanisms to avoid double counting on GhG emission reductions or removals.

Features:

- The JCM starts its operation as the non-tradable credit type mechanism;
- Japan and the partner government hold consultations on the transition to the tradable credit type mechanism and implementation of the JCM;
- The JCM aims for concrete contributions to assisting adaptation efforts of developing countries after establishment of the tradable credit type mechanism;
- The JCM covers the period until a possible new international framework under the UNFCCC.

The project cycle of the JCM takes after that of the CDM, albeit with some differences that simplify it learning from experience. Annex 13 contains current technical details on the JCM.

So far, the Japanese government has signed JCM bilateral agreements with Mongolia, Bangladesh, Kenya and Ethiopia.

⁴⁰ Adapted from: New Mechanisms Information Platform (2013).

4.4.4. Comparative Analysis

While many developing countries focus on public finance efficiency before private financing can be accessed, private finance is critical and must materialize at scale concurrently. Both are essential and public finance needed to unlock the full potential of private finance. The private sector will be responsible for the bulk of the investment needed to meet the USD 100 billion pledged at the COP 16 in Cancun. The UNFCCC recently estimated that more than eighty-five percent of all finance to address climate change will need to come from the private sector (CDKN, 2013).

Jamaica has already tapped some of the most relevant sources of public climate finance for CCA. It might not be likely that Jamaica could obtain large amounts of additional funding from these sources in the near future except for TA. The GoJ should therefore focus on untapped potential sources of international public funding for CCM.

Because there are many other sources of equity, debt and grant capital, particular care should be taken to identify the funding for a program or project. Since the 2008 financial crisis, it is quite common for different sources of capital to work closely to leverage their resources. As a result, beneficiary entities or projects need to work multiple funding sources with different requirements, due diligence procedures and sometimes competing goals. This reality makes the work of structuring the financing more difficult since different entities have a wide range of requirements and work at different paces. Impact capital funds could be approached to finance projects with CCM and CCA co-benefits with yields above five percent. Traditional venture capital or institutional investor funds could be approached to finance RE projects with yields above fifteen percent once the regulatory framework is in place for on-grid projects. The PFAN network and SIDS DOCK can be useful mechanisms to match projects with investors.

Table 5 compares the pros and cons of more traditional climate finance sources and mechanisms.

Table 5. Comparison of Private Climate Finance Sources

SOURCE / INSTRUMENT	ADVANTAGES	DISADVANTAGES
IMPACT CAPITAL	<p>Lower internal rate of return (IRR) requirements than other sources of capital.</p> <p>Other social development goals may be helpful for the target area/country.</p> <p>Sometimes includes TA to develop and structure the project.</p>	<p>Complex objectives that involve social development goals may not be aligned with the interest of other investors.</p> <p>Typically, longer due diligences.</p>
TRADITIONAL EQUITY CAPITAL	<p>Faster decision making than impact capital or other sources.</p>	<p>Higher IRR requirements than impact capital.</p> <p>Typically, private equity will only consider large projects where the due diligence cost can be offset due to the size of the projects.</p> <p>Very sensitive to the local regulatory framework. Should</p>

		guarantee reasonable returns for a long time, as most clean energy projects have long payback periods. Interests of private equity investors may not be aligned with other project stakeholders.
PRIVATE DEBT	Faster decision making. Usually, the existing entity will benefit to use the same bank for climate change investing than it is using for other financial needs; the bank already has considerable information about the client.	Only a few private sources of debt have in-house expertise to understand the benefits and risks of climate change investments. TA programs offered by donors may solve this problem, but need a strong commitment from the bank to be successful. Typically, private debt will only consider large projects where the due diligence costs can be spread
GRANT DONORS	No need to repay funds. Usually, grant donors also provide TA in kind that otherwise would not be available or would be too expensive to acquire by beneficiary entities.	Long due diligence process. Usually, many projects compete to obtain a few grants, so it is not possible to know in advance if the grant may materialize. Some grants require beneficiaries to buy equipment from particular countries/entities, limiting the freedom to select the best design (“tied aid”).

Table 6 compares the advantages and disadvantages of the new mechanisms and vehicles identified in this chapter.

Table 6. Comparison of New Climate Finance Mechanisms and Vehicles

MECHANISM	ADVANTAGES	DISADVANTAGES
NAMAs	Willingness of government of Colombia and USAID to transfer know-how to Jamaica. Collaborative approach involving the private sector (bottom-up). It is the trend for CCM-CF.	Need for capacity building in Jamaica. Relatively complex and time consuming bottom-up approach.
DEBT-FOR-ADAPTATION SWAPS	There is a good track record of debt swaps. Moreover, there are already working examples related to CC in other SIDS such as Guyana and Seychelles. Due to long-term focus, more financially sustainable than grants. The TNC is in the process of	Instrument for CCA, not CCM. Low volume of climate finance since it is not likely there will be many taking place. Complex and time-consuming mechanism that requires political buy-in.

	<p>preparing a formal business proposal to the GoJ, with the financial backing of the Germans (KfW).⁴¹</p> <p>The risk of default or debt restructuring by GoJ can be considered an advantage since it leads to there being more willing sellers of debt at a discount.</p>	
GREEN / CLIMATE BONDS	<p>Can raise finance at a relatively low cost if properly structured.</p>	<p>A mechanism to raise funds by creditworthy entities and governments.</p> <p>Bond duration needs to be adjusted to the climate finance context.</p> <p>Climate mitigation investments in Jamaica seem like too “exotic” at for institutional investors (poor demand and/or very high yield required).</p>
JCM/BOCM	<p>Potentially good way to transfer CCM technology from Japanese companies.</p>	<p>Japan must have strategic interest in the country to be willing to sign a bilateral agreement.</p> <p>Japan has traditionally not being willing to give grants to Jamaica due to its GDP/capita ranking.</p>

4.5. POTENTIAL FINANCIAL MECHANISM BY JAMAICA TO CHANNEL CLIMATE FINANCE

A National Climate Fund (NCF) is a country-driven mechanism that supports the collection, blending, coordination, and accounting for climate finance. It can support climate change goal setting and strategic programming, oversee climate change project approval, measure project implementation and performance, offer policy assurance and financial control of climate change funds and assist with partnership management. It can also serve as a gateway for enhanced capacity building and knowledge sharing among stakeholders.

NCFs help countries blend various resources together at the national level, providing a mechanism for shifting power away from traditional top-down fund management to country-level management. The climate change objectives are managed and supported by the country itself. The components and structures to deliver the services vary greatly according to national circumstances and priorities. For example, an NCF capitalized by international and national public finance will collect and blend resources differently than an NCF that relies only on private finance. Tailored fiscal tools effectively access and

⁴¹ According to the TNC (personal communications with Rob Weary), the German Government – through KfW - is willing to contribute €100 million for this type of swaps in the Caribbean.

channel public and private sources. An NCF can strengthen the capacities of stakeholders for direct access to climate finance (UNDP, 2011). Annex 14 showcases two examples (Brazil and Indonesia).

Jamaica already has existing trust funds set up for various purposes, including climate change. A pending trust fund for adaptation is being designed under Investment Program 3 (IP3) of Jamaica's Strategic Program for Climate Resilience (SPCR).

The recommendation is to set up an umbrella trust fund – the Jamaica National Climate Fund (JNCF) to channel and coordinate all domestic and international, public and private, and concessional loan and grant climate finance at the national level. This national climate fund would provide a unified engagement point for the – GoJ, donors, development partners, civil society, and other stakeholders to make funding decisions on climate change issues.

The JNCF would not duplicate the role of NIEs (such as collecting funds from multilateral and bilateral climate funds), but blend different resources at the project level. It would provide a means for leveraging public funds to attract private funds and national-level coordination. The JNCF could increase information flows among stakeholders, and reduce management costs through economies of scale.

It would be important to take advantage of existing structures in the country and align the national climate fund with existing national institutions and goals. Therefore, ideally, the JNCF should reside in the Public Investment Office of the Ministry of Finance (MOF), which is already the focal point for national and international public climate finance. The DBJ could act as the trustee/fund manager.

4.6. INCREASED LOCAL FINANCING OF SMALL-SCALE ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECTS

There is a great potential in Jamaica for small-scale clean energy projects. Currently access to finance by small developers is a key barrier since local banks in Jamaica are only starting to consider lending in this sector. Alternative ways to foster debt financing could increase the development of these projects.

The sectors considered are EE and RE projects in the residential, commercial and industrial sectors. Small-scale is defined as RE projects below 200 kW of installed capacity (e.g., roof-top solar PV, small wind towers, and small bio-digesters) and EE projects in the built environment or small production processes of non-corporate clients. Only credit operations that fall under the commercial business branch (non-corporate clients) are considered here.

A road map for increased financing of small-scale EE and RE projects by local banks would include

1. Evaluate needs of small-scale EE and RE developers (including households) as well as lenders.
2. Review of lending for these investors in other countries, seeking lessons that can be adopted in Jamaica (benchmarking).
3. Assess how local approved financial institutions (AFIs) evaluate smaller customers and how they could structure loans for clients with fewer assets that may be used as collateral and on barriers to implementation.
4. Assess the factors that limit AFI lending of funds provided by DBJ for clean energy.
5. Identify and rank potential client groups.

4.6.1. Background

Project Development Context

Seventy to eighty percent of total, small-scale, electricity consumption corresponds to the residential sector (where there is a twenty-five percent theft rate). Supply of small-scale clean energy equipment in Jamaica began approximately five years ago. Although the use of solar water heaters (SWH) and solar PV systems has increased and is a feature in some newer housing developments, market penetration remains relatively low.

Large consumer goods retailers such as ATL, FOSRICH or ISRAETECH are starting to offer clean energy equipment (mainly solar PV systems) using the “hire-purchase” contract. These arrangements are similar to a leasing contract but without the tax benefits. The advantage is affordable monthly payments. The disadvantage is greater total cost – up to three times more expensive than a regular loan.

It seems that the Rural Electrification Program (REP) is shifting its focus into off-grid, RE generation (substituting small diesel generators). Project developers and communities should now be able to count on additional support for their off-grid RE projects.

Barriers to Project Development

Regulatory

Net billing is the main regulatory incentive for small-scale EE and RE systems with a maximum capacity allowed of: (i) twenty-five kW for households, and (ii) 100 kW for businesses. However, due to a cumbersome and bureaucratic process, only two licenses have been commissioned out of the fifty-five that have been granted. Moreover, the GoJ has set no clear targets for EE and this constitutes an important barrier to EE investments. International experience clearly indicates that the existence of well-defined, specific EE objectives is fundamental to improve energy performance. Countries without clear EE objectives, like Brazil, have worse performances relative to those that do have them (e.g. Italy and U.K.).

Financial Culture

There is a widespread reluctance in Jamaica to take out loans due widespread defaults during the 1990s financial crisis when variable interest rates increased sharply. MSMEs expect a short payback period for their clean energy investments (three to five years), which is feasible for most EE but not for RE.

Technical

Many rooftop solar PV systems have failed as a result of low adaptation to local conditions or inadequate qualifications of some local installers. The poor track record has led to a bankability problem for solar PV. To help remove these barriers, the Jamaican Solar Energy Association (JSEA) is setting up an accreditation scheme for solar equipment installers and promoting the adaptation of equipment standards to Jamaican humidity, wind, sunlight and temperatures.

It does not make sense to invest in rooftop solar PV without first ensuring that homes and MSMEs have installed hurricane-strapped roofs. Otherwise there is a high probability of damage or even total loss of the RE equipment.

Incentives for Project Development

The high cost of grid electricity in Jamaica (Jamaica currently USD 0.40/kWh and increasing five to ten percent each year) is the most important motivation for Jamaicans to switch to clean energy. Moreover, as more projects come on line, the local prices of EE and RE systems is expected to decrease since equipment suppliers had not achieved sufficient volume. Other motivations are the unreliability of power supply and the exemption from import duty and the General Consumption Tax on solar panels or inverters.⁴² The lack of transparency in billing is also an incentive for investing in RE, but not in EE, since there is no clear incentive for consumers to invest in EE measures when they cannot see a short-term payback. Because of the unfavorable power supply conditions, there is a potential market of disaffected JPS customers looking for alternatives.

Financing Context

The recent GoJ-International Monetary Fund (IMF) agreement allows some room for Jamaica to borrow from external sources. However, the size and sustainability of this borrowing will depend on the Government's ability to stay on track, which has been questioned:

“Economically, Jamaica is still struggling to ignite growth. Moody's Investors Service warned in a May 20 report that Jamaica and Belize, which restructured about \$544 million of global bonds this year, face a “high probability” that they will default again. It's obviously so highly indebted, and with the precarious fiscal situation and the inability to grow, once you combine those factors, it's very difficult really to improve your outlook unless some drastic measures are undertaken, and that's what the government is trying to do now.” (Bloomberg, 2013)⁴³

The local banks have suffered a big hit from the debt restructuring and have relatively limited liquidity.

The Bank of Jamaica (BOJ) is monitoring commercial banks very closely due to a sector meltdown in the 1990s, and it is difficult to get partially secured loans since the unsecured portion of bank loan portfolios affects their rating. Only hard collateral is acceptable (such as buildings), not soft collateral from the allocation of revenues or savings. Equipment can only be used as collateral exceptionally making it the least preferred type of collateral and it does not seem likely that this rule will be relaxed in the near future. These collateral conditions are an important barrier to small-scale clean energy investments.⁴⁴ Moreover, few micro-, small- and medium-sized enterprises (MSMEs) own buildings.

The general constraints to lending and additional barriers to clean energy investments are particularly strong in the agriculture sector where DBJ is currently the only financial entity willing to offer financing. Yet, this sector offers many opportunities for bankable clean energy investments with CCA co-benefits.

⁴² The Jamaica Solar Energy Association (JSEA) is currently reviewing the many other smaller components to also try to get taxes and duty removed, which includes energy efficiency and conservation items.

⁴³ Jamaica's GDP declined 0.5 percent in the fiscal year ending March 31, the IMF said. Tourist arrivals fell 2.5 percent to 541,000 in the first quarter, according to the Jamaican Tourist Board. Unemployment climbed to 14.2 percent in the fourth quarter from 13.7 percent in the previous three-month period. Growth will probably rebound to 0.4 percent this year, according to the median estimate in a Bloomberg survey of five economists.

⁴⁴ Some AFIs that do accept equipment discount its value by at least fifty percent.

4.6.2. Needs Assessment of Borrowers and Lenders

Borrowers

Under current lending conditions, it is difficult for an average borrower, with a J\$ 40,000 (USD 348) monthly electricity bill to see a net savings from clean energy or RE investments. There is a need for longer loan tenors and continuation of the current concessional interest rates. Moreover, borrowers often prefer fixed lending rates to reduce the risks that they will be unable to repay. However, in some cases, variable interest loans may be less costly than fixed interest loans.

A survey was conducted of members of the Jamaica Manufacturers Association (JMA). Annex 15 contains the questionnaire. A few of the key responses follow:

- The financial terms that clean energy equipment suppliers offer are a barrier. Most suppliers require the majority of the clean energy investment cost upfront.
- A lack of reliable suppliers and information were mentioned as reasons for not carrying out clean energy investments.⁴⁵
- One of the main reasons expressed to invest in clean energy is to become independent from JPS;
- Economic incentives for clean energy such as duty and tax-free on imports of equipment would help people to invest.

There is a need to modify the risk perceptions of potential borrowers by making income streams associated to a clean energy investment more predictable and reducing the technical risk). Under the current collateral and repayment period conditions offered by financial entities, which are not likely to improve in the short to mid-term, concessional interest rates may be needed to spur the demand for small clean energy loans.

Lenders

Jamaican banks are not used to lending to clean energy projects and remain concerned following the aftermath of the financial crisis of the 1990s. TA and demonstration projects may help banks increase their appetite for these investments and learn to value EE and RE equipment. The banks need to learn how to evaluate the technical design of the projects and create a solid pipeline of projects with less risk. This is a precondition to improve access to finance for small clean energy projects, so that banks will perceive less risk.

The DBJ's Energy Facility for MSMEs is offering an eighty percent loan guarantee for the unsecured portion of the loan is critical in offering them security for lending to small-scale clean energy projects. A facility with good TA for applicants might be able to reduce or eliminate concessional interest rates.

4.6.3. Assessment of Small-Scale Clean Energy Lending by Local Financial Institutions

Annex 16 summarizes the current lending terms in Jamaica for small-scale clean energy. This small sample shows that the financial market is offering loans with five to seven percentage points lower

⁴⁵ One respondent said, "The sales representatives often do not seem to know much about their products," so there is a need for more knowledgeable sellers.

interest rates when there is an external guarantee or collateral. Experience worldwide has shown that bank clients normally consider the interest rate the most important financing term. In this sense, when the loan is guaranteed or collateralized the interest rate normally is five to seven percent lower than market interest rates prevailing in the country.

4.6.4. Assessment of DBJ's On-Lending Uptake

The DBJ launched a J\$ 100 million (USD 871,080) line of credit in March 2012.⁴⁶ This new loan facility was a response to the growing demand from households for financing options to reduce or eliminate their electricity bills through alternative sources. The credit line allows households to access up to J\$ two million (USD 17,421.6) to install renewable energy solutions such as solar water heaters (SWHs), photovoltaic (PV) panels, bio-digesters, and wind turbines on their homes. Longer-term loans of up to J\$ two million (USD 17,421.6) at a 9.5 percent interest rate with ninety percent leverage and repayment periods of up to eight years (initially five years) can be obtained through AFIs and microfinance institutions (MFIs).^{47, 48} The loan can be repaid through the borrower's electricity bill. There is no guarantee facility for household energy loans and AFIs often request 120-130 percent of the value of the loan as collateral. Uptake of these loans has been low since households are unwilling to put collateral or lack knowledge about the value of the investment. As a result, the DBJ is considering changing its marketing strategy (not channelling it through AFIs). Since 2008, the DBJ's Energy Fund has offered businesses loans of up to J\$ thirty million (USD 261,324) (increased from J\$ fifteen million (USD 130,662) in 2012) for energy efficiency, energy conservation and renewable energy.⁴⁹ These loans carry a concessional, fixed interest rate of eight percent, cover up to ninety percent of the capital cost, and have a tenor of up to ten years (average is seven). Loans in excess of J\$ thirty million (USD 261,324) have a fixed interest rate of 9.5 percent per year and are provided from DBJ's own resources.⁵⁰ To date, the Bank has approved energy loans of over J\$ 1,031 million (USD 8,980,840) for companies involved in manufacturing, agro-processing, restaurant/food services, tourism, small hotels, retail stores, contact centers and technology services, professional offices, as well as energy equipment suppliers. In addition, the DBJ has participated in the WB-funded Energy Security and Efficiency Enhancement Project with USD 4.6 million in loan funding for businesses since April 2012.

The DBJ has also secured TA from the IDB for:

- A study on the demand for EE and RE;
- Establishment of a local training program endorsed by the Association of Energy Engineers (AEE) for Certified Energy Auditors and Managers by the University of Technology;
- Implementation of eight energy efficiency and renewable energy projects in various sectors,

⁴⁶ DBJ funds can only be loaned to companies that are at least two-thirds Jamaican owned.

⁴⁷ Increase of tenure so that the borrower won't have to increase his cash outflows at the end of the month.

⁴⁸ Commercial banks, credit unions, PC Bank, JMMB or capital and credit merchant banks.

⁴⁹ The GoJ assumed the forex cover cost of the funds from the PetroCaribe Fund (the source of most of the funds for the Energy Facility).

⁵⁰ DBJ borrows at an average 4.5 percent and then adds a 0.5 percent spread, for a total cost to AFIs of five percent.

- Several workshops with energy equipment suppliers and businesses and financial institutions on financing EE and RE solutions.

The DBJ stated that energy projects that have accessed its concessional loans have incorporated EE solutions with RE technologies ranging from solar or photovoltaic systems to bio-digesters and wind turbines.

In 2011, the DBJ set up a guarantee fund that offered fifty percent proportional collateral guarantees to AFIs for energy loans to MSMEs. There was very little uptake of the funds from this Energy Fund, because 1) AFIs do not want to take nearly any risk; 2) the interest rate was capped at eight percent, providing only a three percent spread; 3) the DBJ did not publicize the fund to potential borrowers for fear of encouraging moral hazard (enterprises more likely to default since the DBJ was providing a partial guarantee); and 4) the fund was designed for borrowers who lacked sufficient collateral, which raised an issue with information disclosure as a barrier to entry.⁵¹

To address the problem of low uptake of the clean energy loans for businesses, DBJ started offering an eighty percent loan guarantee without the proportional loss requirement and with maximum loan size of J\$ ten million (USD 87,108) in early 2012. The change in the loan product created a large increase in demand. This guarantee takes a second loss over the unsecured portion of a loan.

Using this guarantee, the National Peoples Cooperative Bank branches provided loans to poultry farmers for PV systems. The energy cost savings was important to poultry farmers who use electricity for heat and cooling fans. DBJ provided a second round of these loan guarantees in May 2013.

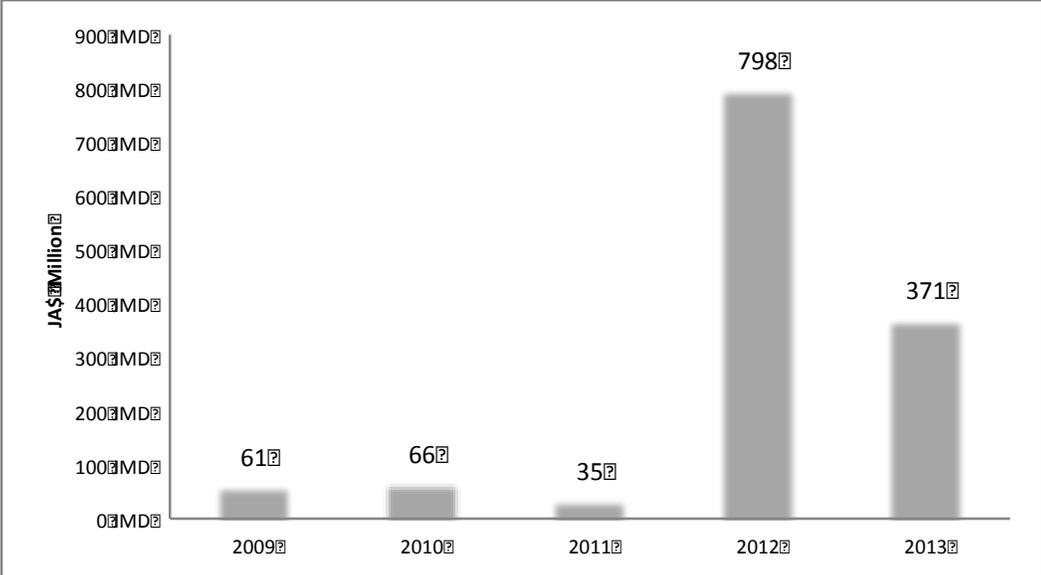
Figure 4 shows the change in lending from the Energy Fund after the loan product changes. Total lending increased from J\$ fifty-eight million (USD 505,226) in fiscal year 2010/11 to J\$ 958 million (USD 8,344,950) in fiscal year 2012/13.⁵² DBJ has guaranteed J\$ 200 million (USD 1,742,160) of the J\$ 250 million (USD 2,177,700) available.⁵³

⁵¹Since some AFIs complained that DBJ's loan processing time was too long, it recently adopted a simplified loan application form (2 pages instead of the previous 50 pages before).

⁵² Fiscal year is April to March.

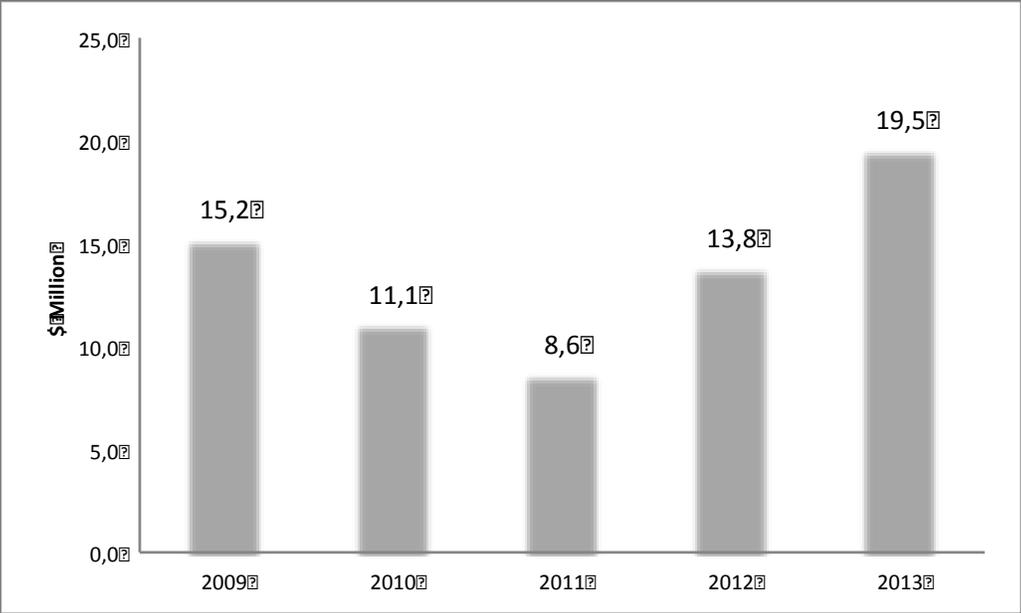
⁵³ The AFIs decide where and when to apply the guarantee.

Figure 4. Value of the Energy Fund Annual Loan Approvals by Calendar Year



Source: DBJ and own elaboration.

Figure 5. By the DBJ’s Energy Fund Average Yearly Amount Approved by Calendar Year



Source: DBJ and own elaboration.

In calendar years (vs fiscal ones), in 2012 there was a significant change in the total annual amount, coinciding with the guarantee level increase from fifty percent in November 2011 to eighty percent. Such a trend shows even better results in 2013, when just in five months the total amount is seventy-five percent over the total amount in 2012. So it seems that the improvement in the Credit Enhancement Facility has been something that the lenders needed to finance projects with DBJ’s concessional funding.

4.6.5. Benchmarking Potential Solutions Applicable to Jamaica

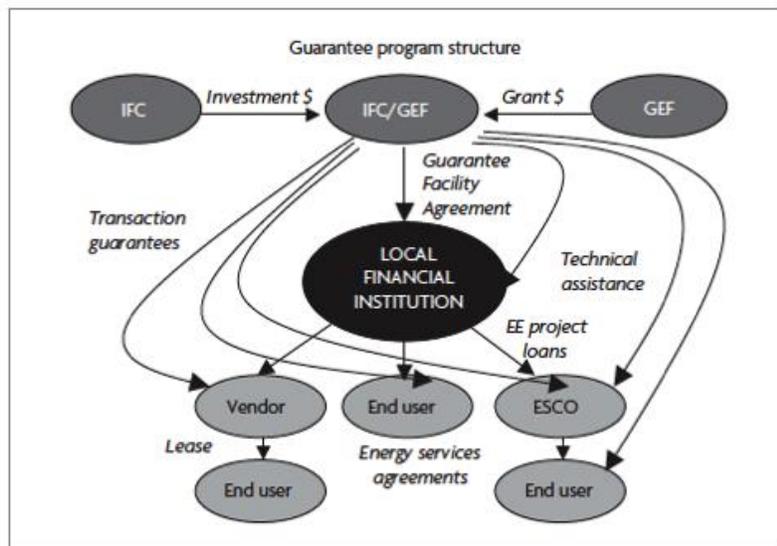
4.6.5.1. Loan Guarantees: Central and Eastern Europe

The IFC and GEF financed the Hungary Energy Efficiency Co-Financing Program (HEECP) in partnership with local financial institutions (FIs) to build a sustainable commercial lending business for energy efficiency investments in a range of sectors. This program supported development of the energy efficiency lending market through the establishment of specialized loan products and new capabilities among Hungarian FIs and project developers. The IFC provided a partial risk guarantee to the FIs and offered a range of TA to FIs and project developers. Since then, the IFC has refined the model, and the GEF has applied it to support commercial energy efficiency financing in other countries.

Figure 6 shows the structure of the program. Guarantee Facility Agreements (GFAs) for energy efficiency transactions are executed with domestic FIs. Subsequently, Transaction Guarantee Agreements (TGAs) are executed individually for each transaction as it was originated. Each TGA established a Transaction Liability Limit for the financed project. Eligible transactions are then covered by the partial guarantee and the IFC charged a guarantee fee. In the event of a default, the IFC releases the payment to the FI, which would then begin the recovery process.

The guarantees were originally targeted at various types of clients. The best borrowers turned out to be project developers -- ESCOs, leasing companies, and SMEs that deliver energy efficiency equipment, projects, and services. By focusing on these clients, FIs avoid the transaction costs of a multitude of small projects of individual borrowers. They can also reduce the collateral problem by securing the savings stream associated with energy efficiency projects through energy supply agreements between project developers and end users or performance guarantees provided by the ESCOs. TA can also be provided more effectively to a small number of project developers.

Figure 6. HEECP Guarantee Program Structure



Source: IFC, 2008.

The IFC Program benefited from several market and institutional changes:

- Lower interest rates and stronger competition in the banking sector
- Increasing energy prices
- Changes in government policies helping the development of new markets such as cogeneration, which benefited from off-take agreements for electricity at attractive rates
- Legal changes that facilitated the formation of housing associations, which could then pledge common assets as loan security
- Existence of generous subsidies for renovation of residential buildings and heating systems

This loan guarantee program has been replicated in many countries after its success in Hungary, the Czech Republic and other countries. However, the program only took off successfully after the TA and marketing programs were fully resourced and operational.

Subsequent replications documented the value of loan guarantee programs in spearheading EE and small RE financing in new markets. The ultimate measure of success is when the local FIs become comfortable with financing EE and small RE projects without any guarantees.

A Super ESCO can be very effective in the short-term for rapidly implementing public sector projects, facilitating the growth and development of the private ESCO industry, leveraging commercial financing for energy efficiency projects and providing a platform for long-term sustainable financing market for EE projects.

The experience with ESCOs sponsored by governments has generally been positive, but there is a risk of crowding the small, private ESCOs. Governments need to ensure that a Super ESCO acts as a facilitator and not a competitor of private ESCOs.

Since the initial cost of establishing a Super ESCO are high, this option is more appropriate for countries with large public budgets than small island states, like Jamaica. Another alternative is to create an ESCO as a joint venture between DFIs and the private sector. This alternative has benefits, but is also a burden for the government budget during the early phases, which are typically unprofitable.

4.6.5.2. A Mixed DFI-Private ESCO in Emerging Markets: Honeywell ESCO Polska

In 1997, the IFC, EBRD and Honeywell (a US manufacturer of controls and energy efficiency equipment) created a joint venture to serve the Polish energy efficiency market. Large municipal district heating networks urgently needed investments that could be profitably financed by an ESCO. However, the existing local ESCOs either did not have the balance sheet, credit record, or combined engineering and financial skills to finance the projects. A mixed DFI-Private ESCO showed the market the feasibility of the business model and offered a complete engineering and financial solution.

Honeywell ESCO Polska was created by joining the technical expertise and strong balance sheet of a leading manufacturing and engineering company with two DFIs. It received one-third of its equity capital from Honeywell, one-third from the EBRD and one-third from the IFC. This model also offers the advantage that it can support the development of SMEs subcontracted by the ESCO. It also required no government budget funds.

This model could be applicable to Jamaica if a large private ESCO shows interest in the market and at least one DFI is willing to support it.

4.6.5.3. Concessional Financing with Extensive TA: GEEF South Africa

Concessional financing can increase the interest of financing institutions and SMEs that otherwise would not consider climate change investments. The rationale for concessional financing is the newness of RE and EE projects in the country. Despite the potential profitability, the market was still unaware of most EE and self-use RE solutions. The companies and households that could benefit from these technologies and banks are unfamiliar with them. The purpose of using concessional financing is to prove to the market agents that financing self-use RE and EE makes economic sense and is sustainable. To avoid market distortions and high subsidy costs, concessional financing programs should expire after demonstrating success. The TA component is critical to the success of the loan.

The Green Energy Efficiency Fund (GEEF) is a good example of concessional financing (i.e. implemented through a domestic finance institution -- the Industrial Development Corporation (www.idc.co.za)).

The GEEF offers loans below market rates (prime minus two percent) along with TA.

It supports investments in energy efficiency and renewable energy projects aimed at improving energy efficiency, facilitating South Africa's transition towards a low-carbon economy. The energy and related cost savings are expected to result in improved production capacity, operational effectiveness, competitiveness, and job creation.

The Benefits of GEEF for Companies

The benefits of Investing in energy efficiency include:

- Technical support available for energy assessments based on the size and complexity of your proposed project.
- Investment risk reduction through energy efficiency validation checks.
- Modernization of industrial equipment and the use of energy efficient technologies will reduce energy and other costs.
- Improved product quality and production capacity while increasing the company's profitability.
- Improved company image due to reduced carbon footprint and contribution to sustainable development goals.
- Lower vulnerability to increasing energy prices.
- Increased company value.

Provided access to international and local technical experts who will support at no cost eligible enterprises by:

- Performing energy assessments and audits to identify sustainable energy solutions and support the preparation of investment project proposals.
- Calculating the economic and financial benefits of proposed investments.
- Supporting selection of eligible equipment and enhanced performance technologies.

The GEEF program has financed seventeen deals in the first two years from its launch in June 2011. The TA grant for a Euro fifty million fund was close to Euro two million. Other similar programs in the

region have not taken off, possibly due to insufficient TA and marketing resources in the first several years.

Since companies tend to do business with the same bank to reduce due diligence and transaction costs, the launch of a new financial product has to overcome this inertia.

4.6.5.4. On-Bill Financing: Sri Lankan Utility

On-bill financing has been used successfully in several developing countries as an alternative way to cover the higher capital costs of energy efficiency equipment when banks are unwilling to provide loans for this purpose. With on-bill financing, a third party takes on the upfront cost of EE or RE improvements and is repaid by a surcharge on the customer's utility bill. The advantages are that the costs are paid by the customers who benefit and the possibility of lower financing costs. However, some utilities may have difficulty collecting the payments. There is a well-documented example of success in the small island of Sri Lanka (VWB, 2008). Sri Lanka, like many other developing countries, has a power system load profile characterized by a sharp evening peak, primarily attributable to electric lighting. Where electricity production capacity and energy sources are scarce, an efficient lighting program can offer significant cost savings to utilities.

The Ceylon Electricity Board (CEB) is a vertically integrated, public utility responsible for electricity generation, transmission, and distribution in Sri Lanka. To cope with a power crisis in the mid-1990s, CEB initiated a demand side management (DSM) program to increase the efficiency of electricity use, resulting in lower electricity bills for the customers, reduced production shortfalls for CEB in the short term, and deferment of CEB investment in new capacity over the long term. In this case, program benefits through the year 2000 included seventy-four MW of demand savings and 110 GWh per year of energy savings. The system load factor improved from fifty-seven to sixty percent. The program received wide public acceptance and transformed the market for CFLs in Sri Lanka. The number of CFLs purchased by customers outside of the program due to program publicity (1,235,000) far outweighed the number of CFLs purchased by the program participants (261,000). (VWB program evaluation, 2001)

The program relied on monthly utility bills to collect loan repayments for the customers' energy efficiency investments. To make this possible, the legal implications of the contractual arrangements between the utility and its customers need to be considered carefully.

Upon signing the agreement, the customers would collect the lamps from one of the participating dealers and the dealer would be reimbursed by the CEB for the full cost of the lamps. In the case of the CEB DSM program, bill payments from customers were first applied to loan instalments and any remaining balance to the electricity bill.

This kind of program requires detailed legal and tax analysis because the agreements could be considered loans or service contracts. Another issue is the transferability of the loan when there is a new tenant or owner.

This approach has many advantages:

- The threat of disconnection is effective in securing collections in some countries. It also addresses the "first-cost" hurdle by requiring very little customer capital upfront. On-bill financing (OBF) can be structured to use third-party capital at no cost to taxpayers or ratepayers.
- The payment obligation can either follow the customer or the meter.

- It can accommodate a variety of energy efficiency and self-use renewable energy financing methods.
- It can serve a diverse range of customers and market segments.
- It can be structured to address the split incentives of tenants and owners.

On-bill financing can work well for residential energy, where it is otherwise expensive to reach a huge number of small residential projects, which otherwise would be very difficult to structure. The experience in Sri Lanka shows the importance of a coordinated public awareness campaign. The CFLs purchased outside the program area greatly contributed to the success of the program. OBF could help on a large-scale provide electricity in a more efficient way, but needs a utility committed to EE.

4.6.6. Need for a New Small-Scale Lending Program in Jamaica

It may not be necessary to implement new financing instruments in Jamaica. There is a need to optimize the implementation of the current product offered by DBJ (concessional interest rate coupled with a very attractive guarantee instrument). The lessons learned from the benchmarking study are most applicable for Jamaica point are the need to focus on both the guarantee and concessional interest rates to encourage small-scale clean energy financing by local financial entities.

To increase lending to small-scale, clean energy projects the DBJ projects that it needs a larger guarantee fund and more loan capital. The DBJ estimated a total capital requirement for small-scale clean energy of J\$ 400 million (USD 3,484,320). Even though this is significant relative to the historical performance for small-scale clean energy financing in Jamaica, it is still low compared to the total potential demand for “green” loans.

The DBJ is interested in promoting the ESCO industry in Jamaica and recently sent a team to learn about the experience in Chile. The DBJ thinks that it could replicate the Chilean model of a guarantee fund for ESCO projects with grants for start-up ESCO businesses.⁵⁴ However, the Chilean model may be more feasible for a country with a well-developed financial sector and many high-quality clean energy-engineering firms, which is not currently the case in Jamaica. A replication of the Chilean approach might not work in Jamaica unless the Government takes on an important role and provides extensive TA. Implementation of new EE and RE projects is an urgent need for Jamaican households and MSMEs due to the high cost of power and supply reliability problems. Current collateral requirements make it difficult to focus an energy lending on smaller clients, even with the current DBJ facility. As a result, this study recommends the following target groups in decreasing order of cost-effective clean energy deployment:

1. Middle and lower middle-income households who pay high energy costs relative to their income and have more difficulty providing collateral for a loan;
2. MSMEs of key energy intensive sectors such as agriculture, food production and tourism;⁵⁵

⁵⁴ There is an ongoing project funded by the EU ‘Development of an ESCO sector in Jamaica’ managed by The Jamaica Productivity Centre (JPC) of the Ministry of Labour as the National Implementing Entity (NIE). This project focuses on two main aspects: (i) design of new procurement rules in the public sector, and (ii) design new rules for collateralization. Other institutions participating are: MSTEM, PCJ, UTech, UWI, Jamaica Institute of Engineers, BOJ and DBJ, amongst others.

⁵⁵ Poultry farmers working from Jamaica Broilers is a good case in point of such MSMEs, to whom the savings are very important (they use a lot of electricity for heat production as well as fans). Moreover, it seems that they are seeing savings from the first year.

3. Other MSMEs.

A new program could provide TA to the majority of projects by MSMEs and householders to increase bankability in general, and extra help to the smaller projects and borrowers. In addition, it could dedicate some initial funds for a limited number of demonstration projects with more aggressive financing conditions and sufficient technical review.

4.6.7. Road Map for Increasing Lending by Local Financial Institutions

Figure 7 contains a road map for designing a program to increase lending for small-scale energy efficiency and renewable energy projects by local banks. Jamaica has already implemented some financing incentives through the DBJ. Key issues to assess are how to improve the current credit instruments and whether it is necessary to introduce new ones.

Figure 7. Steps to Increase Lending for Small-Scale EE and RE



a) Context

AFIs in Jamaica are risk-averse. Small energy projects are assessed as commercial loans with a high collateral requirement. Nevertheless, small-scale clean energy loan financing has increased significantly over the last year as a result of changes in the DBJ's Energy Facility:

- Loan terms: The investment cap has been raised to J\$ ten million (USD eighty-seven thousand), an attractive concessional annual interest rate of eight percent vs. fourteen percent for typical commercial loans, a tenor of up to ten years (average is seven), and an ability to finance up to ninety percent of the total investment costs.
- The guarantee cover increased from fifty to eighty percent of the non-collateralized loan amount and the proportional loss requirement has been removed.

Moreover, local banks have enough liquidity now to be potentially interested in financing small energy projects.

b) Market Demand

Potential new credit programs or instruments should not crowd out what financial institutions are already offering for the energy sector in Jamaica. Instead, they should address the potential gaps in the demand for financing. A second consideration is whether it is possible to reduce the required public incentives or subsidies.

Project developers still face a sector in its early stage of development in the country. Lenders are concerned about whether there is a sufficient pipeline of projects to finance. ESCOs can have the necessary skills and can help develop bankable projects.

c) Financing Structures

The key factors that have increased energy lending in Jamaica have been the availability of a loan guarantee and concessional interest rates. The international experience in similar programs has shown that after the end of a loan guarantee program, banks often continue lending to the same borrowers that they previously perceived as unqualified. There are two common ways to structure loan guarantees:

- Guarantee covers the first loss over a part of the loan
- Partial credit guarantee where banks assume the first loss over the unsecured amount (e.g., DBJ's Credit Enhancement Facility)

A first loss guarantee is more favorable for an AFI, as it reduces their potential losses. However, it requires a thorough risk assessment by the guarantor to reduce the likelihood the AFI is assuming too much risk. A partial credit guarantee (risk sharing) helps ensure that banks perform their own due diligence so that they will be more likely to continue lending on their own without a guarantee.

International experience has also shown the importance of TA in expanding energy financing.

It is not enough to work only on the design of supply-side instruments. It is also necessary to facilitate the growth in demand for energy investments. This could be done through an institutional ESCO structured as a public-private partnership.⁵⁶

The advantages of an Institutional ESCO include:

- Larger lending capacity through the equity provided by the partners and the cash flows generated by the portfolio of projects to facilitate bank assessments of guarantees and bankability;
- Greater technical skills to increase the quantity and quality of project proposals;
- Higher capacity to assess the feasibility of new projects;
- Ability to collaborate with current projects that lacked technical capabilities;
- Consolidation of projects;
- Generating a pipeline of new projects.

An institutional ESCO could prepare a strategy to foster the small-scale clean energy sector, identifying those market niches where it can avoid competing with the private sector. Institutional ESCO should implement a communications campaign. It could also assist emerging local ESCOs.

The institutional ESCO would require initial capital for its establishment and working capital to carry out these activities. Private sector participation would be desirable.

Local financial entities, backed by DBJ guarantees, should continue providing loans to finance the ESCO's investments. Some investments could be covered by the institutional ESCO's own equity. The ESCO can help generate the demand for energy lending.

⁵⁶ Annex 17 describes the barriers to development of the ESCO industry in Jamaica.

d) Recommendations for Program Design and Implementation

Jamaica needs a solid pipeline of bankable projects and an increased willingness of local banks to finance them. A financing program should also address the supply side:

- Review and improve DBJ's guarantee and facility to avoid creating too many incentives.
- In addition to financing new projects, sustainable, long-term financing should be available for small projects.

Gradual decline in the availability of concessional interest rates to avoid inefficiencies and potential rent-seeking strategies. Assess what types of projects need a concessional interest rate and the level of the subsidy required. Subsidies should only be available for projects that would not be feasible without it (additionality). This change in lending terms should be done with care and gradually (allowing for a smooth learning curve with a trial-and-error period). The Jamaican clean energy market for small-scale projects is still in its early stages and, given the context of the financial sector, concessional rates may still be part of the solution.⁵⁷

- Consider gradually increasing or removing the cap on the interest rates.
- Fixed interest rates reduce borrower uncertainty although variable rates can sometimes be less costly without excessive risk if there are stated limits on the maximum increase.

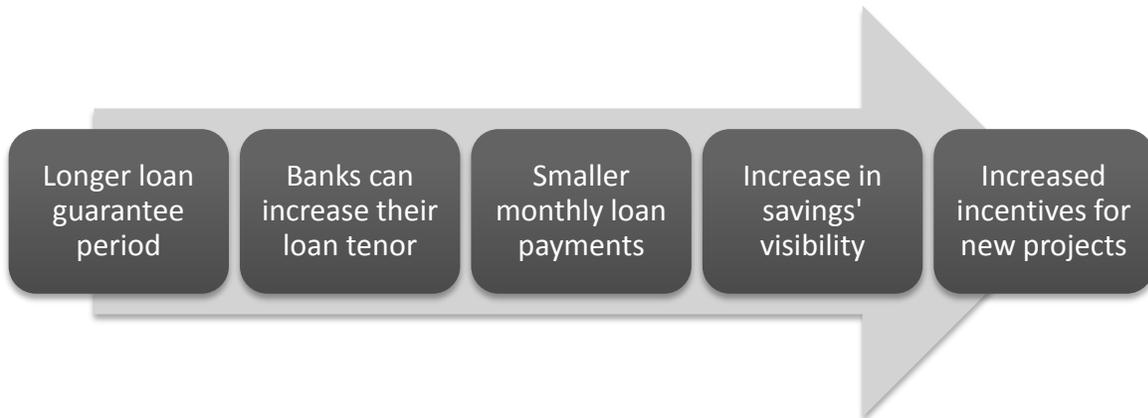
The review of the loan guarantee scheme should include considering whether a higher guarantee would increase the volume of lending or allow a reduction or elimination in concessional interest rates. The guarantee could be augmented by:

- Offering a first loss cover.
- Increasing the guarantee cover level beyond the current eighty percent.
- Extending the loan guarantee period with or without an increase in the guarantee percentage (Figure 8).

Before introducing a higher guarantee, it would be desirable to consider relying on an independent institution with greater technical skill in energy project risk assessment (such as an institutional ESCO).

⁵⁷ It is assumed that the GoJ / DBJ will absorb the costs of forex cover of the loans by external sources, and that the GoJ won't impose a sovereign guarantee fee.

Figure 8. Effect of an Extension in the Loan Guarantee Period



Other items to consider in improving the guarantee scheme:

- Detailed design of the new guarantee scheme:
 - Total funds available and their cost;
 - Leverage –Using projected default rates to design a guarantee scheme with enough good rating that spreads the available funds as much as possible;
 - Guarantee risk assumed by the entity: Establish a risk guarantee level for each project rating;
 - Operating considerations:
 - Team involved in the new guarantee scheme;
 - Assessment and approval process: This depends on the project developer, the project structure and business model, technical risk, and investment amount;
 - Implementation: Typically, the banks apply for the guarantees on behalf of the borrower.
 - Marketing: publicize the new guarantee scheme.

Road Map for the Demand Side

Some important considerations for designing an Institutional ESCO and preparation of a business plan:

- Gap assessment and pipeline identification: What are the market segments where the developers and investors are not currently operating due to technical difficulties, capacity weaknesses, or perceived risks;⁵⁸
- Financial resources sufficient to cover the establishment cost, working capital, and equity required for the initial investments;

⁵⁸ See annex I6 for a list of barriers identified by the EU-GoJ ESCO Project.

- Financial projections to demonstrate the business case;
- Choice of funding sources;
- Identification of team skill requirements;
- Portfolio risk management: Based on the project and financing structure and availability of corporate guarantees.

A key issue to consider is who would participate as a shareholder in the ESCO, (public and/or private institutions). A joint venture with a foreign ESCO could contribute to the efficient operation of the company.⁵⁹ To avoid undue delays, too many stakeholders should not be involved in the design, as was the case in the EU-GoJ ESCO project.

4.6.7.1. Public Super ESCOs

ESCOs include energy efficiency service companies and other companies that provide solutions to reduce the power a company or household consumes from the grid.

Energy services companies in developing countries often face a number of barriers:

- Small size and limited capacity
- Mostly supported by donor funds
- Challenges in working with the public sector
- Poor credibility with private sector
- Small equity, weak balance sheets
- Limited staff capacity
- Challenges in working with banks and FIs
- High project development costs
- Lack of supportive legislative and regulatory environment
- Lack of demonstrated experience

A Public-Private Partnership (PPP) in the form of a “Super ESCO” may help to alleviate the bottleneck of bankable projects by solving these problems. In addition, a Super ESCO can start by targeting the public sector, which typically offers many opportunities for financing energy efficiency projects. Governments can lead by example, but may face some challenges:

- Public procurement regulations (“low bidder”)
- Inability to sign multi-year contracts
- Limits on retention of savings
- Limited internal capacity to implement or to manage ESCO contracts
- Lack of access to commercial financing
- Split responsibilities for capital and operating budgets

A Super ESCO can address most of these public sector barriers.

⁵⁹ According to the JSEA, some large US ESCOs have shown an interest in the Jamaican market (e.g. NRG).

A Super ESCO can be effective in the short-term for rapidly implementing public sector projects, facilitating the growth and development of the private ESCO industry, leveraging commercial financing for energy efficiency projects and providing a platform for long-term sustainable financing market for EE projects.

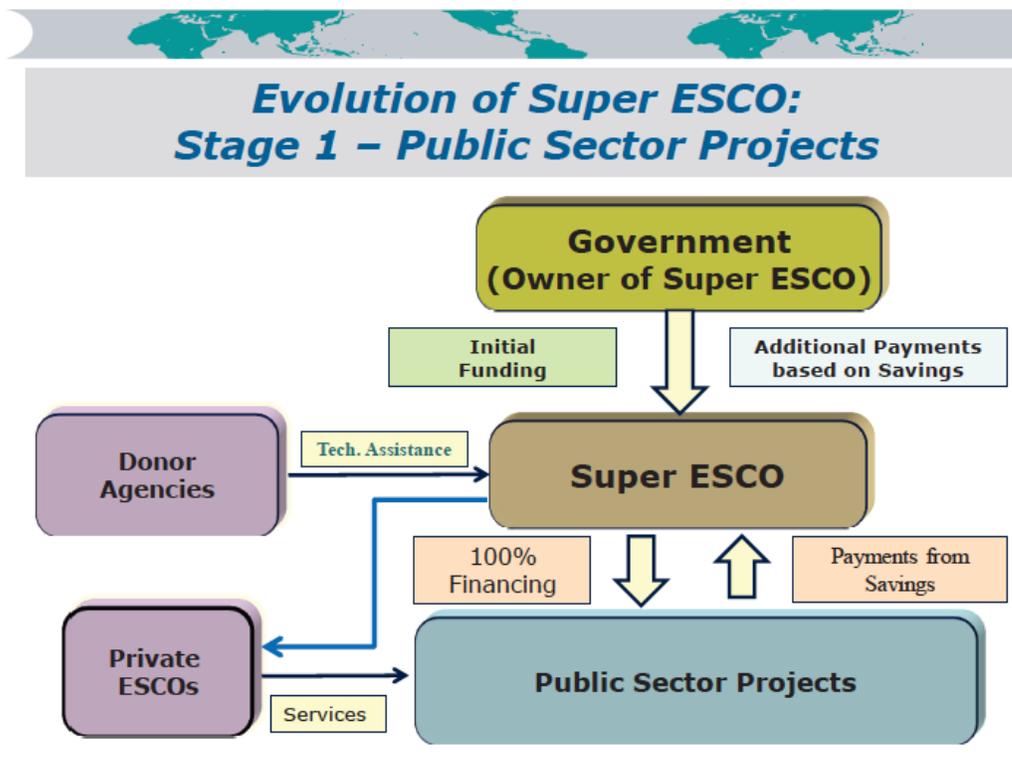
However, a Super ESCO should be a facilitator and not a competitor of private ESCOs.

The initial cost of establishing a Super ESCO can be high. As a result, a super ESCO may be more appropriate for countries with large public budgets, rather than small island states, like Jamaica.

An alternative that may be less costly for small countries with limited public budgets would be to create an ESCO joint venture between DFIs and the private sector. This structure allows similar positive results, but does not burden the government budget during the first phases, which is typically unprofitable.

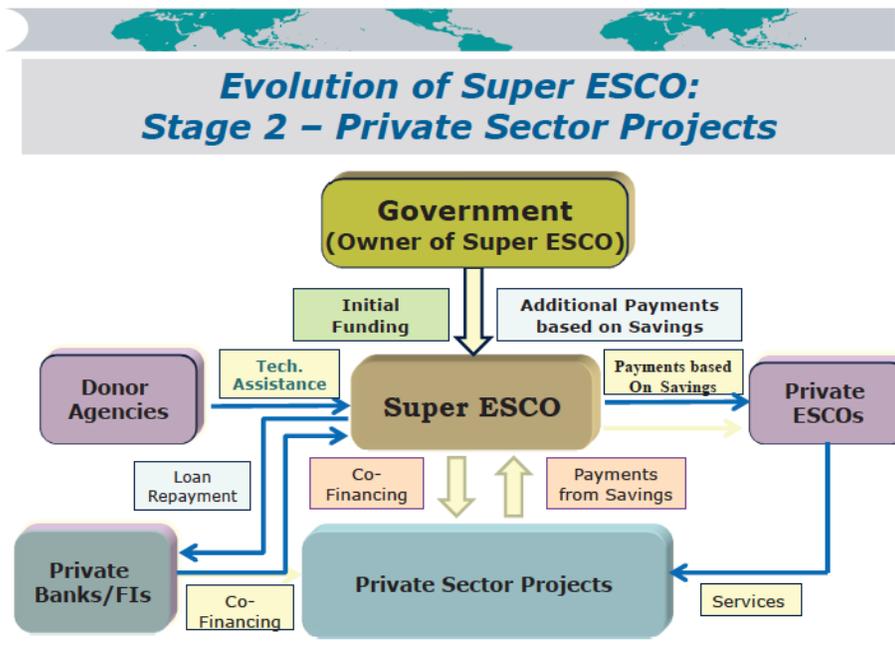
A Super ESCO should be designed to avoid current and future competition with local, private sector ESCOs. Figures 9-11 show how a Super ESCO can be set up and evolve to achieve the intended goals without negative impacts.

Figure 9. Super ESCO Initial Phase: Public Sector



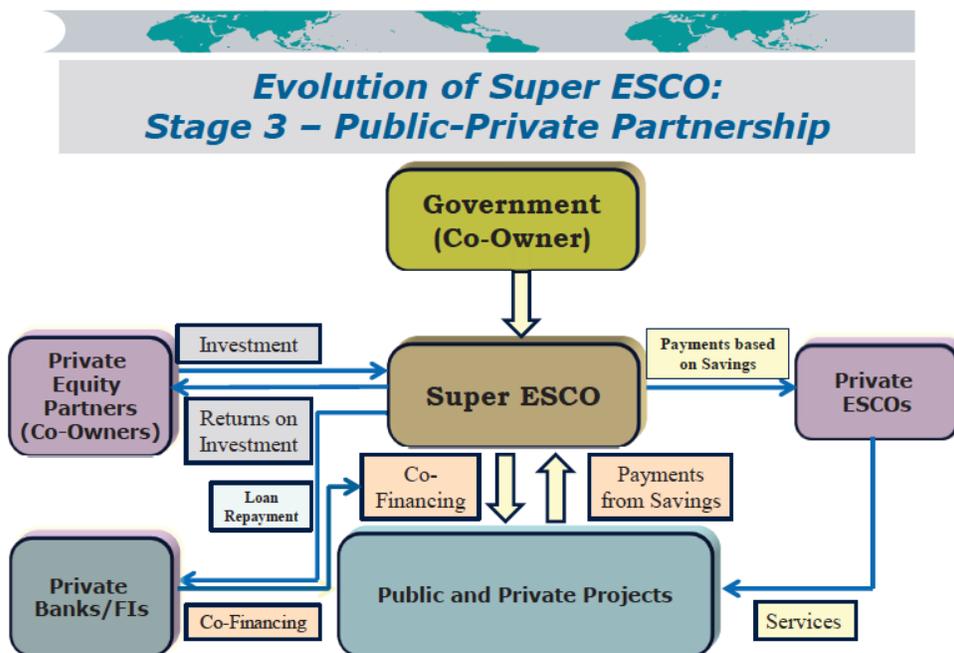
Source: Limaye, 2013

Figure 10. Super ESCO Second Phase: Public Sector



Source: Limaye, 2013

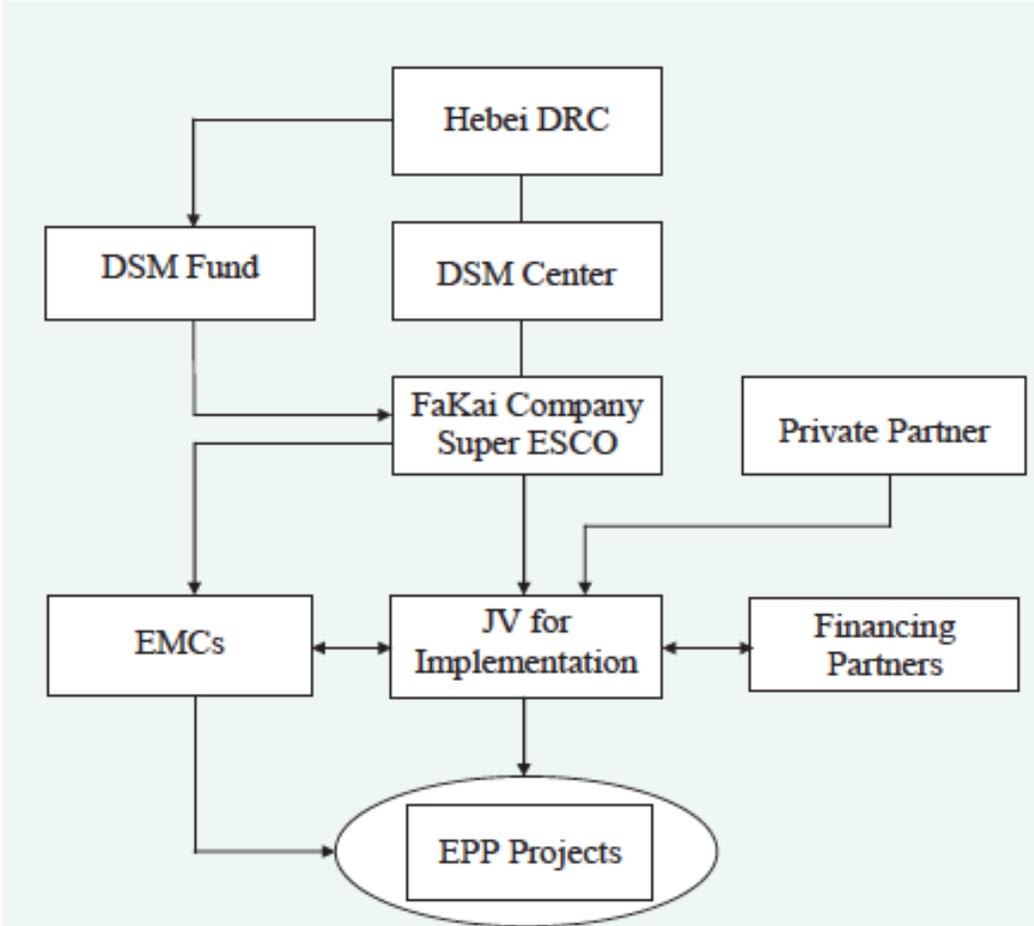
Figure 9. Super ESCO Third Phase: PPP



Source: Dilip, 2013

The WB has supported growth of the ESCO industry in China where the commercial banking industry has been undergoing a transition and needs assistance to fully engage in EE project financing. Figure 12 shows the Super ESCO PPP model established in Hubei Province, China that is working with existing and newly formed ESCOs and commercial banks to implement EE projects.

Figure 12. Super ESCO PPP Model in China



Source: Limaye, 2013

Similar entities have been successful in India, Armenia and other developing countries.

5. RECOMMENDATIONS FOR A CLIMATE FINANCE STRATEGY IN JAMAICA

This chapter contains recommendations for a government strategy that will cost-effectively increase climate change mitigation financing in Jamaica from domestic and international sources.

5.1. BACKGROUND

The GoJ is currently finalizing a CC framework policy that will integrate bottom-up sector plans with a detailed vision for the role of the newly created CCD. This policy will include the four priority special initiatives defined by MWLECC (Annex 18). These initiatives will address multi-sectoral impacts of climate change through a multi-agency approach. The CCD will be responsible for oversight of these special initiatives.

As a small island state, Jamaica is a highly vulnerable country to climate change. Until recently, the country has mainly focused on finance and strategies for climate change adaptation. Because of the potential of climate change to disrupt economic development, it should be viewed as an economic concern that warrants attention by national ministries of finance and planning. Jamaica has already tapped the major funding sources for adaptation initiatives (AF, PPCR and GCCA) and might not be able to receive more significant additional financing from these sources in the short- to medium-term.

In addition, climate mitigation projects can generate income or savings, while adaptation often involves public goods. Consequently, Jamaica should now focus on mitigation projects that have collateral adaptation benefits.

Like most developing countries, Jamaica faces a considerable challenge in planning for climate change and coordinating the financing. As a result, it may be desirable to establish one entity with a climate change financing mandate to coordinate with the rest of the GoJ and other stakeholders. This entity should qualify for direct access to climate finance given that financing vehicles such as the GCF, GEF, etc., are moving towards this access modality to the funds (through the accreditation of NIEs).

International sources of climate change financing have been shifting from project-focused interventions to programmatic ones to catalyze larger amounts of public and private funding. The GoJ could use strategically targeted public resources and policies to address the risks faced by private investors.⁶⁰

⁶⁰ Public finance instruments can take risks that the private sector is not ready to take, support early movers, and pool increased private capital. Examples include those that de-risk finance using risk guarantees to underpin credit worthiness, funding incentive mechanisms such as price guarantees, and concessional finance to complement early-stage risk capital.

5.2. BARRIERS TO ACCESS TO CLIMATE FINANCE

5.2.1. Barriers to Private Investment

- Need for a public RE policy that offers transparency, longevity and certainty to investors over the long term;
- Domestic costs of operation, limited human capital, insufficient infrastructure, and political and economic risks;
- Lack of investment ready, low-carbon or climate-resilient projects that do not require further development, due diligence, and changes in regulations or the institutional framework;
- The current low price of carbon and uncertainty on the future attractiveness of carbon markets.

5.2.2. Barriers for the Government of Jamaica

- Gaps in institutional and technical capacity to budget, plan, program, and manage climate finance effectively;
- Awareness of the various sources of climate finance, and their applicability under different contexts;
- Limited understanding of fundraising, financing prerequisites and requirements, blending of financing sources, and streamlining local management;
- Lack of systematic tracking of public and private climate finance flows;⁶¹
- Weak capacity to analyze climate change spending;
- Scarcity of tested models for climate finance delivery, including budget support, direct access through national implementing entities, and national execution of funds managed by multilateral or bilateral agencies;
- Limited capability at the national level to develop and package bankable investments that would make effective use of climate and other concessional funds, making core public and private funds available at a large scale;
- Nonpayment of the GoJ incentives for private forest set-asides reduces receptiveness to a potential REDD+ strategy.

5.3. RECOMMENDATIONS FOR A CLIMATE FINANCE STRATEGY IN JAMAICA

A climate finance strategy is needed to develop the capacity to access, deploy and track climate finance in alignment with national plans and priorities, while ensuring accountability and international requirements for transparency, monitoring and evaluation, and safeguards (CDKN, 2013). The following recommendations may help the GoJ develop a strategy for financing climate change mitigation with adaptation benefits:⁶²

- Assess and improve the capacity of the GoJ to receive and manage climate finance consistent with UN's Climate Public Expenditure and Institutional Review (CPEIR) framework (Annex 19). This

⁶¹ There are difficult conceptual and definitional ambiguities associated with the term 'climate finance' that hinder the policy debate. These need to be addressed to reach a national consensus in each country over what constitutes spending relevant to climate change.

⁶² The PIOJ has already been approved as the NIE for the AF.

includes enabling effective access, ownership, management, and disbursement (UNDP and ODI, 2012);⁶³

- Demonstrating that the GoJ is committed across the board and has developed a good long-term planning with clear priorities, dedicated own budget and has achieved the necessary fiduciary standards;
- Quantify government spending in climate change related activities to obtain funding through co-financing instruments such as NAMAs;⁶⁴
- Focus the GoJ's efforts in tapping mitigation climate finance
 - Participate actively in the negotiations to set up the GCF;
 - Develop a NAMA policy and strategy by sectors
 - Following Colombia's example, Jamaica should prepare a NAMA strategy based on a bottom-up, sector-by-sector consultation process. Financing of each NAMAs financing once they have been defined in detail after a feasibility analysis;
 - Aligning the NAMA with Jamaica's development priorities and plans;
 - Focusing first on EE (the low-hanging fruit in Jamaica);
 - In the short- to medium-term, Jamaica will have to engage with donor countries bilaterally to arrive at mutually acceptable funding criteria for NAMAs;
 - Quickly building a small pipeline of projects (see Annex 20 for some examples of readily "available" candidates for a NAMA in Jamaica); and
 - Registering the NAMAs in the UNFCCC specific web site.
 - Develop a REDD+ strategy and policy, following the example of USAID's BIOREDD+ program in Colombia, applying for USAID's REDD+ Readiness funds and other similar sources.
 - Set up at least one debt-for-adaptation swap. TNC currently has a proposal in an advanced stage that should be considered;
 - Establish a national climate fund (JNCF), to centralize the management of GOJ climate finance and leverage access to private finance. Moreover, ideally set it up as a PPP with the private sector (national and international) since it would add transparency for donors;
 - Understand private sector's opportunities and needs to mobilize private funding;
 - Engage the private sector as part of national planning and investment priority-setting prioritization processes to avoid policy reforms or program that might crowd out private investments, distort local markets, or create unnecessary subsidies. This is needed in order to make the financial instruments work effectively and to build trust in the public sector regarding private sector involvement;
 - Ensure that the newly created CCD has the necessary means to fulfil its mandate by developing the capacity of staff for designing and implementing NAMAs, and hiring a climate finance expert.

5.4. NEXT STEPS

- Develop scenarios for climate finance flows: The GoJ should set and monitor quantitative targets for climate finance. Carry out an institutional mapping to optimize the cash flows from climate finance: The GoJ should identify the institutions that have obtained climate finance and how it is being used.

⁶³ Samoa, another SIDS, has already gone through the CPEIR process.

⁶⁴ Co-financing does not apply to adaptation efforts.

This could be linked to a Geographic Information System (GIS). Analyze how to best utilize the DBJ as a catalyzer of private investment in CCM and CCA in Jamaica: The DBJ should continue to leverage its institutional position and its resources to attract private investment into climate change-related investment opportunities.

- Enhance South-South cooperation: Foster links and collaborations with other developing countries that are further ahead on the learning curve in terms of NAMA design, financing and implementation (such as Colombia). Learn from their experience in catalyzing climate finance;
- Because of the complexity of NAMA designs, the GoJ should organize separate teams for their design, resource mobilization, and marketing Jamaica's projects (resource mobilization);
- Another alternative would be to collaborate with external experts from the universities who could dedicate fifty percent of their time to implementation of the climate finance strategy and the national climate change trust fund.

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ANNEX I. QUESTIONNAIRE FOR FINANCIAL ENTITIES

AILEG JAMAICA PROJECT

QUESTIONNAIRE FOR FINANCIAL ENTITIES

This questionnaire is focused on financing for small-scale clean energy investments by small businesses (MSMEs) and households in Jamaica. In this sense, and as a reference, we are considering 'small-scale' as including all those renewable energy (RE) projects below 250 kW of installed capacity (e.g. roof-top solar PV) and energy efficiency (EE) for the built environment or small production processes of non-corporate clients. Moreover, it only considers credit operations that fall under the commercial business branch (non-corporate clients).

- 1) What's your experience with clean energy financing (off-grid or on-grid) for small-scale projects (commercial loans)?
 - a) Have any small IPPs (Independent Power Producer; a small developer), MSMEs or individuals approached you to finance EE and/or RE investments (including 'green' mortgages)? If so, did you reach financial closure? Can you please give us the profile of the projects (technology, kW, RE resource, type of sponsor, etc.)?
 - b) If you didn't, can you please tell us what were the issues/risks considered? Very important: can you please give us the profile of the projects (technology, kW, RE resource, type of sponsor, etc.) that couldn't reach financial closure?
- 2) What's your current pipeline in terms of the above types of clients and investments?
- 3) In what conditions, if at all, would it be possible for you to consider financing small EE / RE projects (what size do you consider small?) Please provide details as per the table below:

TERM SHEET / SMALL-SCALE CLEAN ENERGY	
Amount of investment ⁽¹⁾	
Leverage (%)	
Tenure (years)	
Grace Period (years)	
Interest rate (%) ⁽²⁾	
Level of securitization ⁽³⁾	

Type of Collateral	
Other covenants	

- (a) Maximum amount considered small-scale (i.e. commercial banking)
 - (b) Indicate whether fixed or variable.
 - (c) Fully vs partially secured (if partially, to what degree?)
- 4) Would these small projects be approved / rejected at the branches or at the headquarters?
 - 5) How do you / would you evaluate **solvency risk** of the sponsor of a small-scale clean energy investment?
 - 6) What **collateral** would you ask for in a loan for a small-scale clean energy investment? Would you relax your collateral requirements if there were a guarantee in place by a third party (e.g. DBJ)? How do you evaluate DBJ's 80 percent guarantee of its Energy Efficiency Facility?
 - 7) Do you perceive any problems/barriers to finance MSME's clean energy projects? What about households? Please use the following list as a guide:
 - a) Regulatory risk
 - b) Technological risk (lack of knowledge about the proposed technology)
 - c) Construction risk
 - d) Developer risk: financial capacity, management capacity, rating/solvency risk
 - 8) What non-lending instruments (equity, guarantees, etc.) are you marketing (or thinking about doing it) and under what conditions? For clean energy projects?
 - 9) Would you offer these non-lending products to a MSME or to a small IPP (independent Power Producer; a small developer)?
 - 10) What about alternative credit structures (to the traditional loan), such as leasing? Are you already offering them or considering doing it? Are there any legal requirements / barriers to their commercialization in Jamaica?
 - 11) What about DBJ's clean energy credit lines? Are they attractive to you for on lending? If not, why?
 - 12) Who would you say are the most interested / interesting target groups of clients?
 - 13) How good would you say your in-house knowledge is about the risks (technical, financial and other) involved in clean energy projects/investments, and about the needs of the sponsors (e.g. in terms of tenor)?
 - 14) Are you considering any changes in the short term in your strategy for small-scale clean energy investments in Jamaica?

ANNEX 2. ALTERNATIVE DEFINITIONS OF CLIMATE FINANCE

- IPS Glossary Climate Finance Terms: Transfer of public resources from North to South to cover the costs of dealing with the long-term impacts of climate change.
- Article 4.3 of the UNFCCC commits “annex II” countries to provide “new and additional financial resources” for the “full incremental costs” of addressing climate change.
- World Bank: Covers additional costs and is a catalyst to leverage private and public resources, open economic opportunities, and enhance development policy and finance.
- Climate Policy Initiative:
- ‘Climate-specific finance’: capital flows that target low-carbon or climate-resilient development, both international public or private financing flows, also domestic;
- ‘Climate-relevant finance’: broader set of capital flows (public or private) that will influence (positively or negatively) emissions and/or vulnerability to climate change in developing countries. –
- German Ministry of Economic Cooperation and Development: Describes funding that can be used to support climate change mitigation and adaptation activities.
- Global Economic and Governance Program, Oxford University: Funds that will be transferred to developing countries to cover their investments in mitigation and adaptation.
- Conservation International: An effort to support developing countries by providing funding from the developed world to assist these countries in mitigation and adaptation, and to embark on green development paths, specifically those monies under discussion in the UNFCCC.

Transparency International: Born of the ‘polluter pays principle,’ the idea that industrialized countries have contributed the most to global warming and should therefore compensate developing nations for the costs they face as a result of climate change.

ANNEX 3. DESCRIPTION OF MAIN CARBON CREDIT STANDARDS

Table I.1. Main Carbon Credit Standards⁶⁵

STANDARD	DESCRIPTION	MARKET TYPE ⁶⁶
Clean Development Mechanism (CDM) ⁶⁷	<p>Market mechanism linked to the Kyoto Protocol. Under the CDM, emission-reduction projects in developing countries can earn certified emission reduction credits (CERs), each equivalent to one tonne of CO₂.</p> <p>These CERs can be traded and sold, and used by industrialized countries to meet a part of their emission reduction targets under the Kyoto Protocol.</p> <p>The mechanism stimulates sustainable development and emission reductions, while giving industrialized countries some flexibility in how they meet their emission reduction limitation targets.</p> <p>The CDM is the main source of income for the UNFCCC Adaptation Fund (through a two percent levy on CERs), which was established to finance adaptation projects and programmes in developing country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change.</p>	C
Gold Standard (GS) ⁶⁸	<p>The Gold Standard is a certification standard for carbon mitigation projects and is recognised internationally as the benchmark for quality and rigour in both the compliance and voluntary carbon markets. It certifies renewable energy,</p>	V

⁶⁵ There are other carbon credit standards, which are much less relevant in terms of market volumes, such as: CarbonFix, Plan Vivo, VER+, ISO 14064 – 2, Swiss Charter Standard or the Pacific Carbon Standard.

⁶⁶ C=compliance, V=voluntary.

⁶⁷ Definition adapted from the UNFCCC's website: <http://cdm.unfccc.int/about/index.html>

⁶⁸ Definition adapted from The Gold Standard website: <http://www.cdmgoldstandard.org/about-us/who-we-are>.

STANDARD	DESCRIPTION	MARKET TYPE ⁶⁶
	<p>energy efficiency, waste management and land use and forest carbon offset projects to ensure that they all demonstrate real and permanent greenhouse gas (GHG) reductions and sustainable development benefits in local communities that are measured, reported and verified.</p> <p>Established in 2003 by WWF, The Gold Standard is trusted and endorsed by more than eighty NGOs worldwide, including Care International, World Vision Australia, Forum for the Future and Mercy Corps. It is also the standard of choice for multiple governments and multinationals such as HandM, DHL, Swiss Post, Nokia, Virgin Atlantic, Panasonic, TUI Travel and FIFA. United Nations agencies use the Gold Standard for the development of their own carbon mitigation and sustainable development projects.</p> <p>Gold Standard projects must adhere to a stringent and transparent set of criteria developed by the Secretariat, overseen by an independent Technical Advisory Committee and verified by UN accredited independent auditors. The certification process uniquely requires the involvement of local stakeholders and NGOs. To be eligible for Gold Standard certification, projects must:</p> <ul style="list-style-type: none"> • Employ renewable energy and/or energy efficiency technologies • Adhere to the strictest standards on additionality • Positively impact the economy, health, welfare and environment of the local community hosting the project <p>Moreover, after an in-depth consultation process with key stakeholders, The Gold Standard Foundation made the decision to expand its scope to include land use and forests. In late 2011, as part of the execution of this strategy, The Gold Standard Foundation acquired the CarbonFix Standard and announced partnerships with Forest Stewardship Council (FSC) and Fairtrade International to build upon existing expertise and develop a comprehensive scheme.</p>	
Voluntary Carbon Standard (VCS) ⁶⁹	<p>The Verified Carbon Standard (VCS) is a 'comprehensive quality assurance system used to account for greenhouse gas emission reductions and credits'. It applies to offset projects in the voluntary carbon-trading sector and was established by the Verified Carbon Standard Association (VCSA). All Voluntary Carbon Units (VCU's) produced under the standard must represent GHG emissions that are:</p> <ul style="list-style-type: none"> • Real: accounted for after they occur, not before 	V

⁶⁹ Description adapted from IIED's website: <http://shapingsustainablemarkets.iied.org/ver-standard>.

STANDARD	DESCRIPTION	MARKET TYPE ⁶⁶
	<ul style="list-style-type: none"> • Measurable: quantifiable against a credible emissions baseline, using scientific practices • Additional: must go beyond 'business as usual' and reduce emissions that would have occurred in absence of project • Permanent: land use projects must ensure that GHG removals last over time. They must dedicate a percentage of credits to a buffer account to draw on in case of losses. • Independently verified • Conservatively estimated • Uniquely numbered • Transparently listed. <p>There are twenty-seven verification bodies accredited by the Verified Carbon Standard Association to provide verification for reductions and credits. The VCS Registry system involves three independent registry providers: APX, Markit, Caisse des Dépôts. VCUs can be moved and tracked between registries. The VCS Registry freely provides information on VCS registered projects, their location, and sector type and estimated annual VCU's.</p> <p>Market coverage: Ecosystem Marketplace reports in their 'State of Carbon Markets 2013' report that in the voluntary market, the VCS was the largest single certification standard with sixty-one percent of all carbon credits certified to the VCS in 2012.</p> <p>Background information: The VCS Association (VCSA) was founded by The Climate Group, International Emissions Trading Association (IETA) and the World Economic Forum in 2005. The World Business Council for Sustainable Development (WBSCD) joined soon after in 2006. In 2009 the VCSA was incorporated as a non-profit in Washington. It has 10 people on its board with representatives from a number of organisations including the founding organisations, The International Institute for Sustainable Development, Ecotrust, Norton Rose, Future Vision 2020, Quest Capital and 2CO Energy. The standard was first released for public comment in 2006. Development of the standard was led by a nineteen member expert steering committee – seven Working Groups and two rounds of public consultation. Version 3 was formally launched in 2011.</p> <p>Other programmes can also trade in VCS certified offsets: to date the Climate Action Reserve and UN CDM/JI programmes are allowed to cancel credits and reissue them as VCUs.</p> <p>Funding source: Fee of €0.04 per VCU issued covers the running costs of the Voluntary Carbon Standard Association. The Standard is supported technically and financially by a number of organisations: Price Waterhouse Cooper, The UK</p>	

STANDARD	DESCRIPTION	MARKET TYPE ⁶⁶
	Department for International Development (DFID), International Standards Organisation (ISO), Esmée Fairbairn Foundation, Norton Rose, Clifford Chance and Syngenta Foundation.	
Climate, Community and Biodiversity (CCB) Standards ⁷⁰	<p>The Climate, Community and Biodiversity Standards are designed to identify high quality climate change mitigation projects that not only contribute to emissions reductions but also deliver benefits to local communities and for biodiversity conservation.</p> <p>By complying with the standards project developers can demonstrate the quality of the project. This in turn can attract investment and lead to increased returns, and provide market preference or price premiums for the offsets. The Standard is also designed to signal low risk investment opportunities to investors. Governments who host projects can use the standard to ensure that the project delivers on many aspects of development, whilst donor governments can identify quality projects which fulfil multiple international agreement criteria e.g. Millennium Development Goals, UN Conventions on Climate Change and Biological Diversity.</p> <p>The Standards have four areas for compliance: General, climate, community, and biodiversity. In addition there is a Gold Level Section to differentiate the highest performing projects. Evaluation of projects is undertaken by an approved third party auditor and project documents are made publically available.</p> <p>Market coverage: In 2012 the volume of VCS offsets from projects that certified their additional environmental and social benefits to the CCB Standards more than doubled to 12.5 MtCO₂e (See 'State of Carbon Markets 2013' published by Ecosystem Marketplace).</p> <p>Background information: The Climate, Community and Biodiversity Alliance (CCBA) is a partnership between research institutes, corporations and NGOs. It is made up of Members, Advising Institutions and CCB Standards Sponsors. Members include: CARE; Centre for Environmental Leadership in Business at Conservation International; The Nature Conservancy; Rainforest Alliance; Wildlife Conservation Society. Advising Institutions (who helped evaluate and rewrite the standards) include: CATIE; ICRAF; CIFOR. The majority of certified projects are found in developing countries and major expansion of the number of mitigation projects that are covered by the standard is predicted.</p> <p>The First Draft of the Standard was released in 2004. This was open to the public for comments. In addition, trials took place (also in 2004) in Indonesia, Tanzania, Peru, Bolivia, Ecuador, Scotland and Madagascar. The First Edition of the standard was launched in May 2005. This was revised in 2008, with the second edition published in December 2008.</p>	V

⁷⁰ Description adapted from IIED's website: <http://shapingsustainablemarkets.iied.org/climate-community-biodiversity-standards>.

STANDARD	DESCRIPTION	MARKET TYPE ⁶⁶
	Funding source: Funding and administrative support is offered by ‘CCB Standard Sponsors’. These are: The Blue Moon Fund, The Kraft Fund, BP, Hyundai, Intel, SC Johnson, Sustainable Forestry, Management, and Weyerhaeuser.	
Social Carbon standard	<p>SOCIALCARBON is an add-on standard to demonstrate the social and broader environmental co-benefits of some carbon offset projects. It does not include criteria for the emission reduction itself and as such is <u>always partnered with other existing methods</u> (but at present is only used alongside the Verified Carbon Standard). Instead SOCIALCARBON “certifies voluntary emission reduction projects for their contributions to sustainable development.”</p> <p>It is based on the Sustainable Livelihoods Approach. This outlines six resources on which humans base their livelihoods: Biodiversity, natural, financial, human, social, carbon.</p> <p>Projects that have been certified to a credible carbon standard can apply for SOCIALCARBON certification. Every project draws up indicators for each of the six areas outlined above. A baseline scenario is then described and the project must show continuous improvement in each area. Ideally the project reports annually on progress and verification are ensured by an independent third party organisation. The Ecologica Institute claims that it is flexible by not requiring absolute levels of performance, rather aiming for continuous improvements in each of the indicators.</p> <p>Market coverage: There are currently fifty-three projects with SOCIALCARBON certified status. These projects all use the Verified Carbon Standard for offset certification.</p> <p>Background information: SOCIALCARBON was developed by a Brazilian NGO, Ecologica Institute. The criteria were based on their experiences developing a carbon sequestration project in Ilhao do Bananal, Brazil in 1998.</p> <p>Funding source: It is not clear how the Ecologica Institute is funded however it receives a fee of USD 0.02 per SOCIALCARBON credit issued.</p>	V

ANNEX 4. CLIMATE FINANCE FLOWS IN JAMAICA

Table 4.1. Projects Receiving Climate Finance Channelled by the GoJ

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
1	Energy Efficiency and Conservation Loan Preparation Facility (JA-L1025)	The objective of the project is to enhance Jamaica's energy efficiency (EE) and energy conservation (EC) potential through the design and implementation of cost savings EE and EC measures in the public sector. It will provide substantial savings to the GOJ through the installation of highly-efficient and energy conservation equipment to public sector buildings.	Loan	2011	20.000.000 USD		CCM	IDB
2	Energy Security and Efficiency Enhancement Project	The objectives of the project are: To promote private sector investment in the energy sector by updating the regulatory framework, preparing projects for investment decisions and increasing the contribution of renewable energy in electricity; • To improve energy efficiency and security in key areas of the economy, including implementation of fuel diversification through development of the gas strategy and fuel switching; To strengthen institutional and technical capacities in the Energy Division (MSTEM) for policy and strategy formulation, investment planning, project and programme implementation and sector regulation.	Loan		15.000.000 USD		CCM	WB
3	JA-T1031: Support to Promote Energy Efficiency, Energy Conservation and Sustainable Energy	The project will provide the information; training and practical demonstration needed for the adoption of energy efficiency and conservation measures in the small and medium enterprise sector in Jamaica.	Grant + TA	2009	593.000 USD	214.000 USD	CCM	IDB
4	JA-X1001: Wind and Solar Development Program	The objective of this initiative is to undertake wind and solar developmental studies aimed at improving the utilization of these renewable energy resources in Jamaica.	TA?	2009			CCM	IDB
5	JA-T1044: Energy Efficiency and Conservation Technical Assistance (ECTA)	The objective of the project is to support the GOJ in its efforts to improve energy efficiency and provide technical assistance to prepare the upcoming EE Program.	TA	2009	350.000 USD	87.500 USD	CCM	IDB
6	JA-T1003: Establishment of an Energy Efficiency Fund	The objectives of the project are: To effectively contribute to the reduction of Jamaica's energy intensity by encouraging alternative and renewable energy applications and research, and efficient use of energy by households, institutional and industrial users as well as to seek to restructure the energy mix from its current high level of dependence on imported fuel sources.	TA	2004			CCM	IDB
7	TC8207137: Project, Development of Solar Lagoons		?	1982			CCM	IDB

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
8	Low-Carbon Energy Road Maps for Small Island States in the Caribbean (formerly Low Carbon Energy Road Map for Jamaica)	<p>The objectives of the project are:</p> <p>Provide stakeholders, with a comprehensive country overview of renewable resource and energy efficiency potential including additional renewable resource mapping and assessment;</p> <p>Identify renewable energy generation sites in Jamaica and augment current resource mapping;</p> <p>Work with civil society leaders and government officials to evaluate current policies and regulations and analyse barriers to a low carbon energy future;</p> <p>Provide government officials with a detailed plan to develop a low carbon energy future that shows the effects on energy costs, green jobs, business opportunities and greenhouse gas emission reduction;</p> <p>Provide a carbon impact monitoring and evaluation tool for assessment carbon emissions and progress towards sustainable energy future;</p> <p>Build support for roadmap solutions through buy-in by utility providers, business leaders, lawmakers, regulators, and local communities. At least 5 NGO partners, 10 business partners, and 5 political partners will be identified.</p>	Grant		210.000 USD		CCM	Government of Germany
9	Caribbean Hotel Energy and Action Project	<p>The objectives of the project are:</p> <p>To improve the competitiveness of the Caribbean hotel industry;</p> <p>To migrate towards higher Energy Efficiency and Micro-Generation with Renewable Energy and contribute to compliance with the Montreal Protocol.</p>	Grant		667.000 USD		CCM	IDB
10	Wind Powered Irrigation Feasibility Assessment	<p>The Ministry of Science, Technology, Energy and Mining will execute the project in conjunction with the National Irrigation Commission (NIC). The aim is to use wind power to replace fossil fuel and improve energy efficiency. Jamaica intends to expand its Renewable Energy (RE) portfolio and these wind projects and the related regulatory solutions (wheeling) can support the country's goal to generate 20% of its energy from Renewable Sources by 2030. Specific objectives include the following:</p> <ul style="list-style-type: none"> • Evaluate the power need and load profile prior to and after the recommended energy efficiency measures are implemented; • Evaluate the wind technology best suited for such power need and load; • Evaluate the technical solutions for linking the wind power to the grid; • Provide preliminary engineering design and cost estimates for a wind solution;; • Evaluate wheeling as an alternative to sales of the electricity under a Power Purchase Agreement (PPA);; • Develop models for replication of the wind solution to other projects. 	Grant		60.000 USD		CCM	OAE
11	Capacity Development for Energy Efficiency and Security in Jamaica	<p>The objectives of the project are:</p> <p>To increase the national capacity for energy efficiency and energy conservation within the public sector, in an effort to achieve reductions in public sector energy costs;</p> <p>Pilot renewable sources of energy by / through the construction of a number of small scale wind turbines;</p> <p>Establish a platform for dialogue between the public and private sectors to ensure information sharing with respect to energy efficiency.</p>	Grant		100.000 USD		CCM	UNDP

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
12	Jamaica: Second National Communication to the United Nations Framework Convention on Climate Change		Grant	2005	400.000 USD		CC	GEF
13	Developing Sustainable Land Management to address Land Degradation in Jamaica		Grant		500.000 USD		CCA	UNDP
14	Renewable Wave Energy Technologies for Electric Power in coastal comm.		Grant	2009			CCM	UNDP
15	Enhancing the Resilience of the Agricultural Sector and Coastal Areas to Protect Livelihoods and Improve Food Security	<p>Enhancing Resilience, Protecting Livelihoods and Improving Food Security: GOJ/Adaptation Fund Programme — The PIOJ secured grant funding to the tune of US\$9.9M from the Adaptation Fund for concrete adaptation measures and building resilience to climate change. The programme, which began October 2012, is designed to contribute to building Jamaica's adaptive capacity in accordance with the objectives of Vision 2030 Jamaica National Development Plan and Jamaica's 2nd National Communication on Climate Change.</p> <p>The objectives of the programme are threefold:</p> <ul style="list-style-type: none"> • Increasing climate resilience of the Negril coastline by constructing breakwater structures • Enhancing climate resilience of the agricultural sector by improving water and land management • Improving institutional and local level capacity for sustainable management of natural resources and in disaster risk reduction. <p>Programme implementation is being led by the Planning Institute of Jamaica, accredited as the National Implementing Entity (NIE), partnering with four Executing Entities — Ministry of Agriculture and Fisheries, National Environment and Planning Agency, Ministry of Tourism, and National Work Agency.</p>	Grant	2012	9.965.000 USD		CCA	Adaptation Fund
16	Jamaica Strategic Programme for Climate Resilience (SPCR) - IP1	Improving Climate Data and Information Management	Grant	2013	6.400.000 USD		CCA	CIF - PPCR
17	Jamaica Strategic Programme for Climate Resilience (SPCR) - IP2	Mainstreaming CC Adaptation in Local Sectoral and National Plans, and implementing Integrated CC Adaptation Strategies in targeted River Basin planning and management.	Grant	2013	7.000.000 USD		CCA	CIF - PPCR
			Loan	2013	3.600.000 USD		CCA	CIF - PPCR

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
18	Jamaica Strategic Programme for Climate Resilience (SPCR) - IP3	Mechanisms for the Sustained Financing of Climate Change Adaptation Initiatives.	Grant	2013	6.400.000 USD		CCA	CIF - PPCR
19	Montreal Protocol for the Phasing out of Ozone Depleting Substances		Grant	2011	110.420 USD	42.230 USD	CCM	UNEP
20	AILEG Project	<p>The Analysis and Investment for Low-Emission Growth project (AILEG) is a component of the Enhancing Capacity for Low Emissions Development Strategies program (EC-LEDS) in Jamaica. In October 2012, a U.S. Government scoping mission identified key opportunities for low emissions focused planning in Jamaica. Further dialogue with government ministries and other stakeholders led to the development of AILEG activities for Jamaica.</p> <p>AILEG is providing technical assistance to build capacity of the Government of Jamaica and other stakeholders to analyze low emissions scenarios and integrate them into economic development strategic planning and implementation, as well as conducting economic analysis to promote investment in low emissions technologies and projects. Three priority areas of assistance are provided for under the AILEG project: (1) Climate Finance Analysis; (2) Economic Modeling for Low Emissions Development; and, (3) Integration of Low Emissions Planning into National Development Planning.</p>	Grant	2012			CCM	USAID
21	Jamaica: Third National Communication to the United Nations Framework Convention on Climate Change		Grant	2013	500.000 USD		CC	GEF
22	Jamaica Rural Economy and Ecosystems Adapting to Climate Change (Ja REEACH) Project	<p>ACDI/VOCA is implementing the Ja REEACH Project, formerly known as the Marketing and Agriculture for Jamaican Improved Competitiveness (MAJIC) Project; in partnership with the GoJ and USAID. The MAJIC program focused on transforming Jamaica's agriculture sector into a market-driven, competitive industry. In response to Jamaica's high vulnerability to climate change, the program's focus was revised to respond to the impacts of global climate change on Jamaica's natural resources, lives and livelihoods.</p> <p>The Ja REEACH Project goal is "to protect rural lives, livelihoods and ecosystems in targeted Jamaican communities affected by climate change through interventions that drive adaptation and build resilience."</p> <p>Ja REEACH activities will be implemented through three components:</p> <ul style="list-style-type: none"> - Component 1: Systems and Strategies to Protect Lives and Livelihoods - Component 2: Institutional Strengthening, Capacity Building and Coordination for Climate Change Adaptation and Resilience Building - Component 3: Systems and Strategies to Protect Targeted Ecosystems <p>Using site assessments and other data to evaluate vulnerability, exposure and sensitivity, Ja REEACH will work with partners and beneficiaries to implement programs such as Climate Smart Field Schools, Climate Change Action Training (CCAT) and the Communities Engaged to Drive Adaptation (CEDAR). These programs will serve as the mechanisms for increased knowledge and awareness of climate change and adaptation solutions complemented by local and national level capacity building and institutional strengthening.</p> <p>ACDI/VOCA will work with local partners, strengthening their ability to provide services all along the value chain to improve productivity beyond the life of the project.</p>	Grant	2012	2.603.944 USD		CCA	USAID

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
23	Community Based Landslide Risk Reduction		Grant	2011	2.817.430 USD	110.000 USD	CCA	IBRD
24	Building Disaster Resilient Communities		Grant	2011	355.920 USD		CCA	CIDA
25	Capacity Building for Sustainable Land Management in Jamaica	To enhance sustainable land management (SLM) by building capacities for SLM in appropriate government and civil society institutions and user groups and mainstreaming SLM into government planning and strategy development.	Grant				CCA	GEF
26	Water Programme for Environmental Sustainability (WPA II): Towards Adaptation Measures to Human and Climate Change Impacts	This regional project will develop and implement a Groundwater Management Model to assess and manage the aquifer system on a continuous basis. It will make recommendations on best practices for the protection and development of those sites and other similar aquifer systems in the project countries, and within the region using the opportunity to also build capacity. The demonstration project site in Jamaica will be in the Yallahs River Watershed.	Grant				CCA	Italian Govt.
27	FAO Technical Cooperation Programme on Promoting Rain Water Harvesting and Small Scale Irrigation in South St. Elizabeth	The project will enhance food security and socio- economic well-being of farmers in South St. Elizabeth by promoting increased crop production through rainwater harvesting, improved water management and introduction of small-scale irrigation technology.	TA				CCA	FAO
28	Natural Hazard Management in Urban Coastal Areas	The objective of this Technical Cooperation is to strengthen disaster risks management in towns and cities located in coastal areas in Jamaica. Activities include Improving Communities' Resilience; 28 communities risk plans will be developed, including risk assessment for Black River, Savanna-la-mar and Ocho Rios.					CCA	IDB
29	Coastal Multi-Hazard Mapping & Vulnerability assessments towards Integrated Planning & Reduction of Vulnerability for Portland Cottage, Morant Bay & Manchioneal.	This project aims to complete Multi-Hazard Assessment & develop Multi-Hazard Maps; carry out vulnerability & risk assessments; Produce disaster/Risk Management plans for three communities in Jamaica – Portland Cottage, Morant Bay and Manchioneal.					CCA	WB
30	The Palisadoes Peninsula Shoreline Protection and Rehabilitation.	Immediate repair and protection of the extensively degraded shoreline of the Palisadoes Peninsula. This includes raising the road from its existing levels to 2.4 –3.2 metres above sea level.	Loan	2010	59.275.480 USD	2.000.000 USD	CCA	Govt. Of China
31	Tropical Storm Nicole Rehabilitation (Natural Disaster Management ; KMA Drainage Project).			2010	38.170.000 USD	12.240.000 USD	CCA	CDB
32	The Risk and Vulnerability Methodology Project (RiVAMP).	This project sought to assist decision-makers at the national and local levels to consider risks in future planning, paying particular attention to the potential threats posed by climate change. The project was completed and lessons extracted.					CCA	UNEP

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
33	Improving Jamaica's Agricultural Productivity (IJAP) Programme	Objectives: Alternate energy system to light up six major fishing beaches that were slated to be upgraded under the Sustainable Marine Fisheries Management component of IJAP. The project forms part of Government's overall strategy to rehabilitate some 187 beaches, from which approximately 40,000 fisher folk and other stakeholders operate and earn their livelihood. IJAP involves the Canadian International Development Agency (CIDA), IICA, and the Ministry of Agriculture and Fisheries. It comprises two components focusing on expanding green house production and encouraging sustainable management of the marine fisheries sector.	Grant	2011	50.000 USD		CCA	CIDA
34	EU-GoJ ESCO Project	Development of a local ESCO Industry	Grant	2012	431.854 €	114.720 €	CCM	EU
35	Climate change adaptation and disaster risk reduction in Jamaica	Overall objective: Increase resilience and reduce risks associated with natural hazards in vulnerable areas through the implementation of adaptive measures to climate change, thereby contributing to the sustainable development of Jamaica. Specific objectives: Rehabilitate and improve management of selected watersheds to reduce downstream run-off and associated pollution and health risks. Restore and protect coastal ecosystems to enhance natural buffers and increase resilience. Integrate climate change mitigation and adaptation into relevant national policies and plans, enhance institutional capacity and facilitate awareness building amongst Jamaica's population to better adapt to climate change.	Grant	2010	4.130.000 €	350.000 €	CCA	EU-GCCA

Table 4.2. Jamaican Projects Receiving Climate Finance from Non-Governmental Sources

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
1	Jamaican Adaptive Agriculture Program	The goal is to increase the adaptive capacity of Jamaican farmers and fishers to respond to climate change while developing a resilient and sustainable form of agriculture-based microenterprise and providing economic opportunities for youths. The programme will introduce aquaponics/fish farming and hydroponics (soilless crop production) at 5 schools and 20 small farms and fishing communities (2010-2013).	Grant	2010	745.482 USD		CCA	USAID
2	Caribbean Climate Change Tourism & Livelihoods: A Sectoral Approach to Vulnerability & Resilience	To strengthen, protect, and enhance the economies and livelihoods of Caribbean nations and sectoral stakeholders, who rely directly or indirectly on Caribbean tourism industry; and to strengthen, protect and enhance the natural and built assets, and sectors on which the industry is based. The Jamaican component of this regional project is focused primarily on assessing the vulnerability, resilience, and adaptive capacity of the tourism sector to climate change, in selected destinations in Jamaica. Vulnerability assessments of Long Bay-Negril and Rose Hall- Montego Bay are done. An assessment to be done on the institutional capacity of the tourism sector to adapt to Climate Change.	TA				CCA	FCO & CCCCC
3	Voices for Climate Education: A national climate change communication strategy	To develop and implement a national communication strategy on issues related to climate change. Activities will focus on public awareness, on the threats posed by climate change, and strategies to reduce social and economic impact. The communication strategy will utilize popular artists, and sectoral workshops, targeting sectors such as tourism, insurance, agriculture and health.					CC	EFJ & UNDP
4	Jamaican Adaptive Agriculture Program	The goal is to increase the adaptive capacity of Jamaican farmers and fishers to respond to climate change while developing a resilient and sustainable form of agriculture-based microenterprise and providing economic opportunities for youths. The programme will introduce aquaponics/fish farming and hydroponics (soilless crop production) at 5 schools and 20 small farms and fishing communities (2010-2013).	Grant	2010	745.482 USD		CCA	USAID
5	Application of Renewable Energy	The FISH Medical Clinic will reduce 3,000Kg of carbon emissions and climate change by employing solar energy systems. The supply and installation of 22.4 KW of solar panels, inverters and electrical wiring will produce 75% of the clinic's power supply. The savings in costs could be utilized to treat 6% more patients without increased fees and to sustain their free periodic checks. The project is to serve for 25 years and result in better healthcare for people and sustainability of the environment.	Grant	2009	40.000 USD		CCM	GEF-SGP
6	Establishing the Caribbean Maritime Institute as a learning centre for RE producing wind energy / potable drinking water	The school has concerns of access to freshwater, especially during droughts. As a result, the performance of students and operations of the school are hampered. The management has developed an idea to use reverse osmosis technology that will provide 1000 gals of potable water which includes rainwater harvesting systems. Sea water will be purified to freshwater using a solar/wind energy facility. The wind generator is going to be constructed using locally obtained and recycled materials, such as used PVC pipes and 45 gallon metal drums. This system can be easily replicated, creates a new industry, and reduces production of green house gases and imports.	Grant	2010	40.000 USD		CCM	GEF-SGP

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
7	Reducing carbon emissions through the use of solar energy in protected agriculture	The use of gasoline and diesel pumps to operate irrigation systems has resulted in atmospheric pollution in the Mafoota area. Switching to solar energy to run the systems for the greenhouses will reduce carbon-dioxide emissions by 6 tons, resulting in better air quality. The project will be implemented under Climate Change Mitigation OP6. The project can be replicated, prevents respiratory diseases, saves on imports, and increases production while switching to renewable forms of energy to protect our environment.	Grant	2010	28.000 USD		CCM	GEF-SGP
8	Promotion of Renewable Energy for Sustainable Production and Protection of Natural Resources	This project seeks to address the issues of GHG emissions, deforestation and poverty alleviation through the use of renewable energy technology in production and reforestation activities. Solar technology will be introduced for provision of electricity for drying fruits, spices, pollen and herbs for the Golden Grove Women Entrepreneurial Group and a solar pollen drying house will be set up for the JFCA. Additionally, the project will address the conservation of biodiversity through training and reforestation activities	Grant	2011	40.000 USD		CCM	GEF-SGP
9	Environmental Management for Sustainable Development in Jeffrey Town	The main problems faced by the community are flooding and consequent soil erosion. However, the community also wants to adopt the use of alternative energy technology in order to reduce their reliance on fossil fuels as they develop climate change adaptation and mitigation strategies. The Project activities will include (i) the construction of a gabion wall and drainage channels to reduce land degradation (ii) installation of solar panels to the CBO's office building (iii) installation of solar powered street lights in the community and (iv) training in and adoption of environmentally friendly farming practices	Grant		49.820 USD		CCM	GEF-SGP
10	Creating Renewable Energy from Waste Vegetable Oil (Bio-Diesel)	The increased level of carbon dioxide (CO2) in the atmosphere has resulted in acidification of the water. This hampers the sustenance and reformation of coral reefs, which in turn affects coral dependent marine species, the community's natural resources and livelihood. Jam UK plans to protect the environment while creating job opportunities. The project aims to slow down climate change impacts by switching to renewable energy sources: bio-diesel. Educating community members and implementing bio-diesel projects will reduce CO2 emissions by 75%, thereby protecting the environment and increasing job opportunities.	Grant		50.000 USD		CCM	GEF-SGP
11	Sunbeam Waste Conversion and Alternative Energy Project	The improper disposing of farm and kitchen wastes, including waste water, has resulted in environmental degradation and breeding spots for mosquitoes; which pose as a health hazard to the boys and staff. Improper disposal of piggery wastes has produced foul odors and affected interactions with neighbours. In addition, the need for fertilizers will increase and in turn will the expenditures. The project poses to cut costs and ensure proper disposal of farm wastes by using the wastes in the production of fertilizers and biogas, reducing the usage of cooking gas starting at 30%. A bio digester to convert waste products into biogas and the production of fertilizer for crops. will be constructed	Grant		41.422 USD		CCM	GEF-SGP
12	Biodiesel Production Initiative: A Waste to Fuel Project for Energy diversification, transportation, education and climate change mitigation	The use and reliance of fossil fuels results in copious green house gases (GHGs) emissions which result in climate change and rising sea levels. Jamaica has an obligation to reduce these emissions and report periodically on their emissions and removal of GHGs not controlled by the Montreal Protocol. In addition, the increasing costs to import fuels are significant. The project proposes that the waste oil be disposed safely and converted to biodiesel in order to encourage alternative fuels. The project seeks to address these issues by ensuring awareness of the approach, thereby increasing student engagement and responsibility towards the environment.	Grant		50.000 USD		CCM	GEF-SGP

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
13	Construction of Water Harvesting Infrastructure and improving the Community's Adaptive Capacity to Natural Hazards	With the unpredictable rainfall due to climate change, the community needs to find a strategy to secure water during the rainy periods to increase plants and reduce bush fires. The project serves to repair the community rainwater catchment and construct an earth pond for the 1st and 2nd phase of the Pleasant Valley Reforestation Project. This will enable the community to have water for agro forestry activities to cope with climate change and drought, alleviating the community of trucking of water and expenses along with preserving the natural environment.	Grant		50.000 USD		CCM	GEF-SGP
14	Strengthening the Adaptive Capacity of Farmers through the Construction of a Water Harvesting System.	Drought period for the past 20 years has gotten increasingly longer which has brought us to this point today where we experience approximately 8 months of drought. This change is also evident in an increase in our overall temperature. These climate changes are a direct result of deforestation for the purpose of bauxite mining. The project seeks to: develop sustainable water harvesting system, build awareness about the productive use of rainwater harvesting and increase the community's capacity to apply adaptive management tools in Sustainable Land Management.	Grant		20.000 USD		CCM	GEF-SGP
15	Renewable Energy For All - Expansion of Renewable Energy Activities at the Community Level both Locally and Regionally.	The problem of over dependence on traditional sources of energy is not new to Jamaica or the SIDS region where advanced research and experimental exploration in the field of renewable energy is still limited, due to lack of funding. The project seeks to address this problem with the expansion of renewable energy activities. The expansion of the project will be done in collaboration with a NGO group in Barbados.	Grant		150.000 USD		CCM	GEF-SGP
16	Promoting the use of Alternative Energy Sources while Ensuring the Sustainability of Livelihoods in Llandewey	In Llandewey approximately 80% of the youth are unemployed has been introduced to and has accepted beekeeping / honey processing as a viable livelihood option to alleviate poverty. The project seeks to install solar equipment at the Llandewey honey processing facility that will ensure consistency of power supply for processing thereby enabling consistent delivery of an approved product to meet demand.	Grant		38.409 USD		CCM	GEF-SGP
17	Reducing carbon emissions through the use of solar energy in protected agriculture	The Sweetwater area relies heavily on their production and supply of fresh vegetables to Super clubs. The pumps used for irrigation supply for the new greenhouses are powered by gas and diesel, leading to poor air quality. The area relies heavily on water for irrigation and hence is moving towards solar energy to reduce carbon emissions, climate change and support a healthier environment, along with increasing household income. The sub projects will include training in technology usage and sustainable practices.	Grant	2010	16.854 USD		CCM	GEF-SGP
18	"Climate Change Adaptation in the communities of Moore Town & Bellevue, Rio Grande Watershed"	The NGO - Portland Environment and Protection Association is implementing a sustainable land management programme, that employs better agricultural practices, to address deforestation, soil erosion and nutrient depletion while enhancing the skills of farmers to protect their land, improve livelihood, while increasing their awareness of the effects of climate variability and change.	Grant	2011	43.895 USD		CCA	GEF-SGP
19	"Tell It"-Disseminating Caribbean Climate Change Science and Stories	Several studies and pilot projects have been done, few have been presented in a way that allow for rigorous peer review from the scientific community, especially for the Caribbean. This project will allow for the translation of information gathered from CBA projects, into scientific language to effect policy decisions and to ultimately be included in the Fifth Assessment Report. It will also provide the Caribbean with the knowledge, tools and skills to effectively adapt to climate change.	Grant	2009	20.500 USD		CCA	GEF-SGP

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
20	Glengoffe Climate Change Adaptation Project	This project is geared at reducing the risks of landslides and flooding from heavy rain as well as lessening the effects of extreme drought conditions on crop production. This will be done realising four outputs: -contour farming - reforestation -fruit tree production - and drought mitigation, all incorporating training of farmers and community	Grant	2010	42.000 USD		CCA	GEF-SGP
21	Increasing Community Adaptation and Ecosystem Resilience to Climate Change in the Portland Bight	The Portland Bight Protected Area (PBPA) includes some of the best remaining coastal dry forest and longest continuous mangroves coastline in Jamaica. Due to Climate Change and the increasing threat to this coastal region for flooding which has cost many lives in recent past, and its biodiversity and ecological services being threatened. This project will seek to embark of an educational drive to engage stakeholders in the communities to work together to take action to minimise risks and reduce impacts associated with this phenomenon. A rainwater harvesting project is also to be implemented.	Grant	2010	50.000 USD		CCA	GEF-SGP
22	Construction of Water Harvesting Infrastructure and improving the Community's Adaptive Capacity to Natural Hazards	With the unpredictable rainfall due to climate change, the community needs to find a strategy to secure water during the rainy periods to increase plants and reduce bush fires. The project serves to repair the community rainwater catchment and construct an earth pond for the 1st and 2nd phase of the Pleasant Valley Reforestation Project. This will enable the community to have water for agro forestry activities to cope with climate change and drought, alleviating the community of trucking of water and expenses along with preserving the natural environment.	Grant	2013	50.000 USD		CCA	GEF-SGP
23	Strengthening the Adaptive Capacity of Farmers through the Construction of a Water Harvesting System.	Drought period for the past 20 years has gotten increasingly longer which has brought us to this point today where we experience approximately 8 months of drought. This change is also evident in an increase in our overall temperature. These climate changes are a direct result of deforestation for the purpose of bauxite mining. The project seeks to: develop sustainable water harvesting system, build awareness about the productive use of rainwater harvesting and increase the community's capacity to apply adaptive management tools in Sustainable Land Management.	Grant	2013	20.000 USD		CCA	GEF-SGP
24	Land and Preservation Measures to Combat Climate Change Pressures in Cockpit Country's Martha Brae Watershed	The objective of this project is to reduce climate-driven landslide risk and climate driven threats to key biodiversity hotspots through measures that improve local agricultural livelihoods, reduce forest fragmentation and deforestation, and reduce disaster risk.	Grant	2009	47.000 USD		CCA	GEF-SGP
25	Reducing Climate Change-Driven Erosion and Landslide Risks through Sustainable Agriculture for Safer Slopes	The project objective is to increase the capacity of the targeted farming communities on the slopes of the Blue Mountains to adapt to climate change. The above stated objective will be achieved with the following project outcomes: (1)Agro-technical capacity for applying soil conservation techniques that will become necessary in steep slope environments increased (2)Alternative livelihood practices promoted (3)Forest and tree cover (with appropriate species) promoted on slopes that are vulnerable to climate-driven increases in erosion and landslide risks	Grant	2008	50.000 USD		CCA	GEF-SGP
26	Attendance at Climate Change Conference in Copenhagen	Ms. Carmen Griffiths is seeking sponsorship to attend the United Nations Framework Convention on Climate Change the Copenhagen 15 Negotiations. She has been invited by GROOTS International and the Huairou Commission and is a part of the ISDR community platform, and is one of that organisation's leaders in the region. Based on Ms. Griffiths experience in working with organisations and communities to reduce the risk of disasters, and her links with various governmental agencies and departments, she would be a fitting participant to attend the conference, as the information/knowledge gained will be useful in carrying out activities within communities and her organisation. As a GROOTS and HC member on the Global Gender Climate Alliance, she will also be participating in side events to advocate community led work in Jamaica.	Grant	2009	2.000 USD		CCA	EFJ

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
27	Discretionary Grant Application for Carbon Credit Market Assessment For Blue and John Crow Mountains National Park	JCDT is seeking to enter the carbon credit trading market and is seeking support to o background studies. Some of he activities to be undertaken include the assessment of the current structure of the market to determine the best approach; assesses the value of carbon credits in relations to existing forest within the BJCMNP; assess the value of additional credits due to reforestation and replanting of existing degraded areas. These activities are based on discussion with a carbon credit market expert.	Grant	2011	2.000 USD		CCM	EFJ
28	Selection of Civil Participant to attend the Climate Change Copenhagen meeting in Denmark, December 7-18, 2009	Through the Voices of Change - NEEC/EFJ Project, the selection process was done for a participation in the Copenhagen Conference and Mr Horace Fisher was nominated as the Civil Society representative to attend the Conference. Mr. Fisher was selected as it was thought that getting the authentic community voice of groups directly and strongly affected by climate change was important, and it was felt he could most strongly represent the community experience by virtue of his ties to the Mocho community and his work in it. The priority was the authentic community representation.	Grant	2009	2.000 USD		CCM	EFJ
29	Conducting Energy Audits and Energy Conservation workshops for NGOs	COMAND and ADA are collaborating to implement an energy audit project that will conduct audits for 15 NGO/CBO and public sector organisations and provide assistance for the implementation of conservation measures recommended by the audits.	Grant	2010	49.150 USD		CCM	EFJ
30	4th Biennial Conference on the Environment under the theme "Climate Change - Caribbean Response" May 12-14, 2009	The objective of the project is to provide a forum to examine and discuss the issues of global climate change and aims to raise awareness of the potential impacts of global climate change and what it means for the country and the region. The organisation will also stage an exhibition on adaptation and mitigation solutions for climate change.	Grant	2008	20.000 USD		CCA	EFJ
31	Communicating Climate Change and Biodiversity	An EFJ/UNDP GEF Small Grants Programme co- funded project. The objective of this project is to sensitize key stakeholders in vulnerable sectors and communities on the emerging research and data on climate change and biodiversity issues and help to create sustainable conservation and preservation of marine and forest eco-systems.	Grant	2010	7.298 USD		CCA	EFJ
32	When The Sea Rises	This project aims to create a documentary to highlight the threat the sea level rise can pose to the islands of the Caribbean i.e. the possible socioeconomic impact. The adaption steps taken by Guyana will be highlighted as possible solutions for the Caribbean to adopt for this soon to be realized challenge.	Grant	2010	33.850 USD		CCA	EFJ
33	Voices For Climate Change Education: A National Climate Change Communications Strategy	The project aims to implement a national education strategy on issues related to climate change. Activities will focus on public awareness on the threats posed by climate change and strategies to reduce social and economic impact.	Grant	2008	44.995 USD		CC	EFJ
34	Feasibility Study on Wind Hybrid Energy Systems	The aim of the project is to examine the feasibility of wind-solar hybrid systems for electrical power generation in Eastern Jamaica including conditions under which hybrid systems are cost effective compared to JPS grid power. Attention was focused on household or small community power demands.	Grant	2005	10.407 USD		CCM	EFJ
35	Enhancing Education in Alternative Energy	The project will provide suitable wind and solar power equipment for practical demonstration for the newly planned major in Applied Physics specialising in Alternative Energy (Renewable Energy). The equipment will also facilitate ongoing research aimed at evaluating, promoting and providing real examples of renewable energy schemes in Jamaica.	Grant	2006	21.853 USD		CCM	EFJ

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
36	Annotto Bay Disaster Risk Reduction/Climate Change Adaptation Project (2011)	The project addresses two critical priorities identified in the Anotto Bay Community Disaster Plan and will reduce flooding in the town, providing data required for assessment and implementation of other priority disaster mitigation/climate change adaptation solutions.	Grant	2011	13.050 USD		CCA	EFJ
37	Hazard Mapping and Reforestation for Disaster Risk Reduction in the Blue Mountains.	The main purpose of the project is to assist the JCDDT to improve its reforestation for disaster risk reduction through hazard mapping and related research into sites, previous projects, the impact of invasive species and deforestation on disaster risk and reforestation for risk reduction.	Grant	2011	24.200 USD		CCA	EFJ
38	Reducing the Disaster Risk Potential in Jeffrey Town through Soil Retention Techniques	Together with funding from CIDA, JFTA seeks to further secure an area suffering from severe land erosion during times of excessive rain. The project will involve construction of a gabion wall with baskets, planting of fruit trees, construction of a nursery and distribution of trees to primary school children in the community. In addition JFTA seeks to enhance their renewable energy system by adding four batteries to their current stock.	Grant	2011	18.820 USD		CCA	EFJ
39	Runaway Bay Disaster Risk Mapping and Assessment	The project will focus on Disaster Risk Reduction involving hazard mapping of vulnerable communities, with special emphasis on climate related disasters. The project will provide valuable documentation for land use activities, social and economic planning, environmental protection and conservation.	Grant	2011	17.950 USD		CCA	EFJ
40	Development of National Energy Project	This project aims to contribute to the national goal of diversification from fossil fuel to renewable energy. ADA proposes to design and implement a national energy project to promote alternative energy systems. Proposed activities include preparation of a project proposal, research into Jamaica's alternative energy systems as well as ngo consultations.	Grant	2008	25.000 USD		CCM	EFJ
41	Discretionary Grant Support for National Energy	ADA has been leading the charge with the Environmental NGOs and Stakeholders in the development of a National Energy Project for the sector. So far the group has met several times and will be hosting the final National Stakeholder Consultation meeting as well as assisting with the development and preparation of five local energy projects and one large national project for funding.	Grant	2010	2.000 USD		CCM	EFJ
42	Demonstration of Alternative Energy Hybrids for Small Farmers in Jamaica	The project seeks to construct two small scale renewable energy hybrid systems on the CASE Tutorial Farm primarily to improve the efficiency of operation of the liquid waste management plant and to demonstrate to the farming community affordable alternatives that can be used for support energy in agriculture. It will improve the existing agricultural digester, the installation of small scale integrated systems that utilize wind, solar and bio-fuels.	Grant	2006	45.000 USD		CCM	EFJ
43	The Application of Solar Electrical System and Utilisation of Biodigester Technology at the Dallas Castle Agroprocessors Production Facility	The main purpose of the project is the utilisation of biodigester technology for processing of by products and sewage, and solar system for electricity and hot water.	Grant	2007	46.090 USD		CCM	EFJ
44	Establishment of a Crop Drying System Utilizing Solar Heating and Waste Oil for Energy	The purpose of the project is to demonstrate the environmental and economic benefits of a crop drying system which uses a combination of solar heating, waste-oil and silica gel desiccant drying technology. The data gathered will be used to justify its replication locally, regionally and internationally.	Grant	2010	45.000 USD		CCM	EFJ

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
45	Application of Renewable Energy	The FISH medical clinic, is seeking to employ the use of Renewable Energy (Solar) to reduce the spiraling energy costs by at least 75% its current usage. 22.4KW of solar panels and relevant accompanying equipment will be installed.	Grant	2009	50.000 USD		CCM	EFJ
46	Solar Energy Supply for Irwin High School	The project proposes to equip the institution with a source of solar energy. The main objectives are 1. To reduce the dependency on the Jamaica Public service 2. To use the technology as a teaching tool to enhance students' learning 3. To enhance the learning environment with better facilities through cost savings 4. To increase community/parental participation in the school through collaboration in school/community projects.	Grant	2006	61.230 USD		CCM	EFJ
47	Irwin High School - Solar Energy	This project is a continuation of the project previously funded by EFJ. The main components of the project will be to source, procure and install solar water power with the necessary meters and monitoring equipment; deliver power to multiple locations specifically to lighting in both classrooms and the administrative blocks, also to highly use locations such as the woodwork, electrical installation and computer laboratories.	Grant	2007	8.800 USD		CCM	EFJ
48	Discretionary Grant: Symposium: Energy Solutions - The Sustainable Way Forward for Jamaica"	The Jamaica Institution of Engineers will be hosting an Energy Symposium in association with the Jamaica Society of Energy Engineers, as part of the annual Jamaica Institution of Engineers (JIE) Week September 21 - 25, 2009. This Symposium will see presentations and discussions from private and public sector entities and stakeholders sharing strategies for energy conservation in the domestic and corporate environment.	Grant	2009	2.000 USD		CCM	EFJ
49	Establishing The Caribbean Maritime Institute As A Learning Centre For Renewable Energy Producing Wind Energy/Potable Drinking Water	An EFJ/UNDP GEF Small Grants Programme co- funded project. The objective of this project is to provide 500 gallons potable water per day for over 1000 persons at the Caribbean Maritime Institute through the processes of reverse osmosis and renewable energy systems	Grant	2010	8.500 USD		CCM	EFJ
50	Phase III - Jeffrey Town and Environs Agriculture and Capacity Enhancement Programme	The aim of the project is to complete 1100sq ft of construction to the first floor of their building and prepare the ground floor for agro-processing, install solar panels for the production of electricity sufficient to support the current multimedia centre and radio station, storage of poultry in the freezers and the agro-processing of crops that are produced on the farms.	Grant	2009	57.200 USD		CCM	EFJ
51	Reducing Carbon Emissions through the use of Solar Energy in Protected Agriculture	An EFJ/UNDP GEF Small Grants Programme co- funded project. The objective of the project is to introduce a technology that of solar energy that can be used to drive the irrigation and fertigation systems of the recently constructed greenhouses that is environmentally friendly and acceptable, to reduce climate change and global warming.	Grant	2010	4.392 USD		CCM	EFJ
52	Demonstration and Use of Solar Energy and Biodigester Technology at the Mango Valley Pride Agroprocessing Facility	The main purpose of the project is the demonstration and use of alternative energy options within the community of Mango Valley for the agroprocessing facility.	Grant	2007	51.414 USD		CCM	EFJ

#	PROJECT	Description / Goals	Type of CF	Approval year	USD / € received	USD GOJ	Primary Focus	Source of funding
53	A Sustainable Development for the Establishment of Pandanus Plots, Rainwater Harvesting and Solar Electricity	The OWIP is requesting funding for a solar electricity system, rainwater harvesting and planting of Pandanus (Screw Pine) in order to operate an environmentally friendly and sustainable micro-enterprise.	Grant	2010	39.987 USD		CC	EFJ
54	Rowlandsfield Renewable Energy (Solar) Project	The main objectives are to instal solar system for reduction of overhead operational costs, to train eight community members in maintenance of solar systems, to operate the training activities and juice making venture to begin the the future.	Grant	2010	26.150 USD		CCM	EFJ
55	Science Block - Photovoltaic Energy Project	Wigton Windfarm Limited will partner with the St. Andrew High School for Girls to install and monitor a photovoltaic system to supply electricity for the school's science block. The objectives of the project is to reduce energy dependence on grid (largely fossil fuel) energy by using clean, renewable energy and also to transfer technology to the students to build Jamaica's technical capacity in renewable energy.	Grant	2010	22.000 USD		CCM	EFJ
56	Green School Energy Efficiency Program	The main purpose of this project is to introduce a prgram which will reduce energy costs and the impact of the school on the environment through use of a renewable energy system (decrease of fossil fuels use), promotion of energy conservation, and the education of the school community of the benefits of renewable energy systems.	Grant	2007	36.000 USD		CCM	EFJ
57	Alternative Energy Systems	By using waste water converted to fuel to drive a combined heat and power cogeneration system, UWI seeks to reduce usage and dependency on utility electricity supply in Rex Nettleford Hall, A.Z. Preston Hall and Post Graduate Housing by applying the technology of Base Load Generation, therefore replacing the combined base loads of the three halls utility cost and also supplement the costly utility source of power by a cost effective system of an alternative energy system that supplies electricity and cooling at a fuel cost much less than the electricity utility suppliers.	Grant	2007	66.980 USD		CCM	EFJ
58	Photovoltaic System to produce electricity for a resource and training centre in Yallahs	The project will focus on implementing a photovoltaic system to produce 100% of electricity requirements for a resource and training centre located in Yallahs. The Objectives are: (1) To educate the community in alternative sources of energy; (2) source equipment; (3) provide a forum for networking on expanding alternative energy options in the community and report on findings, including the tranformation of attitudes.	Grant	2009	49.950 USD		CCM	EFJ
59	Glengoffe Climate Change Adaptation Project	An EFJ/UNDP GEF Small Grants Programme co- funded project under the Community Based Adaptation Programme (to Climate Change). The objective of this project is to implement a comprehensive sustainable land management programme that will introduce and reinforce skills small farmers need to protect their land and improve their livelihood, while increasing awareness of the effects of climate variability and change at the local level.	Grant	2010	7.650 USD		CCA	EFJ
60	Support to the Global Climate Change Alliance (GCCA) under the 10th EDF Intra-ACP financial framework	The objective of the project is to enhance local, national and regional capacities and resilience in ways that link sustainable development, risk management, and adaptation for a win-win-win situation. The four main components of the project are focussed on: Refining vulnerability and risk assessment methodologies that are more contextually relevant, and build local capacity to better assess the current and future vulnerabilities and risks of specific states and communities within those states; reducing the states vulnerability to climate change through embarking on adaptation pilots; building Regional /National Capacity for Carbon Financing; improving Climate Monitoring, Data Retrieval and Space-based tools for Disaster Risk Reduction.	Grant		1.200.000 €		CCA	EU
61	Support to CaribShare Biogas	This start-up that wants to produce biogas from manure from farmers and organic waste from hotels won the Energy Innovation Contest of the IDB.	Grant	2012	200.000 USD		CCM	IDB

ANNEX 5. JURISDICTIONAL AND NESTED REDD+⁷¹

A growing number of projects to Reduce Emissions from Deforestation and forest Degradation and sustainably manage forests and enhance forest carbon stocks (collectively referred to as REDD+) are being implemented around the world. Many of these projects use the VCS Program to quantify carbon benefits.

At the same time, governments are establishing new policies and programs to mitigate greenhouse gas (GHG) emissions across the forest sector of entire national or subnational jurisdictions. However, a lack of guidance on robust and transparent accounting and verification approaches at the jurisdictional level, and uncertainty surrounding international climate policy, has prevented the integration and scaling up of government-led and project-level REDD+ activities.

To fill this void, VCS developed the world's first Jurisdictional and Nested REDD+ (JNR) Framework for accounting and crediting REDD+ programs, whether implemented at the national or subnational (state) scale. The resulting framework also establishes a clear pathway for existing and new subnational jurisdictional activities and projects to be integrated (or “nested”) within broader (higher-level) jurisdictional REDD+ programs.

Piloting JNR Programs

VCS is advancing a number of ground-breaking JNR pilot activities around the world at both national and subnational scales. JNR pilot programs establish a clear pathway for verifying forest-related emission reductions at the jurisdictional scale. Pilot programs will increase the confidence of policymakers, donors and investors in REDD+, contributing to the scaling-up of activities that effectively tackle deforestation and forest degradation, significantly reduce global emissions, and generate positive benefits for local and indigenous communities.

JNR Benefits

The JNR Requirements provide governments with a comprehensive, integrated accounting and crediting framework to harmonize emissions reductions across national REDD+ programs as well as subnational and/or project activities. The VCS JNR Framework offers some key benefits for participants including the abilities to:

- Monitor, quantify and reward emissions reductions across an entire jurisdiction, maintaining environmental integrity;
- Increase the potential for emission reduction as a result of working at a larger scale;
- Provide incentives to drive REDD+ through government policies and programs as well as projects;

⁷¹ Adapted from: <http://v-c-s.org/JNR-benefits>.

- Build on project experience and provide a pathway for recognition of “early action” projects and programs;
- Create potential for harmonizing market and public REDD+ funding streams by serving voluntary, bilateral, multilateral, pre-compliance and potentially compliance markets through use of a consistent, independent framework;
- Increase funding available for REDD+ implementation.

The JNR Requirements include flexibility for jurisdictional proponents to account for unique national and subnational circumstances. Proponents may choose to develop their REDD+ programs in a phased approach, for example, by including additional activities or carbon pools, and using more advanced methods for baseline setting and monitoring over time. The requirements create a practical, flexible and consistent framework to ensure JNR programs maintain environmental integrity and jurisdictional sovereignty.

Bridge to UNFCCC Framework

To date, the UN Framework Convention on Climate Change (UNFCCC) has not provided guidance on how to develop jurisdictional REDD+ accounting programs, or how to integrate lower-level REDD+ activities into national scale accounting. Leading countries and subnational governments have been actively developing national and subnational REDD+ programs and policies, at the same time as REDD+ projects have been moving forward on the ground.

The JNR Framework provides detailed guidance for the development of national and subnational REDD+ programs, including how activities at multiple scales can be effectively integrated, advancing readiness for participation in any forthcoming UNFCCC framework. Applying the JNR Requirements may serve to inform countries about operationalizing results-based REDD+ under voluntary, bi- or multi-lateral REDD+ efforts, the UNFCCC or another regulatory program.

ANNEX 6. OVERVIEW OF OFFSET ACCEPTANCE BY THE MAIN COMPLIANCE CARBON MARKETS

Table 6.1. Overview of Offset Acceptance by the Main Compliance Carbon Markets⁷²

MARKET	TYPE	INT. OFFSETS ALLOWED (Y/N)	DETAILS
EU ETS	Regional	Y	Projects recognized under the KP's Joint Implementation or CDM programs; but post-2012, only CDM credits from LDCs (aside from those already in the pipeline) are recognized, CERs from industrial gas projects are not allowed, and emission reduction units (ERUs) and CERs from large-scale hydropower are subject to conditions. Offset limits: fifty percent of EU-wide required aggregate abatement for the period 2008-2020 relative to 2005 levels. In Phase II, CERs and ERUs were allowed to combine to comprise up to 13.4 percent of the total EU ETS cap.
AUSTRALIA	National	Y	International offsetting permitted from the start of the flexible price period in July 2015 (with a price floor and ceiling through 2018). Kyoto CERs and ERUs permitted. Broad ministerial discretion to allow non-Kyoto units after 2015. Offset limits: Until 2020, covered entities must meet at least half of their annual obligations with domestic permits rather than international permits. 12.5 percent of an entity's compliance obligation can be fulfilled using CERs and ERUs.
CALIFORNIA	Subnational	Y	Initially, four protocols approved by responsible agency: US forest projects, urban forests, livestock, and destruction of ozone-depleting substances. California is open to developing international offset protocols, but all protocols so far do not include jurisdictions outside of the US, Canada, and Mexico. Offset limits: Up to eight percent of a facility's

⁷² Adapted from EDF and IETA (2013).

			compliance obligation. International sector- based offsets may comprise up to a quarter of all offsets (two percent of overall compliance) in Phase I, and half of all offsets (four percent of overall compliance) in Phase II and III.
NEW ZEALAND	National	Y	KP offsets, including Assigned Amount Units (AAUs), ERUs, RMUs and CERs. Domestic forestry can generate (and sell) NZUs to reflect increased carbon stock in forested land. Offset limits: No limit for use of approved domestic and international offsets. No nuclear or forestry CERs. HFC-23 and N2O CERs banned from 24 December 2011. In December 2012, banned Eastern European ERUs from projects destroying HFC-23 and N2O from adipic acid plants.
QUEBEC	Subnational	N	Offset protocols include: Agricultural Methane Destruction; Small Landfill Site Methane Destruction; and Ozone Depleting Substance (ODS) Destruction. Offset limits: Up to eight percent of a facility's compliance obligation. There are no international offset protocols.
Regional Greenhouse Gas Initiative (RGGI)	Subnational	Y	Five project categories for three GHGs: (1) Landfill methane; (2) sulphur hexafluoride (SF6) in the electric power sector; (3) afforestation CO2 sequestration; (4) CO2 emissions from natural gas, oil, or propane end-use combustion due to end-use energy efficiency in the building sector; (5) CH4 emissions from agricultural manure management operations. Offset limits: Up to 3.3 percent of total emissions reductions can come from offsets. If price reaches USD \$7 in 2005 dollars, offsets can be five percent of total reductions. If price reaches USD \$10 in 2005 dollars offsets can be ten percent of total reduction and international offsets units, such as CERs, may be accepted.

ANNEX 7. OVERVIEW OF PROJECTS WITH CO-BENEFITS

Table 3.1. Overview of Projects with Co-Benefits

DESCRIPTION	CCA BENEFIT	CCM BENEFIT
Efficient water use in agriculture through reduced use and/or more efficient pumping systems. This solution can be coupled with pumping by RE (e.g. solar PV).	More water available for other uses (than irrigation)	Reduced emissions through lower power consumption because of reduced pumping needs (and use of RE).
Climate-proofing of businesses and homes through better insulation of buildings	Increased comfort levels and improved health conditions (decrease of heat stress potential)	Decrease in emissions due to lower electricity consumption
Improved forest management / afforestation and reforestation	Increased resilience against floods Reduction in erosion and sedimentation of water bodies: Improvement in water quality	Improved / increased sink capacity of forests
Climate-smart agriculture (CSA) potentially integrated with RE. Examples of CSA include: <ul style="list-style-type: none"> - Conservation tillage, - Reduced fertilizer use⁷³ 	Farming better adapted to changing climatic conditions and with improved soil quality (e.g. by allowing organic residues to decompose naturally) Reduced land degradation	Reduction in emissions due to (i) the use of RE, (ii) better farming practices by e.g. reducing the energy needed to maintain land (e.g., by reducing the use of fossil fuel-powered tractors) and increasing the

⁷³ Fertilizer is a significant source of emissions in the agriculture sector. Chemical fertilizers typically contain the GHG N₂O, and the application of fertilizer to vegetation leads to N₂O emissions. The global warming potential of these is 310 times that of CO₂ emissions over a 100-year time span. There are several ways of reducing the use of fertilizers, and thus reducing emissions from their production and application. The quality and long-term viability of soil can be improved by improving the nutrient balance through the timing of fertilizer applications, the use of nitrification inhibitors and the utilization of existing nitrogen from organic matter instead of from fertilizers. Fertilizers can also be more precisely applied through the use of Global Positioning Systems (GPS) software, which has become more easily and cheaply available. Another option is to switch from synthetic to organic fertilizers. The emission reduction potential of this project type is largely unexplored. (UNCCD, 2012)

DESCRIPTION	CCA BENEFIT	CCM BENEFIT
		soil's capacity to bind and sequester carbon
Domestic biogas plants for the substitution of firewood for cooking, lighting and other, income-generating activities in rural areas	More resilient communities, not depending on fossil fuels and avoiding deforestation of surrounding lands for firewood Improved health conditions	Avoided emissions from the use of manure and other biomass and from avoided use of fossil fuels and / or deforestation
RE systems in buildings (commercial and residential)	Increased climate resilience of infrastructure	Reduced emissions due to substitution of fossil fuels for power supply
EE in buildings: More efficient heating/cooling	Reduction in the stress on power systems	Emissions reductions due to a reduction in power consumption
Substitution of bamboo charcoal for wood charcoal	Preservation of forests, with all its ecosystem services that benefit adaptation	Improved sink capacity due to avoided deforestation
RE in agriculture in general in rural areas (SWH, solar cookers and solar food processing for cooking, baking or pasteurization)	Help to fight land degradation by providing energy from renewable sources. The decreased reliance on fossil fuels and fuel wood for energy generation or heating reduces the pressure on forest resources.	Reduced emissions due to substitution of fossil fuels for power supply
RE linked to agricultural lands	The concept of 'co-use' and 'land easements', for example, reduces the use of virgin land for renewable energy-generating plants by encouraging farmers to lease unused portions of their land to renewable energy producers.	Reduced emissions due to substitution of fossil fuels for power supply
Practise of agriculture in controlled environments. ⁷⁴	As agriculture production from indoor, controlled greenhouses increases, the intensity of agricultural production from natural land will decrease, resulting in reduced fertilizer use, less intensive cultivation and thus reduced land degradation. It may also have positive effects on the economic situation of agriculture-intensive societies by removing the risk of climate change- induced fluctuations in agricultural production.	Increased EE and thus reduction in consumption of fossil fuels and reduction of emissions

⁷⁴ Based on the assumption that a controlled climate reduces production fluctuations, such a strategy would support the development of large-scale greenhouses and aquaculture farms and reduce the dependence on land. (UNCCD, 2012)

DESCRIPTION	CCA BENEFIT	CCM BENEFIT
Reforestation through multifunctional forest plantations, including consideration of climate-related risks (fire, storms, diseases and pest outbreaks) and adoption of specific measures ⁷⁵	Benefits for local stakeholders such as income generation and capacity building, which in turn enhance adaptive capacity	Enhanced sink capacity through new, more resilient forests
Watershed management through sustainable forest processes	Ensuring hydrological regulation and conserving biodiversity	Enhanced sink capacity through new, more resilient forests

⁷⁵ E.g. test of different mixtures of native and non-native species and adequate thinning for reducing vulnerability to storm and fire.

ANNEX 8. OVERVIEW OF CLIMATE CHANGE FUNDS AND OTHER PUBLIC SOURCES

Table 8.1. Overview of Climate Change Funds and Other International Public Sources

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
ADAPTATION					
Adaptation Fund (AF)	Multilateral	Adaptation Fund Board		Adaptation	<p>The AF is financed through a two percent levy on the sale of emission credits from the CDM of the Kyoto Protocol. Operational since 2009, with a total capitalisation (with includes developed countries' commitments) of USD 306 million.</p> <p>One of the key innovations of the Adaptation Fund is that it provides a direct funding modality to countries that meet the international fiduciary standards of the Fund (the so-called "Direct Access" financing mechanism). Thus, countries have the choice of submitting proposals via a National Implementing Entity (NIE), as well as through Multilateral Implementation Entities (MIEs). In both cases, the Implementing Entity first submits an application to the AFB for accreditation. Once accredited, the Implementing Entity bears full responsibility for programmes and projects submitted to the Board for approval through it.</p> <p>Jamaica has already accessed it and there will no more funds available for the country until the next replenishment.</p>
Pilot Program for Climate Resilience (PPCR)	Multilateral	The World Bank		Adaptation	<p>Part of the Strategic Climate Fund of the Climate Investment Funds (CIF).</p> <p>The PPCR funds TA and investments to support countries' efforts to integrate climate risk and resilience into core development planning and implementation. It provides incentives for scaled-up action and initiates transformational change by catalysing a shift from "business as usual" to broad-based strategies for achieving climate resilience at the country level.</p> <p>PPCR programs are country-led and build on National Adaptation Programs of Action (NAPAs) and other national development programs and plans. The PPCR complements existing development efforts and supports actions based on comprehensive planning consistent with countries' poverty reduction and development goals.</p>

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
					<p>Jamaica is one of the five PPCR pilot countries in the Caribbean region (the others are Grenada, Haiti, St. Vincent and the Grenadines and Saint Lucia).</p> <p>Jamaica is currently finalizing its three Investment Plans (IP), see Annex 5. IP3's goal is to institutionalise financing mechanisms for climate change adaptation initiatives by the private sector and community-based organisations.</p>
Special Climate Change Fund (SCCF)	Multilateral	The Global Environment Facility (GEF)		Adaptation and Technology Transfer	<p>The SCCF was established to support adaptation and technology transfer in all developing country parties to the UNFCCC. The SCCF supports both long-term and short-term adaptation activities in water resources management, land management, agriculture, health, infrastructure development, fragile ecosystems, including mountainous ecosystems, and integrated coastal zone management.</p> <p>There are two active funding windows under SCCF: Adaptation window (SCCF-A) and Technology Transfer window (SCCF-B).</p> <p>In November 2008, the Council approved the Strategic Program on Technology Transfer, which included a funding window of USD fifty million with USD fifteen million coming from the SCCF- B and USD thirty-five million from the GEF Trust Fund. There are three funding windows to support technology transfer under the Poznan Strategic Program, namely (1) technology needs assessments (TNAs); (2) piloting priority technology projects linked to TNAs; and (3) dissemination of GEF experience and successfully demonstrated ESTs. Under this program, SCCF-B resources contributed to a global TNA project and 1 piloting project.</p> <p>The SCCF has disbursed USD 100 million since its inception in 2002 across seventy-four countries.</p>
MITIGATION					
Clean Technology Fund (CTF)	Multilateral	The World Bank		Mitigation	<p>One of the Climate Investment Funds (CIF), the USD 5.2 billion Clean Technology Fund (CTF) provides middle income countries with resources to explore options to scale up the demonstration, deployment, and transfer of low-carbon, clean technologies. Each CTF investment plan is tailored by the country to be integrated into national development objectives and to serve as a programmatic organizing framework for the activities of actors across institutions, stakeholder groups, and sectors.</p> <p>In all, more than 100 projects are expected to emerge from these plans and have a major impact on reducing CO2 emissions—by an estimated 1.7 billions tons—and on strengthening the viability and availability of clean technologies nationally, regionally, and globally. As of March 2013, forty-one projects have been approved for USD 2.3 billion in CTF funding, attracting an estimated USD 19.2 billion in co-financing and saving 600 million tons of CO2 emissions.</p>

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
					<p>Channeled through the multilateral development banks (MDBs), CTF concessional financing focuses on large-scale, country-initiated projects in:</p> <ul style="list-style-type: none"> • Renewable energy: concentrating solar power, solar photovoltaic, geothermal, wind, small hydro • Sustainable transport: bus rapid transit, public transportation, high efficiency vehicles, modal shifts • Energy efficiency: industry, building, district heating, municipal lighting, appliances
Global Energy Efficiency and Renewable Energy Fund (GEEREF)	Multilateral	European Investment Bank (EIB) through a fund management team from the European Investment Fund (EIF).		Mitigation	<p>GEEREF is a Public Private Partnership (PPP) drawn from the Patient Capital Initiative (PCI) that was launched in 2004 in the context of the Johannesburg Renewable Energy Coalition (JREC).</p> <p>It is an innovative Fund-of-Funds, providing global risk capital through private investment for energy efficiency and renewable energy projects in developing countries and economies in transition.</p> <p>It aims to accelerate the transfer, development, use and enforcement of environmentally sound technologies for the world's poorer regions, helping to bring secure, clean and affordable energy to local people.</p> <p>It is sponsored by the European Union, Germany and Norway and is advised by the EIB Group. The target funding size for GEEREF is €200-250 million and as of March 2013, it had secured a total €112 million.</p> <p>It is registered as an instrument qualifying as Official Development Aid (ODA) by the OECD Development Assistance Committee.</p> <p>GEEREF seeks to: (i) Cut greenhouse gas emissions, (ii) increase access to sustainable energy services, and (iii) support financial sustainability.</p> <p>Priority is given to investment in countries with policies and regulatory frameworks on energy efficiency and renewable energy.</p>
NAMA Facility	Bilateral	UK and German Governments (run by CCAP)		Mitigation	<p>The NAMA Facility was announced by the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and UK Department of Energy and Climate Change (DECC) on December 6, 2012 at the UN Climate Change Conference in Doha. DECC has committed £25m (ca. €30 million) to the NAMA Facility with BMU committing another €40m (ca. £30m). The Facility is designed to support developing countries that show leadership on tackling climate change and want to implement transformational country-led NAMAs within the existing global mitigation architecture in the short term.</p>

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
The Millennium Development Goals Carbon Facility (MDG Carbon)	Multilateral	UNDP		Mitigation	<p>MDG Carbon has three principal goals: Improving access to carbon finance by enabling a wider range of developing countries to participate — particularly in those countries that are currently under-represented in the carbon market. Promoting emission reduction projects that generate additional sustainable development and poverty reduction benefits, thereby contributing to all MDGs. Scaling up carbon finance to encourage easily replicable, emission reduction activities, engaging the private sector at scale.</p>
Enhancing Capacity for Low Emissions Development Strategies (EC-LEDS)	Bilateral	USAID	In-kind	Mitigation	
Scaling Up Renewable Energy Program in Low Income Countries (SREP)	Multilateral	WB		Mitigation	<p>The Scaling Up Renewable Energy Program in Low Income Countries (SREP) is a targeted program of the Strategic Climate Fund (SCF), which is one of two funds within the framework of the Climate Investment Funds (CIF). The SREP was established to scale up the deployment of renewable energy solutions and expand renewables markets in the world's poorest countries. It aims to pilot and demonstrate the economic, social, and environmental viability of low-carbon development pathways. SREP financing supports technologies such as solar, wind, bio-energy, geothermal, and small hydro technologies. It stimulates economic growth by working with governments to build renewable energy markets, engage the private sector, and explore productive energy use.</p>
Forest Investment Program (FIP)	Multilateral	WB		Mitigation	<p>The FIP is a targeted program of the Strategic Climate Fund (SCF), which is one of two funds within the framework of the Climate Investment Funds (CIF). The FIP supports developing country efforts to reduce deforestation and forest degradation and promote sustainable forest management that leads to emissions reductions and enhancement of forest carbon stocks (REDD+). Channeled through the MDBs as grants and near-zero interest credits, FIP financing complements large-scale investments and leverages additional resources, including from the private sector, to:</p> <ul style="list-style-type: none"> • Promote forest mitigation efforts, including protection of forest ecosystem services • Provide support outside the forest sector to reduce pressure on forests • Help countries strengthen institutional capacity, forest governance, and forest related knowledge <p>Mainstream climate resilience considerations and contribute to biodiversity</p>

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
					conservation, protection of the rights of indigenous peoples and local communities, and poverty reduction through rural livelihoods enhancements
Forest Carbon Partnership Facility (FCPF) ⁷⁶	Multilateral	The World Bank		Mitigation-REDD+	<p>The FCPF is a global partnership of governments, businesses, civil society, and Indigenous Peoples focused on reducing emissions from deforestation and forest degradation, forest carbon stock conservation, the sustainable management of forests, and the enhancement of forest carbon stocks in developing countries (activities commonly referred to as REDD+) by providing value to standing forests.</p> <p>The FCPF has two separate but complementary funding mechanisms — the Readiness Fund and the Carbon Fund — to achieve its strategic objectives. Both funds are underpinned by a multi-donor fund of governments and non-governmental entities, including private companies that make a minimum financial contribution of USD five million. Contributors to the Carbon Fund are known as Carbon Fund Participants. Developing countries participating in the FCPF (both funds) are known as REDD Country Participants.</p> <p>The Carbon Fund makes payments for verified emissions reductions.</p>
Norway's International Climate and Forest Initiative (NICFI)	Bilateral	Government of Norway mainly through established multilateral channels		Mitigation – REDD+	<p>NICFI supports the development of the REDD+ international agenda and architecture. The ICFI's primary goal is to help establish a global, binding, long-term post-2012 regime that will ensure the necessary and sufficient cuts in global greenhouse gas emissions to limit global temperature rises to no more than 2°C.</p> <p>Up to NOK three billion (USD 517 million) per year has been pledged to the NICFI. The NICFI contributes to several multilateral and bilateral initiatives including the Brazilian Amazon Fund, Congo Basin Forest Fund, Forest Carbon Partnership Facility and Forest Investment Program.</p>
BIOREDD+ Program	Bilateral	USAID		Mitigation – REDD+	<ul style="list-style-type: none"> • Flagship Environmental Program developed by USAID; • Portfolio of fourteen REDD+ projects in the Colombian Choco Biogeographic region; • Pursuing VCS and CCBA (Gold Certification); • Terra Global Carbon is modifying VCS method to reflect BIOREDD+ conditions; • USAID Presence Lowers Investor Risk • USAID is a bona fide REDD+ originator with no explicit financial interest in emissions reductions

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
					<ul style="list-style-type: none"> • US Development Credit Authority (DCA) has allocated resources to guarantee up to fifty percent of the value of funds invested in REDD+ projects Why invest in BIOREDD+ portfolio? <ul style="list-style-type: none"> • Application of strong environmental and social safeguards • Availability of financial risk sharing mechanism (DCA) • USAID already co-financing productive activities that help deter logging, and which help strengthen governance and empower local communities • Technical and scientific innovation underpin verification
The United Nations Collaborative Program on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD Program)	Multilateral	UNDP		Mitigation – REDD+	It was created in September 2008 to assist developing countries to build capacity to reduce emissions and to participate in a future REDD+ mechanism. The UN-REDD Program builds on the convening role and technical expertise of its three participating UN organizations: the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Program (UNDP) and the United Nations Environment Program (UNEP).
REDD Readiness Program	Bilateral	USAID	In-kind	Mitigation – REDD+	In 2010, the United States launched a REDD+ strategy to guide U.S. support for countries working to slow, halt, or reverse deforestation. In 2012, USAID launched a comprehensive climate change strategy, including support for REDD+ and other efforts to promote sustainable landscapes. Both U.S. strategies emphasize the importance of building REDD+ readiness, and building country capacity for REDD+. USAID supports a wide range of REDD+ readiness activities with partner countries. Typically the first step in REDD+ readiness is to develop up-to-date forest inventories and effective forest carbon monitoring systems. This often requires access to and training in satellite monitoring technologies, and it also requires the capacity to work with communities and technicians to take detailed measurements on the ground. USAID also supports REDD+ readiness by working with partner countries to develop the legal, institutional, and regulatory policies and frameworks needed to create economic incentives for forest protection.
MITIGATION and ADAPTATION					
GEF Trust Fund - Climate Change focal area (GEF 5)	Multilateral	The Global Environment Facility (GEF) – World Bank	Required	Mitigation and Adaptation	Under the fifth replenishment (2011 – 2014), twenty-six donor countries have deposited USD 1.1 billion to the climate change focal area. GEF 5 has approved a total of USD 326 million for fifty-five projects, of which USD forty-seven million has been disbursed as of September 2012.
Green Climate Fund (GCF)	Multilateral	GCF (to be confirmed)		Mitigation and	The Green Climate Fund (GCF) was adopted as a financial mechanism of the UN Framework Convention on Climate Change (UNFCCC) at the end of 2011. It aims to

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
				Adaptation	make an ambitious contribution to attaining the mitigation and adaptation goals of the international community. Over time it is expected to become the main multilateral financing mechanism to support climate action in developing countries. The board of the GCF met for the first time in August 2012 and its modalities will be agreed throughout 2012 with a goal of making the fund operational by early 2014.
Global Climate Change Alliance (GCCA)	Multilateral	EuropeAid		Mitigation and Adaptation	The GCCA is an initiative of the European Union. Its overall objective is to build a new alliance on climate change between the European Union and the poor developing countries that are most affected and that have the least capacity to deal with climate change. The GCCA does not intend to set up a new fund or governance structure, but will work through the European Commission's established channels for political dialogue and cooperation at national and international level.
The International Climate Fund (ICF)	Bilateral	Government of the UK		Mitigation and Adaptation	The ICF is the primary channel of UK climate change finance. It became operational in 2011, as an outcome of the Spending Review 2010, and replaced the Environmental Transformation Fund (ETF). The ICF is designed to help developing countries adapt to climate change, embark on low-carbon growth and tackle deforestation. They finance large projects.
The International Climate Initiative (ICI)	Bilateral	Government of Germany		Mitigation and Adaptation	The ICI finances climate projects in developing and newly industrialized countries, as well as countries in transition economies. It focuses on promoting a climate-friendly economy, measures for climate change adaptation and for the preservation or sustainable use of carbon reservoirs/ REDD.
The Environment and Energy Thematic Trust Fund (EE TTF)	Multilateral	UNDP		Mitigation and Adaptation	Contributions from donors to the EE TTF can be made through three different "Windows": - Country Windows: for funds earmarked to specific countries for thematic activities; - Regional Windows: for funds earmarked to specific regional programs for thematic activities; - Global Windows: for non-earmarked thematic contributions, for country, regional, and global use.
BioCarbon Fund	Multilateral	The World Bank		Mitigation and Adaptation	Since its creation in 2004, the BioCarbon Fund has allocated resources to projects that transform landscapes and directly benefit poor farmers. It was the first carbon fund established in the world to focus on land use. Housed within the Carbon Finance Unit at the World Bank, the BioCarbon Fund is a public-private sector initiative mobilizing financing to help develop projects that sequester or conserve carbon in forest and agro-ecosystems. It has been a pioneer in this sector, developing the infrastructure needed to pilot transactions and paving the way for the growing land-use carbon market established to date.

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
The Millennium Development Goals Achievement Fund (MDG-F) / Environment and Climate Change Program	Multilateral	Government of Spain and other donors		Mitigation and Adaptation	The MDG Achievement Fund (MDG-F) is committed to eradicating poverty and inequality and changing people's lives around the world. Set up in 2007 with a generous contribution from the Government of Spain to the United Nations system, it works together with and in support of citizens and their organizations as well as governments to implement programs that help advance the Millennium Development Goals (MDGs) worldwide.
Climate Change Programmatic Loans	Multilateral	Inter-American Development Bank (IDB)	Yes	Mitigation and Adaptation	IDB assistance in the environment sector ranges from projects focusing on policies (such as natural disaster risk management policy, forestry development policy) and strategies (strategy for integrated water resources management, strategy for coastal and marine resources management in Latin America and the Caribbean). IDB identifies "air pollution and climate change" as a sub-sector under its environmental sector. Examples: IDB has provided Climate Change Programmatic Loans to support the design and implementation of a Climate Change Adaptation and Mitigation strategy for Colombia. The components include: A) Potential to Mitigate Impacts in transport, energy, agriculture, livestock and forestry sectors, B) Biofuels Development, C) Prevention and Mitigation of Natural Disasters and D) Institutional Strengthening.
The Green Commodities Facility	Multilateral	UNDP		Green commodities, with a specific focus on Mitigation and Adaptation	<p>The UNDP launched the Green Commodities Facility in 2009. Its vision is that global markets, trade and governments mainstream sustainability in the production and sale of agricultural and marine commodities.</p> <p>Its mission is to connect global markets with national governments and farmers to strengthen national capacity for scaling up sustainable agricultural and marine commodities production around the world.</p> <p>Facility Objectives: To manage a global portfolio of national-level commodity-focused programs and platforms that remove barriers and institutionalize systemic approaches and resources for scaling up the production of sustainable commodities. This includes addressing environmental externalities within the supply chain, strengthening financial sustainability for TA, reforming policy to level the production playing field and incentivizing sustainability.</p> <p>At the country level, the Green Commodities Facility programmatically and comprehensively coordinates and facilitates the execution of national strategies. Multi-stakeholder project teams will implement programs to improve the structural conditions under which producers can meet global standards, certification systems and sustainability initiatives (e.g., the Millennium Development Goals). These national-level, government-focused projects will create the approach, foundations and models for mainstreaming sustainable agriculture trade.</p> <p>There is a specific focus on climate change linkages—in terms of both reducing</p>

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
					emission and increasing ecosystem resilience—such as reducing deforestation, maintaining ecosystems and conserving natural habitats.
International Development Association (IDA)	Multilateral	The World Bank		Mitigation and Adaptation	It is World Bank's fund for the poorest countries. IDA aims to reduce poverty by providing interest-free credits and grants for programs that boost economic growth, reduce inequalities and improve people's living conditions. IDA lends money (known as credits) on concessional terms. This means that IDA credits have no interest charge and repayments are stretched over thirty-five to forty years, including a 10-year grace period. IDA also provides grants to countries at risk of debt distress. IDA's response to the challenge of climate change has been developed as part of the Bank's Clean Energy Investment Framework (CEIF). The main elements of the CEIF are: improving access to clean energy, supporting the transition to a low-carbon development trajectory, and supporting adaptation to climate change. It has recently maintained a steady commitment to climate action: mitigation support in IDA remained around \$2.3 billion in FY13 (about the same level as in FY12) while adaptation support decreased to \$2.1 billion (down twelve percent from FY12, but still forty-two percent up from FY11 level). The current (sixteenth) cycle of the IDA includes a special theme on achieving climate-resilient development, indicating the mainstreaming of climate change concerns in the largest fund for the poorest countries.
GEF Small Grants Program (SGP)	Multilateral	UNDP		Mitigation and Adaptation	The Global Environment Facility's Small Grants Program aims to deliver global environmental benefits in the GEF Focal Areas of biodiversity conservation, climate change mitigation, protection of international waters, prevention of land degradation (primarily desertification and deforestation), and elimination of persistent organic pollutants through community-based approaches. Grants are made directly to community-based organizations (CBOs) and non-governmental organizations (NGOs) in recognition of the key role they play as a resource and constituency for environmental and development concerns. The maximum grant amount per project is USD 50,000, but averages around USD 20,000. Grants are channeled directly to CBOs and NGOs.
PROFOR	Multilateral	The World Bank		Mitigation and Adaptation	PROFOR is a multi-donor partnership formed to pursue a shared goal of enhancing forests' contribution to poverty alleviation and sustainable development through improved knowledge and approaches for sustainable forest management. PROFOR's portfolio is diverse, comprising activities related to the four thematic areas at the international, regional or country level. The thematic areas are: livelihoods approach to poverty reduction; promoting good forest governance; innovative approaches to financing sustainable forest management; and cross-sectoral cooperation (agriculture, energy, mining, and transportation). Projects are demand-driven by governments and other stakeholders, and to the greatest extent possible take the form of multi-partner,

Fund / Program	Type	Admin. Entity	Co-Financing	Focus Areas	Description
					larger-scale initiatives rather than stand-alone activities. PROFOR typically funds activities that can be completed in less than two years.

Source: www.climatefundsupdate.org and Funding Options for Adaptation (http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_funding)

ANNEX 9. JAMAICA'S PILOT PROJECT FOR CLIMATE RESILIENCE STRATEGIC PLAN

Jamaica's PPCR involves two phases. Phase I involves the development of the Strategic Programme for Climate Resilience (SPCR) in collaboration with key stakeholders from national and community (local) levels. Phase II will be the implementation of the activities identified in the SPCR.

The Government of Jamaica (GoJ) is seeking to develop and implement initiatives under five broad thematic areas in the proposed SPCR, namely:

- Mainstreaming climate change into Jamaica's planning and policy formulation processes;
- Strengthening institutional arrangements to ensure the effective mainstreaming of climate change;
- Building capacity for climate data management, forecasting and planning;
- Facilitating sectoral adaptation measures; and
- Climate change education and awareness.

Through the PPCR structure, resources from the Climate Investment Fund (CIF) will be sought to implement three investment projects

- Investment 1 - Goal: Improved quality climate information for effective planning and action at local and national levels
- Investment 2 - Goal: Climate change mainstreamed into development plans and planning processes and increased adaptation to the impacts of climate change by stakeholders in vulnerable sections of the Rio Bueno and Rio Minho river basins
- Investment 3 - Goal: Institutionalize financing mechanisms for climate change adaptation initiatives by the private sector and community-based organizations

Generally speaking, Investment 1 will assist in setting the framework for action and improving the systems necessary for the integration of climate change in decision-making processes. This involves the generation of data and information that will form the basis on which instruments such as policies, programmes and projects – are designed and implemented. Special attention will also be given to the health sector which is experiencing resource and information constraints. Investment 2 will facilitate the incorporation of climate change in development planning and also the implementation of some adaptation measures in two badly degraded, yet important watersheds – Rio Minho and Rio Bueno. The capacity of the vulnerable groups within the watersheds will improve and the lessons learnt will be incorporated in other programmes or projects as appropriate. Investment 3 is intended to assist the private sector and local level groups to finance adaptation initiatives through competitive loans and trust funds.

The SPCR will be complemented by on-going and planned initiatives. It will also form the basis on which funding is sought for the country's climate change agenda as the strategies and activities contained

therein are considered critical. Also, the framework established will eliminate possible duplication of project, but will, instead, build on and identify synergies.

ANNEX 10. FACILITY FOR PERFORMANCE-BASED CLIMATE FINANCE IN LATIN AMERICA

Programme Description

The Performance-Based Climate Finance (PBC) Facility shall enable the early design and implementation of concrete pilot measures embedded into different sectoral greenhouse gas mitigation schemes in Latin American countries. By providing necessary financial incentives linked to verified emission reductions existing investment barriers shall be overcome.

The PBC Facility will reward investments in emission reduction beyond an ambitious baseline scenario.

Within the framework of the programme three sectoral approaches are envisaged to be designed and pilot activities to be implemented for each of the sectoral approaches.

The programme is supported by the Latin American Investment Facility of the European Union, which provides EUR 10 million. Regional Implementing Partner is CAF, the Development Bank of Latin America.

Background

Economic growth in Latin America is expected to generate a continuous increase in emissions. At the same time the region has substantial greenhouse gas (GHG) emission reduction potential in many sectors. Financial, technological and knowledge barriers often impede efficient measures to mitigate GHG emissions.

Structuring effective mechanisms to promote GHG mitigation programmes and to leverage public and private sector funding is crucial for a sustainable and climate friendly development. The PBC Facility is intended to create a reference point and lessons learnt for the implementation of new and performance based climate finance instruments in Latin America.

Project Components

Component 1: Technical Assistance Facility (EUR two million)

The TA facility will finance the development of detailed implementation concepts for sectoral GHG mitigation schemes in Latin America. Furthermore, it will support the design and the implementation of mitigation activities, especially with capacity building measures, with the introduction of a robust MRV system and in carrying out the resulting MRV processes.

Component 2: Performance Based Incentive Schemes (EUR eight million)

Under this component financial incentives shall be provided to overcome barriers (for instance high investment costs) for the implementation of GHG mitigation actions. The beneficiary shall be rewarded, for example, for each tonne of verified carbon dioxide equivalent (CO₂e) emission reduction exceeding a predefined ambitious baseline with a financial incentive that can be paid partly ex-ante and partly ex-post.

The necessary investments to implement the pre-defined measures of the pilot projects under the sector schemes will be financed by the lead Financial Institutions of the programme CAF and KfW and / or by regional partner institutions.

Potential Sectors and Countries

In the concept development phase, potential sectors will be analyzed according to certain eligibility criteria. Three sectors in different Latin American countries will be selected for the final implementation.

Main Benefits

- Significant impact on GHG reductions and contributions to limit global warming through concrete abatement measures, standardized and ambitious baselines and a robust MRV System.
- Increased awareness and capacity for low emission technologies.
- Suitable institutional set-ups will be established for the implementation of performance based sectoral approaches. Capacities within participating institutions will be increased.
- Up scaling potential: The open structure allows other financing partners (for instance the private sector or crediting mechanisms) to participate in the program or to upscale the initiatives.
- Important learnings and experiences during the implementation of the pilot schemes: the project set-up will serve as a showcase for future National Appropriate Mitigation Action (NAMA) and / or market based-approaches.

ANNEX II. EXAMPLES OF PATIENT CAPITAL FUNDS

Althelia Ecosphere⁷⁷

Althelia Ecosphere is mission driven and pretends to design and implement a new model that will reverse the trend in natural capital loss - one that works for the benefit of present and future generations of life on Earth. Through a focus on blended value investments that deliver the highest calibre social, environmental and economic performance, it aims to demonstrate that financial performance can be fully aligned with sound environmental stewardship and social development.

With a special emphasis on sustainable land-use, biodiversity and ecosystem services, its vision seeks to leverage investment to simultaneously catalyse a range of positive impacts, including reduced greenhouse gas emissions, sustained or enhanced biodiversity and ecosystem function and conservation of endangered species. On 11th June 2013, Althelia announced the first round closing of its Althelia Climate Fund, a public-private partnership that will deliver multi-benefit greenhouse gas (GHG) reductions, with a focus on sustainable land use and payment for ecosystem services (including forest carbon, or REDD+i).⁷⁸ It has a development-based, holistic view in that it welcomes diversified revenue streams (not just carbon finance, but also other commodities harvested sustainably, such as cocoa, soy, palm oil, etc.). First round subscriptions total in excess of EUR sixty million (USD eighty million) and include leading private and public sector institutions, such as the Church of Sweden, the European Investment Bank, Finnfund and FMO. Althelia expects to raise additional capital, targeting an overall level of EUR 150-200 million for the Fund. The closed-end Fund will comprise a diversified portfolio of investments in Africa, Latin America and Asia that take the form of real assets (certified commodities and agricultural produce) and environmental services (verified emissions reductions and other ecosystem services), delivering cash dividends to investors over its eight-year life.

The Althelia Ecosphere model focuses on addressing the drivers of deforestation and unsustainable land-use, and will benefit from technical, design and implementation support from Conservation International, a long-standing partner of the company.

New mechanisms are beginning to emerge as powerful tools with the potential to enable long-term change in the use of forests and other natural ecosystems. However, the channels through which financial and technical resources are to flow remain challenging from the standpoints of those who wish to deploy and access such resources. Althelia's vision is that these channels need to be implemented, tested and offered to an increasing number of stakeholders. Practically, this means – upstream – offering responsible investors multiple avenues to deploy their financial resources, each with a fair and

⁷⁷ Adapted from: <http://www.ecospherecapital.com>.

⁷⁸ The Fund is structured as a Luxembourg SICAV-SIF, and will be managed by its Luxembourg-based General Partner, Althelia Climate Fund GP s.ar.l, and advised by its London-based subsidiary, Ecosphere Capital LLP.

proportionate risk/return. It also means – downstream – making enabling resources available to initiatives that are reducing ecological impact so such activities can be implemented and sustained over the long haul. Althelia Ecosphere’s vision is that aligning economy with ecology is not only possible, it is an urgent necessity.

Althelia investments will be tailored to meet the requirements of corporate partners seeking to address sustainability of their supply chains through the utilisation of agricultural produce and other natural resources that are certified to high ESG and as “zero-deforestation.” Althelia will also employ the most rigorous carbon accounting standards, utilizing the Verified Carbon Standard’s protocols for Agriculture, Forestry and Other Land Use sectors (AFOLU), and will also work to ensure that its investments are developed in such a way as to be eligible for recognition within jurisdictional (subnational and national) REDD+ programmes that are under development, including VCS Jurisdictional and Nested REDD (JNR) as well as the REDD+ mechanism developing internationally under the UNFCCC process, and where appropriate, in regional frameworks such as California and other states and provinces participating in the Governors’ Climate and Forest taskforce (GCF).

***Terraglobal Capital (TC)*⁷⁹**

Terra Global Capital, LLC was formed in June 2006 to provide organizations with strategic advice in environmental markets. Its goal is to facilitate the market for land use carbon and other environmental credits. It does this by providing technical expertise for the measurement and monetization of land use carbon credits and carbon finance through a dedicated investment fund. By combining remote sensing based measurement methods with carbon finance it aims to lower costs and increase accuracy for carbon from afforestation, reforestation agro-forestry, changes in agricultural practices, and avoided deforestation projects globally. By providing this expertise it can bring feasibility to many valuable projects, particularly those in areas of rural poverty.

Through its work, it supports both for-profit and non-profit organizations that seek its expertise in accessing the carbon markets. Past assignments have involved areas ranging from the analysis of how the environmental markets can be incorporated into an organization’s strategic plan, to the structuring and execution of carbon transactions for specific projects.

Combining its experience in the carbon markets with financial services expertise puts Terra Global Capital in a good position to manage private environmental funds. The initial fund (Terra Bella) is being structured as an absolute return fund on environmental assets, primarily carbon, from the land use sector. The funds are sourced from impact capital investors. TC’s project work enables it to identify projects and acquire high quality credits through the use of innovative financing structures. A quantitative approach to risk and return is used to drive carbon credit valuation and the on going monitoring of carbon assets.

Its expertise in carbon modelling with remote sensing systems for land-based carbon credits enables TC to provide initial feasibility estimates for carbon revenue to project developers and efficiently create and monitor land-based carbon credits. The carbon forecasting and measurement techniques combined with field support allow it to provide project developers with cost effective access the market for carbon credits.

⁷⁹ Adapted from: <http://www.terrarglobalcapital.com/About.htm>

Terraglobal Capital manages the the Terra Bella fund, which is a private investment fund specializing in assets from environmental markets, primarily carbon offsets from land use projects. The fund intends to capitalize on the management company's ability to source and originate carbon credits from AFOLU projects throughout the world. Investments will be made in:

- Compliance and pre-compliance strategies for carbon credits
- Directly with project developers seeking carbon financing for most project types
- Voluntary markets where regulations are uncertain or non-existent
- Under-valued derivative instruments on environmental assets
- Emerging ecosystem markets

Its investment objective is to generate capital appreciation for investors, provide capital to promote efficient ecosystems markets, and to contribute a portion of its positive performance to permanently retire carbon credits for a lasting positive impact on climate change. Successfully delivering fund returns will depend on purchasing environmental assets at attractive prices, properly assessing project risk, and using creative financial structuring techniques to generate liquidity.

Carbonica Capital⁸⁰

Carbonica Capital is an asset and investment manager specializing in identifying and developing low-carbon investments that deliver sustainable and durable alpha to investors. Our focus is to provide solid performance by demonstrating that there are exciting investment opportunities in the transition to a low-carbon economy. Carbonica Capital is owned and managed by the principals, whose expertise is in the fields of asset management, carbon markets and clean energy sectors.

Carbonica Capital's Atticus Fund is a £ thirty-five million fund comprising of three large forestry assets in South America. The fund falls under the category of alternative investment, an area currently experiencing a similarly rapid growth (at a smaller order of magnitude of investment) as clean energy infrastructure projects. The management of the Atticus Fund is underpinned by a combination of carbon assets, commodities extraction and an equity interest in the underlying infrastructure. The template of this model creates a suitable diversification of risk and a sound sustainable long-term performance that will be replicated in forthcoming funds. The minimum expected yield for the investors is five percent (not including carbon finance assets).

C-Quest Capital⁸¹

The mission of C-Quest Capital is to reduce humanity's carbon footprint, while enabling people in poorer communities around the world to transform their lives. C-Quest does this by making profitable investments in carbon-reduction programs that provide access to clean, efficient energy appliances and climate-smart small-scale agriculture and forestry services for poor families. These investments use the infrastructure of global carbon markets to quantify and monetize carbon reductions and are targeted for projects that benefit the least-developed countries, while C-Quest's use of innovative financial structures and public-private partnerships manages investment risk in these emerging markets. The Transformation Carbon Project (TCP) offers socially responsible investors and

⁸⁰ Adapted from: <http://www.carbonicacapital.com/about-us/>

⁸¹ Adapted from: <http://www.cquestcapital.com/about/our-mission/>

corporations. opportunities to invest in community carbon projects that will yield quantifiable and verifiable human health, welfare and environmental benefits. The Quality Carbon Programs provide carbon credits that meet investors' needs for quality, cost, scale and long-term reliability.

Acumen Fund⁸²

Acumen Fund's motto is 'patient capital that dares to go where markets have failed and aid has fallen short'. As a non-profit, it raises charitable donations that allow it to make patient long-term debt or equity investments in early-stage companies providing reliable and affordable access to agricultural inputs, quality education, clean energy, healthcare services, formal housing, and safe drinking water to low-income customers.

For Acumen, patient capital is understood as a debt or equity investment in an early-stage enterprise providing low-income consumers with access to healthcare, water, housing, alternative energy, or agricultural inputs. Our typical commitments of patient capital for an enterprise range from \$250,000 to \$3,000,000 in equity or debt with payback or exit in roughly seven to ten years.

The patient capital Acumen provides is accompanied by a wide range of management support services nurturing the company to scale. Our aim in investing patient capital is not to seek high returns, but rather to jump-start the creation of enterprises that improve the ability of the poor to live with dignity.

Omidyar Network⁸³

Omidyar Network is a philanthropic investment firm dedicated to harnessing the power of markets to create opportunity for people to improve their lives. It invests in and helps scale innovative organizations to catalyse economic and social change. It makes investments in for-profit companies as well as grants to non-profit organizations, with social impact being the unifying criterion for investment. It supports organizations whose market-based approach has the capacity for large-scale, catalytic impact. The cornerstones of its investment focus are economic advancement and individual participation, which it pursues through five initiatives: Consumer Internet and Mobile, Entrepreneurship, Financial Inclusion, Government Transparency, and Property Rights.

Toward that end, its investing style transcends typical boundaries that separate for-profit investing and traditional philanthropy. Regardless of the sector, it invests in organizations that have the potential to embody innovation, scale, and sustainability or help bring them about within their industry. Omidyar Network focuses its investments where it has direct experience and can have the greatest impact. In emerging markets, it creates economic opportunity for the base of the pyramid through access to capital.

⁸² Adapted from: <http://acumen.org/investments/investment-model>.

⁸³ Adapted from: <http://www.omidyar.com>

ANNEX 12. EXAMPLES OF PRIVATE CLIMATE BOND INITIATIVES

Carbonica Capital is working with investment banks on a green bond issuance of £130 million, to be underwritten at investment grade credit rating, in order to finance a portfolio of low-carbon assets available only to institutional investors. The UK market is at its infancy in the green bond industry, and in fact no green bond issuance has been done to date in pound sterling denomination. Therefore there is a gap to fill with plenty of development of this category of financial product.

The Climate Bonds Initiative is an investor-focused not-for-profit, promoting large-scale investment in the low-carbon economy. It promotes safe and secure investments suitable to the needs of pension and insurance funds. Its goal is to rapidly help develop and then assist in connecting a large-scale Climate Bond sellers' market with a large-scale Climate Bond buyers' market. The current value of the bond markets is estimated (by the Bank of International Settlements) to be worth USD seventy-eight trillion at the end of December 2012. Our goal: USD one trillion of investment flowing each year to low-carbon industries.

The Climate Bonds Initiative is:

1. Providing Policy Models and Advice

Rapid change at very large scale will depend on a close working relationship between government, finance and industry. The Climate Bonds Initiative is developing policy proposals for all three sectors, including:

- How to boost bank lending to renewables by adapting the USD three trillion covered bonds market to create renewable energy covered bonds.
- Delivering on the promise of large-scale energy efficiency (e.g. getting to eighty-five percent of housing stock within ten years).
- Policy risk insurance for renewable energy bonds, to be provided by a consortium of governments.

2. Developing Trusted Standards

The Climate Bond Standards Board is developing standards for investments eligible to be called Climate Bonds. This will provide greater certainty for investors about the climate benefit of their investments, especially in controversial areas like energy efficiency and bio-energy.

Board members are California State Teachers' Retirement System (CalSTRS), the State Treasurer of California, the (US) Investor Network on Climate Risk, the Natural Resources Defence Council, the Carbon Disclosure Project, and the (Australian) Investor Group on Climate Change.

An Industry Working Group consults with the Climate Bond Standards Board. Members include representatives from: Standard and Poor's, Aviva Investors, the IFC (a part of the World Bank Group), KPMG, PricewaterhouseCoopers, DNV and Calvert Funds Management.

The Board has already created standards for wind energy bonds and has certified its first bond, soon to be launched. Solar and energy efficiency investments will be the next to be certified.

3. Launching Demonstration Projects

The aim of these 'proof-of-concept' projects is to demonstrate investibility and the potential to finance with Climate Bonds. For example, working with municipalities in England, the Climate Bonds Initiative is developing a plan for securitization of residential energy efficiency loans with the aim of providing a financing pipeline for the whole country.

The Climate Bonds Initiative is a special project of:

- The Carbon Disclosure Project, an independent not-for-profit organisation that collects and distributes high quality corporate climate change information for integration into business and policy decision-making, and
- The Network for Sustainable Financial Markets, an international network of finance sector professionals, academics and others dedicated to improving financial market integrity and efficiency.

ANNEX 13. TECHNICAL DETAILS CURRENTLY CONSIDERED FOR THE JCM

Basic Concept for Crediting under the JCM

- In the JCM, emission reductions to be credited are defined as the difference between “reference emissions” and project emissions;
- The reference emissions are calculated below business-as-usual (BaU) emissions, which represent plausible emissions in providing the same outputs or service level of the proposed JCM project in the host country;
- This approach will ensure a net decrease and/or avoidance of GHG emissions.

Crediting Threshold

Reference emissions are calculated by multiplying a “crediting threshold” which is typically expressed as GHG emissions per unit of output by total outputs.

A crediting threshold should be established ex ante in the method applicable for the same project type in the host country. It should also be established conservatively in order to calculate reference emissions below BaU emissions.

This standardized approach will greatly reduce the burden of analysing many hypothetical scenarios for demonstrating additionality of the proposed project such as under the CDM, whereas increase transparency for calculating GHG emission reductions.

Ways to Realize Net Reduction

- A net decrease and/or avoidance of GHG emissions can be realized in alternative way, instead of calculating the reference emissions below BaU emissions.
- Using conservative default values in parameters to calculate project emissions instead of monitoring actual values, will lead calculated project emissions larger than actual project emissions.
- This approach will also ensure a net decrease and/or avoidance of GHG emissions, as well as reduce burdens of monitoring.

Key Features of the JCM Methods

- The JCM methods are designed in such a way that project participants can use them easily and verifiers can verify the data easily.
- In order to reduce monitoring burden, default values are widely used in a conservative manner.
- Eligibility criteria clearly defined in the method can reduce the risks of rejection of the projects proposed by project participants.

- Eligibility criteria: A “check list” will allow easy determination of eligibility of a proposed project under the JCM and applicability of JCM methods to the project.
- Data (parameter): (i) List of parameters will inform project participants of what data is necessary to calculate GHG emission reductions/removals with JCM methods; (ii) default values for specific country and sector are provided beforehand
- Calculation: Premade spreadsheets will help calculate GHG emission reductions/removals automatically by inputting relevant values for parameters, in accordance with methods.

Basic Concept of Eligibility Criteria in JCM Method

The eligibility criteria in each JCM method should be established, in order to reduce emissions by:

- Accelerating the deployment of low-carbon technologies, products and services, which will contribute to achieving net emission reductions;
- Facilitating the nationally appropriate mitigation actions (NAMAs) in host countries.

In this sense,

1. Both Governments determine what technologies, products, etc., should be included in the eligibility criteria through the approval process of the JCM methods by the Joint Committee;
2. Project participants can use the list of approved JCM methods, similar to positive list, when applying for the JCM project registration.

ANNEX 14. EXAMPLES OF NATIONAL CLIMATE FUNDS

National climate change funds_source: The Global Climate Finance Architecture, Climate Finance Fundamentals (2 November 2012); Alice Caravani, Smita Nakhoda, Charlene Watson, ODI and Liane Schalatek, Heinrich Böll Stiftung North America.

Several developing countries have established national funds with a variety of form and function, resourced through international finance and/or domestic budget allocations and the domestic private sector. In many cases UNDP acts as the administrator of national funds, increasing donor trust that good fiduciary standards will be met. Data on capitalisation of national climate change funds is not always consistently available.

National climate change trust funds attracted early interest as, governed with high levels of transparency and inclusiveness, they could channel finance to projects suited to national circumstances and aligned with national priorities. Working through coordinated national systems could also improve transaction efficiency. In practice, however, the impact of national trust funds on strengthening national ownership and coordination remains to be seen.

The **Indonesia** Climate Change Trust Fund (ICCTF) was established to support energy efficiency, sustainable forestry and peatland management, as well as climate change resilience. As other Indonesian trust funds to support climate change projects related to forests and land use have emerged, the focus of the ICCTF has narrowed to energy related mitigation. The UK, Australia and Sweden have pledged USD 21 million, although the amount disbursed for projects by September 2012 is only USD 5.8 million.

Brazil has been proactive in creating national climate finance structures. The Amazon Fund is administered by the Brazilian National Development Bank and governed by a committee of Brazilian government, civil society and private sector representatives. Norway pledged USD one billion to the Amazon Fund for performance-based REDD+, and the fund has also received contributions from Petrobras, a Brazilian energy company. To date, the Amazon Fund has disbursed USD 169 million for twenty-nine projects. Brazil has also established a National Fund on Climate Change that is financed through domestic fossil fuel revenues. It encourages investment in low-carbon investments by offering low interest capital; in 2012 more than USD 170 million is expected to be available.

ANNEX 15. QUESTIONNAIRE FOR JMA MEMBERS

CONCEPT	QUESTIONS	ANSWERS
MOTIVATION	Why, if at all, would you consider investing in clean energy improvements in your business?	
INVESTMENTS CONSIDERED BUT NOT IMPLEMENTED	Describe any clean energy investments you considered in the past (technology, size, investment in USD) and the reasons why you didn't implement them. If the fin. entities expressed concerns with financing them, which problems/risks did they stress?	
	What would you require to carry out the above investments?	
INVESTMENTS BEING CONSIDERED	Are you currently considering any clean energy investments? If so please describe them (technology, size, investment in USD).	
	Have you already presented the project(s) to any financial entities for financing? To which ones? What have they responded in terms of the bankability of the investment(s)? What conditions, if any, have they offered you? <ul style="list-style-type: none"> - Leverage (%)⁸⁴ - Tenor (years) - Interest rate (%)⁸⁵ - Collateral requirements 	
	If the fin. entities have expressed concerns with financing your clean energy project(s), which problems/risks have they stressed?	

⁸⁴ Percentage of the total investment to be covered by the loan.

⁸⁵ Please specify whether fixed or variable.

CONCEPT	QUESTIONS	ANSWERS
INVESTMENTS CARRIED OUT	Have you already done any investments in clean energy? If so, please describe them (technology, size, investment in USD).	
	If you financed it/them with credit, what conditions did you obtain from financial entities? Please describe the following: <ul style="list-style-type: none"> - Leverage (%) - Tenor (years) - Interest rate (%)⁸⁶ - Collateral requirements 	
FRAMEWORK CONDITIONS	Are you aware of any economic / financial incentives for clean energy investments? If so, please list them. Do you think more incentives are necessary? If so, of what nature?	
	Do you think the conditions that clean energy equipment suppliers are offering are good enough? If no, please explain.	
ADDITIONAL COMMENTS	Please add any other comments you may consider useful	

⁸⁶ Please specify whether fixed or variable.

ANNEX 16. CURRENT CURRENT FINANCING TERMS FOR SMALL-SCALE CLEAN ENERGY INVESTMENTS IN JAMAICA

Table 15.1. Overview of Financing Terms for Small-Scale Clean Energy Investments

Entity	Instrument	Financing terms	Others
The National Housing Trust (NHT)	Credit line for homeowners and other clients applying for loans for solar PV and solar water heaters (SWH).	Seven percent interest rate (down to one percent), depending on age and income. Maximum amount of J\$ 4.5 million (USD 391,986) and thirty years tenure. Eligible only if you have an NHT mortgage.	Joint mortgages with commercial banks. High-income clients may not qualify. Even though it offered a very low interest rate the uptake was very poor. This can be explained due to the barriers that apparently exist to access this facility (e.g. the borrower has to be connected to the grid).
The Bank of Nova Scotia (BNS)	USD 3 million Smart Energy Credit Line for clean energy loans to households and MSME's, which covers SWH, wind power, solar PV, small hydro and ethanol (although they could consider other technologies).	9.75 percent interest rate (fixed up to the third year, then variable). Leverage up to 100 percent (average eighty-ninety percent), maximum amount J\$ two million (USD 17,422) (if larger amount then the interest rate is greater). For unsecured loans (for good risk profiles) the interest rate goes up to 14.9 percent. ⁸⁷ They realized that the maximum loan	They say they would do on lending of DBJ's Energy Fund but clients think it is too slow and prefer theirs even if it is more expensive. This credit line is sourced from their own funds (not on lending). If you buy a home with BNS then it's all right to give an extra amount for clean energy (the house is the collateral). They are aware that solar PV 'sponsors' (including households) need longer tenors (are asking for eight-ten

⁸⁷ Measured via a matrix model. They target A to C+ clients (E is the lowest possible ranking).

Entity	Instrument	Financing terms	Others
	<p>They started in June 2012 with the goal to exhaust the credit line by November but they have had little success so far, even though they did a big promotion campaign in Q4 2012.</p>	<p>amount of J\$ two million (USD 17,422) made sense only for households and so for MSMEs is J\$ five million (USD 43,554) (with up to 100 percent leverage and seven years tenor).⁸⁸</p> <p>They do not accept clean energy equipment as collateral.</p> <p>There's no grace period for clean energy.</p>	<p>years) and are analysing the possibility to offer them. They know that this way the sponsors would be able to see positive cash flows from the beginning (through savings).</p> <p>In the beginning they only targeted middle class and above, but now, after talking to equipment suppliers they perceive low-middle class also as a target (have electricity bills of J\$ 10 to 15,000 /month (USD 87 to 131/month)).</p> <p>Above J\$ twenty-five million (USD 217,770) of principal it becomes a corporate loan. Commercial banking is done at the branches and corporate at HQ.</p> <p>Alternative products are too sophisticated for the Jamaican market. They have discussed leasing with equipment suppliers, but are still analysing it (it's not a priority at the moment).</p>
<p>First Caribbean International Bank</p>	<p>Loan product for the household sector since April 2013 that covers solar PV and any EE improvements (CFLs, energy-efficient appliances, etc.). It is tied to the mortgage.</p> <p>For MSME's no formal product yet, done on a case-by-case basis.</p> <p>No deals yet and no active marketing done.</p>	<p>Nine percent interest rate, with their own funds.</p> <p>As collateral, in the case of households they require forty-three percent of gross income for debt service.</p> <p>On the other hand, for MSMEs they ask for three years of financial information and the cash flow projections and will take as collateral any or all of the following:</p> <ul style="list-style-type: none"> • Accounts Receivable • Inventory • Marketable securities (e.g. bonds, 	<p>Apparently not aware of DBJ's eighty percent guarantee cover.</p> <p>They prefer to lend at nine percent with their own funds vs DBJ's Energy Fund money on-lent at six percent + three percent (capped) margin (nine percent to borrower).</p> <p>They have limited knowledge of RE technologies. The client has to contract the due diligence.</p> <p>Feedback from the market: Return on investment / payback is too long (for borrowers). With EE investments it's complicated to see benefits because of the lack of transparency in the billing system, whereas with solar PV the return is more immediate (savings readily observed).</p>

⁸⁸ An average loan amount to an MSME (non-corporate) could be J\$ 1.5 million (USD13,066) (e.g. for a poultry farmer).

Entity	Instrument	Financing terms	Others
		<p>shares in a publicly-traded company, etc.)</p> <ul style="list-style-type: none"> • Fixed Assets (e.g. vehicles, equipment, etc.) • Real Estate <p>Clean energy equipment is not accepted as collateral.</p>	
EXIM Bank	Clean energy loans	Eight percent interest rate (equal to DBJ's lowest rate).	They don't receive any deposits; they source their funds from DFIs and DBJ. EXIM both on-lends and goes directly to the market.
Victoria Mutual Building Society	Loans to households and MSME's.	9.2 percent interest rate (apparently the most aggressive among the private financial institutions).	
St Thomas Cooperative Credit Union (CCU)⁸⁹	Loans for solar PV and SWH.		<p>They work in deep rural Jamaica (where there is a lot of charcoal production, with its environmental problems). For the past six-nine months they have been offering loans by on lending of DBJs Energy Fund, for solar PV mostly. They have made a few SWH loans and had some inquiries for solar PV.</p> <p>They would like to do more clean energy loans for rural communities but there's a lot of competition from commercial banks and retailers like ATL.</p>
Communications and other Workers of	Clean energy loans (SWH, PV) that complement a new mortgage offering.	<p>9.5 percent interest rate with up to ninety-five percent financing.</p> <p>No need to register the clean energy</p>	

⁸⁹ CCUs are fully private entities.

Entity	Instrument	Financing terms	Others
Jamaica Co-operative Credit Union Limited (CandWJCCU)		investments on the mortgage.	
The Capital and Credit Financial Group	Two “green” loan products launched (in Q4 2011) to finance renewable energy and solar water heater systems; and renewable projects involving windmill, solar panels, and turbines, among others.	9.5 percent interest rate. New and existing customers can access up to J\$ five million (USD 43,554) and have up to ten years to repay. Businesses and homeowners can borrow up to J\$ 250,000 (USD 2,178) to purchase solar water heaters, also for as low as 9.5 percent per annum, with a maximum of three years to repay.	Capital and Credit group is in the process of being acquired by Jamaica Money Market Brokers, but the transaction has to be approved by regulators.

ANNEX 17. BARRIERS TO THE DEVELOPMENT OF THE ESCO INDUSTRY IN JAMAICA⁹⁰

Table 16.1. Barriers to the Development of the ESCO Industry in Jamaica

Barriers or Constraints	Contribution of Action to Removing Barriers or Minimizing Constraints	Target Sector
Lack of information and awareness relating to EE, RE and the role of ESCOs	Awareness building and marketing campaign	Potential clients in the public sector, private sector (Industrial, commercial, tourism, hotels and restaurants, manufacturers, wholesalers and retailers, etc.)
Absence of appropriate policy framework	Review and recommend policy changes	Ministries, Agencies and Departments (MDAs) of government and public bodies
Limited capacity to manage technical and financial aspects of ESCO services	Development of enabling public policies, protocols and organizational capacity	Potential clients (MDAs and ESCOs)
Absence of regulatory framework to inspire trust and confidence among stakeholders	Development of regulatory framework to be led by working group comprised of stakeholders with support from subject matter experts.	Potential clients (MDAs and ESCOs)
Insufficient capacity to develop model forms of performance contracting.	Development of protocols and model forms of contract led by working group comprised of	Potential clients (MDAs and ESCOs), Legal and judicial entities

⁹⁰ Identified by the EU-GoJ ESCO Project.

	stakeholders with support from subject matter experts	
Lack of capacity to deliver specific technical, financial, business and regulatory training related to ESCOs	Capacity enhancement through development of training programs, curricula and certification.	Energy education/training
Distrust of projected savings from EE projects.	Adoption of International Performance and Measurement Verification Protocol (IPMVP) and International Energy Efficiency Financing Protocol (IEEFP)	Potential clients, banking and financial services and ESCOs
Lack of capacity to understand and evaluate EE and RE projects and develop new products to support the ESCO industry.	Capacity building and introduction of protocols and regulatory frameworks for ESCOs	Potential clients, banking and financial services and ESCOs
Absence of knowledge of applicable business models and best practices	Capacity building in the use of ESCO business models, forms of contract and protocols related to best practices	Potential clients, banking and financial services, business support services, ESCOs and MSME
Knowledge and understanding of applicable business models and best practices.	Awareness building, capacity development and marketing, workshops, consultations and presentations	Potential clients, banking and financial services, business support services, ESCOs and MSME
Enabling policies to support ESCOs.	Policy review, development and implementation.	Potential clients, banking and financial services, business support services, ESCOs and MSME
Regulatory frameworks to facilitate ESCO project implementation in industrial and commercial clusters, commercial and residential strata properties etc.	Development of regulatory frameworks.	Potential clients, banking and financial services, business support services, ESCOs and MSME
Inadequate institutional	Development of institutional	Potential clients, banking and

frameworks to legitimize and strengthen ESCO operations.	frameworks, protocols and best practices	financial services, business support services, ESCOs and MSME
Lack of technical knowledge and experience in implementing and managing ESCO services. Low number of certified professionals	Capacity building and networking with international ESCOs	Engineering
Lack of creative solutions and retrofits to reduce energy consumption and carbon emissions	Training to introduce new business and financing models to facilitate investment in EE and RE technology and reduce greenhouse gas emissions	Potential clients, banking and financial services, business support services, ESCOs and MSME
Absence of an appropriate institutional framework which pulls all the strands together leading to sustainable uptake of EE and RE in both the public and private sectors.	Develop institutional framework utilizing working groups comprised of partners and stakeholders and subject matter experts	Primary and supporting energy sector institutions

ANNEX 18. PRIORITY FLAGSHIP PROGRAMS OF THE MINISTRY OF WATER, LAND, ENVIRONMENT AND CLIMATE CHANGE

Recognizing the urgent need for an immediate adaptation response to the impacts of climate change and the existence of several sectoral policies and measures to address the challenges of climate change, priority Special Initiatives will be developed and implemented. These Special Initiatives are programmes comprised of new initiatives and the scaling up of existing initiatives that demand urgency of action. These Special Initiatives will focus on addressing the impacts of climate change that are multi-sectoral in nature and will require a multi-agency approach in the implementation of actions.

The CCD will take responsibility for the oversight of the Special Initiatives. The appropriate line function Ministry will elaborate on each Special Initiative and the responsible Minister will establish teams to create a framework for each initiative. Frameworks will consist of the following:

- A program for implementation.
- A detailed analysis of mitigation or adaptation outcomes expected to result from the program.
- A proposal for realizing local sustainable development benefits, including employment, poverty alleviation, industrial development, reduction in local air pollution and others.
- A well-defined reporting format, which will include a set of relevant indicators, and a proposal to establish an annual reporting process.

The Government of Jamaica has identified an initial list of Special Initiatives covering both adaptation and mitigation measures.

- Water Resources Management Strategy

Water resources is a critical input for many sectors including energy, mining and quarrying, agriculture, manufacturing, tourism, natural resource management, urban planning and regional development, housing, and health services. Adverse impacts to water resources will also negatively impact these sectors. MWLECC and the Water Resources Authority will play the lead role in this Special Initiative to develop programmes that address water resources management including watershed protection and the scaling up of conservation programmes (e.g. rain-water harvesting).

- A Low-Carbon Development Strategy

Climate change threatens the efficient production of energy and given the high dependence on foreign energy sources across all sectors, this could increase Jamaica's overall economic vulnerability. MSTEM will play the lead role in this Special Initiative to develop programmes that include the scaling up renewable energy and energy conservation programmes.

- Disaster Risk Financing Strategy

Jamaica's susceptibility to natural disasters is a major threat to the stability of human settlements and infrastructure and vulnerable sectors including agriculture and tourism. The Ministry of Finance and Planning will play the lead role in this Special Initiative to develop a financial strategy, which reduces the country's fiscal vulnerability to the occurrence of events related to climate change. The Ministry will evaluate different measures such as disaster risk financing and micro-insurance.

- Ecosystem Protection and Land Use Planning Strategy

Ecosystem protection and resilience of the natural environment is key to adapting to climate change. Increased development activities within the coastal zone and sensitive areas have increased vulnerability to floods, storm surges, sea level rise and hurricanes. The MWLECC will play the lead role in this Special Initiative to rationalize land use planning and development processes including implementing a National Spatial Plan and enacting regulations for Environmental Impact Assessments of proposed developments.

ANNEX 19. CPEIR FRAMEWORK⁹¹

Public expenditure reviews (PERs), involve the analysis of allocation and management of public expenditures and may cover all government expenditure or focus on a few priority sectors such as agriculture, water, infrastructure, etc. Information gathered from PERs is used to provide key guidance to strategic planning and budget preparation and to identify ways in which to improve the efficiency and effectiveness of resource allocations. Increasingly, PER processes are applied to expenditure management systems and institutions, since institutional framework, organizational capacity, and everyday expenditure management practice of government determines the allocation and management of public expenditures.

Climate change has become a pressing priority in developing countries. The CPEIR will be a key building block for countries to develop a climate fiscal framework – which would assess the demand and supply for climate funds and the sources of funds available from domestic and external sources. The concept of a climate fiscal framework was discussed with the key government agencies and development partners.

By reviewing current climate expenditures from both domestic and external sources of finance and identifying ways in which climate related expenditures can be tracked through time, the CPEIR will be a key building block for developing a comprehensive climate fiscal framework. Through time as the CPEIR method and approach is improved, a CPEIR will serve as a tool to enable developing countries to improve prioritisation, efficiency and effectiveness of all public resources in support of climate adaptation and mitigation.

The Climate Public Expenditure and Institutional Review method was first pioneered in Nepal, with UNDP and UNEP support in 2011. In a context common to many countries in the region, a proliferation of financing mechanisms and various donor-government dialogues on how to address climate change had been emerging. These discussions had often been fragmented and typically taking place amongst environment or climate change specialists, but not yet rooted in key national debates on how the government might best promote the country's economic and social development.

The CPEIRs were introduced as the very first climate change studies of their kind that sought to move away from a parochial focus on the use of funds that are primarily dedicated to addressing climate change issues. Rather, they aimed to help countries to review how their own stated national climate change policy aims were being reflected in public expenditures more broadly and how institutions might be adjusted to ensure that financing a response to climate change is delivered in a coherent way across government. It was anticipated that CPEIRs would provide a useful starting point for longer-term government-led multi-stakeholder dialogue on how the government might utilise increased financing as part of the national response to climate change.

Since the first CPEIR was undertaken in Nepal in 2011, four further countries have followed suit: Bangladesh, Thailand, Samoa and Cambodia. With five CPEIRs now completed, and further CPEIRs

⁹¹ Adapted from: <http://www.aideffectiveness.org/CPEIR>

already in the pipeline in Indonesia, Timor-Leste and Viet Nam; it is an opportune moment to review this body of work and promote dialogue and learning. The CPEIR process is still evolving: where they have been undertaken, CPEIRs have already played an important role in stimulating more comprehensive and inclusive reflections on climate change than had taken place previously. However, there is still much to be learnt on how this type of analysis can be utilized and built upon to assist delivery of climate change policy goals. There is also scope to further refine and tailor the process to better meet the requirements of countries undertaking CPEIRs.

ANNEX 20. EXAMPLES OF POTENTIAL NAMAS IN JAMAICA

Project 1: Small-Scale Wind Power in the Water Sector in Jamaica

Seaforth Energy, a Canadian energy services company is currently developing a small-scale wind power project with the National Water Commission (NWC).⁹² Its aim is to supply wind-powered electricity for NWC's pumping stations around the country using small windmills (50 kW). This would achieve important reductions in GHG emissions as well as reduce the cost of power significantly.

Project 2: Small-Scale Wind Power in the Farming Sector in Jamaica

Seaforth Energy is also currently developing a small-scale wind power project with the Jamaica Agriculture Society (JAS). The idea is to provide wind-powered electricity for farmers around sites with good wind conditions using small windmills (fifty kW). This would achieve important reductions in GHG emissions as well as reduce the cost of power significantly.

Project 3: Biogas from Waste from the Tourism and Farming Sectors in Jamaica

CaribShare Biogas, a Jamaican start-up company funded by the IDB, is currently launching its business of collecting organic waste from hotels as well as manure from farmers to produce biogas for residential power.⁹³ This business model could be scaled up as part of a waste management sector NAMA.

⁹² <http://seaforthenergy.com>

⁹³ <http://www.caribsharebiogas.com>