



Certification of Payment

1. For Personnel use only

Name:	NIRAS (c/o Thomas Thorsch Krader)	Contract No.:	BRB-ICC 2020_84096
Project Number:	00091623	Contract Total:	US\$67,500
Project Title:	Low Carbon Development Path	Contract Duration:	
Start Date:		End Date:	March 24, 2021
Nationality:	Denmark	Expected number of work days per week:	
Purchase Order No:	BRB10- 0000015670	Vendor No.:	0000006095

2. To be completed by the Contractor:

Please type or print and **mail original and first and second copies**, along with your travel claim upon completion of travel, to: United Nations Development Programme, One United Nations Plaza, New York, NY 10017.


Attention: (Finance Officer) Perry Parris

Room No.:

I certify that the deliverables indicated below are an accurate account of the services and duties performed under the terms of this contract.

Deliverable Description	Amount Payable USD
Inception Report (final)	6,750.00
Feasibility study with detailed recommendations for the EPC arrangements and templates for agreements and EPCs (final)	20,250.00
TOTAL	27,000.00

Please note that payment will be made in the currency of the subscriber's usual residence, unless otherwise indicated in Article 3 of the Individual Contract, or paragraph 3 of the Reimbursable Loan Agreement. Payments in currency other than the US dollar will be made at the UN operational rate of exchange in effect at the time payment is made. Bank charges related to payment will be borne by the subscriber.

Signature:  Date: 11. March 2021

3. To be completed by Area/Requesting Officer

Please check appropriate box

Interim report accepted <input type="checkbox"/>	Assessment sheet attached: <input type="checkbox"/>
Final report accepted <input type="checkbox"/>	Second Assessment to be added: <input type="checkbox"/>

I certify that the work was satisfactorily performed.

Signature: Kimisha Thomas Date: 18-Mar-2021

Name: Kimisha Thomas **PO Receipt No.** 0000011899

4. To be completed by the Certifying Officer

Please process the payment of US\$ 27,000.00 to the subscriber in accordance with the payment instructions given above.

Signature:  Date: 23-Mar-2021

Name: Mohammad Nagdee



UNDP Barbados and The Eastern Caribbean
UN House
Marine Gardens
0 Christ Church
Barbados

Invoice

Invoice no. 102005086
Invoice date 12-12-2020
Due date 27-12-2020

Client account 17125
Your VAT no. N/A
EAN no.
Page 1

Your PO no.
Your contact
Our contact Thomas Thorsch Krader

Project no.: 10409671
Project name: Low Carbon Development Path

Item	Quantity	Unit price	Value
Inception report			6.750,00
	Export Non EU	USD	6.750,00
			0,00
	TOTAL	USD	6.750,00

Any payments overdue are subject to interest charged at 1% per month

Payment ID: +71<000001020050868 +87748626

Terms of payment: Within 15 days due net

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VAT no.: DK 73 43 22 19

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SWIFT-BIC: DABADKKK



UNDP Barbados and The Eastern Caribbean
UN House
Marine Gardens
0 Christ Church
Barbados

Invoice

Invoice no. 102004870
Invoice date 10-12-2020
Due date 25-12-2020

Client account 17125
Your VAT no. N/A
EAN no.
Page 1

Your PO no.
Your contact
Our contact Thomas Thorsch Krader

Project no.: 10409671
Project name: Low Carbon Development Path

Item	Quantity	Unit price	Value
Feasibility study with detailed recommendations			20.250,00
	Export Non EU	USD	20.250,00
			0,00
	TOTAL	USD	20.250,00

Any payments overdue are subject to interest charged at 1% per month

Payment ID: +71<000001020048706 +87748626

Terms of payment: Within 15 days due net

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Danske Bank: 4183 4451017217
IBAN: DK9430004451017217
SWIFT-BIC: DABADKKK



Purchase Order

Dispatch via Print

Barbados

UNDP Office in Barbados
UN House, Marine Gardens
Christ Church 01
Barbados
Tel:
Fax:

PO Number BRB10-0000015670	Date 17/12/2020	Revision	Page 1
Payment Terms Immediate	Freight / INCOTERMS DES		Ship Via Common
Buyer Dwayne Nurse dwayne.nurse@undp.org	Phone Tel: Fax:	Currency USD	
Approver Ugo BLANCO			

Vendor: 0000006095
NIRAS A/S
SORTEMOSEVEJ 19
ALLEROED 3450
Denmark

Ship To: UNDP Office in Barbados
UN House, Marine Gardens
Christ Church 01
Barbados

Tel:
Fax:

Bill To: UNDP Office in Barbados
UN House, Marine Gardens
Christ Church 01
Barbados

Tel:
Fax:

Ln-Sch	Item	Description	Quantity	UOM	Due Date	Unit Price	Line Total
1-1	80161903S	Inception Report	1.00	EA	17/12/2020	6,750.00	6,750.00
2-1	80161903S	Feasibility Study	1.00	EA	17/12/2020	20,250.00	20,250.00
3-1	80161903S	Training Program	1.00	EA	17/12/2020	20,250.00	20,250.00
4-1	80161903S	Energy Performance Contract template prepared	1.00	EA	17/12/2020	20,250.00	20,250.00
Total PO Amount						USD	67,500.00

This order is subject to UN General Terms and Conditions available at WWW.UNDP.ORG, which can also be provided upon request.

IMPORTANT: All shipments, invoices and correspondence must show PURCHASE ORDER and PROJECT NUMBERS.

Please acknowledge receipt of this Purchase Order, acceptance of the Terms and Conditions, and delivery date by signing below.

Acknowledgement:

Vendor signature and date

This PO is subject to UNDP General terms and conditions.

Authorized Signature

This Purchase Order is Electronically Approved by Ugo BLANCO and does not require Signature.

Inception Report

Developing a financial mechanism for the Commonwealth of Dominica's renewable energy and energy efficiency project in the public sector through pilot installations

In support of Dominica's Low Carbon Development Path promoting energy efficient applications and solar photovoltaic technologies in streets, outdoor areas and public buildings in island communities nationwide

Project ID:

Modified: 10-03-2021 11:25

Revision:

Prepared by TKR

Verified by TKR

Approved by External

Prepared by Thom. Thorsch Krader
Consultant | Energy Finance Expert

04 September 2020

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FRI, FIDIC



1 Project summary

Country	Commonwealth of Dominica
Project Manager	Kimisha Thomas (Kimisha.thomas@undp.org), National Project Coordinator, UNDP
Objective	Develop financial mechanism for the renewable energy and energy efficiency project in the public sector through pilot installations
Deliverables, Outcomes & Outputs	<ol style="list-style-type: none"> 1 Following an initial meeting with key stakeholders¹ and desk review of relevant documents², develop an inception report and work plan to complete assigned tasks within the allotted time frame. 2 Conduct a feasibility study of financial mechanisms for scaling up renewable energy (RE) investments and based on the findings, provide recommendations for energy performance contract (EPC) and/or other viable arrangements. 3 Develop and deliver a training program to support EPC pilot participants with the “onboarding” process. Curriculum topics should be included in the training program design. 4 Preparation of an Energy Performance Contract template for energy service companies (ESCOs) using the findings from the feasibility study.
Additional scope	Analyze and address barriers to key drivers in the ramp-up of the financial mechanism for renewable energy technologies and energy efficiency, including applicable, innovative solutions in addition to EPCs.

¹ Key stakeholders may include the Ministry of Finance, Ministry of Public Works, Independent Regulatory Commission and Energy Service Companies

² Such as, but not limited to UNDP LCDP project document, institutional strategies, implementation frameworks, GCOD policies and applicable regulations

Support the Chief Technical Advisor (CTA) in different verticals and contexts:

- Public private partnerships (PPPs)
- Climate change trust fund (CCTF)
- Feedback on the Climate Change, Environment and Natural Resource Management bill

Duration The project runs from 29 July 2020 to 15 November 2020. Details in the accompanying Workplan.

Stakeholders Key stakeholders may include Ministry for Environment, Rural Modernization and Kalinago Upliftment, Ministry of Finance, Ministry of Public Works, Independent Regulatory Commission (IRC) and Energy Service Companies. In addition, the Ministry of Health and Environment and the Ministry of Trade, Energy and Employment.

Other prospective stakeholders include international finance institutions, development finance institutions and multilateral funds.

Total Budget US\$ 67,500

Key beneficiaries The direct beneficiaries will be the Government of the Commonwealth of Dominica's ministries that are engaged as stakeholders. Indirect beneficiaries will be government agencies, businesses and households who have increased access to more affordable clean energy and energy efficiency products and services.

2 Project background

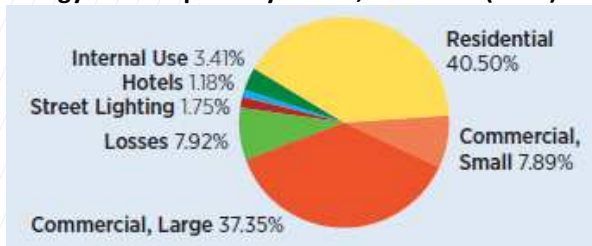
The Commonwealth of Dominica has an area of 754 km² and a population of 71,625 (in 2018). It is in the category of Small Island Developing States (SIDS) located in the Lesser Antilles. As noted by the Minister for Environment, Rural Modernization and Kalinago Upliftment, following the devastation caused by Hurricane Maria, Dominica is striving to become the world's first climate-resilient country.³ And while, for the country's population, this needs to be reflected in infrastructure investments (e.g. via loans from the Green Climate Fund), it also needs to be reflected in clean energy products that directly benefit the end-user context, e.g. solar PV.

Dominica has some of the world's highest electricity costs due to its dependence on imported fossil fuels for power generation. In 2015, electricity rates in Dominica were US\$ 0.39 per kilowatt-hour (kWh), higher than the Caribbean regional average of US\$ 0.33/kWh.⁴

Dominica Electricity tariffs 2015 (per kWh)	Residential	US\$ 0.384
	Commercial	US\$ 0.381-\$ 0.411
	Industrial	US\$ 0.375

Dominica's reliance on imported fossil fuels exposes it to myriad risks including price shocks that affect the cost of electricity and can cause interruptions to supply. In addition to traditional fuel sources, approximately 27.5% of electricity supply comes from the country's hydroelectric plants. The country has a single utility: Dominica Electricity Services Limited (DOMLEC). The Ministry of Trade, Energy and Employment provides oversight to the development of energy generation projects.

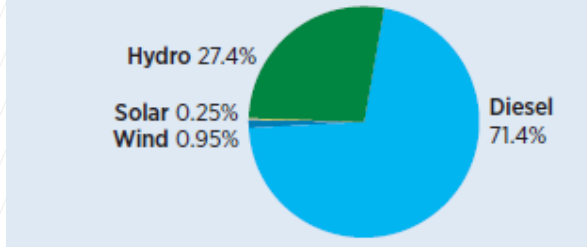
Energy Consumption by Sector, Dominica (2015)



Source: National Renewable Energy Laboratory, US Dept of Energy

³ National Geographic, 2019. (<https://www.nationalgeographic.com/science/2019/11/dominica-on-track-to-be-worlds-first-climate-resilient-nation/>)

⁴ National Renewable Energy Laboratory (NREL), US Department of Energy, Energy Transition Initiative, Islands, 2015

Energy Mix, Dominica (2015)

Source: National Renewable Energy Laboratory, US Dept of Energy

Attempts to implement and scale clean, low-carbon technologies have had relatively little traction due to a lack of incentives at DOMLEC and also the need for upfront investment that accompanies renewable energy and resource-efficient solutions, including their integration into the existing supply mix. There is also competition among technologies with a significant amount of focus on geothermal.

On the policy and engagement frontier, Dominica has enacted a number of green transition directives including the Low Carbon Climate Resilience Strategy, Draft National Sustainable Energy Plan, National Resilience Development Strategy and the multi-donor Sustainable and Renewable Energy Policy. The Low Carbon Development Project (LCDP) complements these strategies, with the central target of eliminating the barriers that impede the rollout of resource-efficient applications and energy (e.g. solar photovoltaic technologies) in streets, shared outdoor spaces and public buildings.

In addition, the LCDP is designed to deliver on core areas that emphasize:

- Improved knowledge, awareness and institutional capacity on Energy Efficient applications and Renewable Energy Technologies, i.e. solar PV through demonstrations of their deployment;
- The attending options for EE and RET financing, i.e. Energy Performance Contracting methodology and model; and
- Plans for scaled-up investments in energy efficiency products and renewable energy technologies for specific communities. This includes establishment of a Climate Change Trust Fund (CCTF) to finance the implementation of energy efficiency measures and renewable energy installations; and the requisite seed funding for the CCTF facility.

3 Inception phase

Key activities undertaken during the inception phase have included reviews of:

3.1 Institutional arrangements

- Review of mission with National Project Coordinator
- Assessment of project context within Dominica and with reference to the Eastern Caribbean economy with project team
- Engagement with Minister for Environment, Rural Modernisation and Kalinago Upliftment, UNDP cohorts and project team

3.2 Operational planning

- Review of assignment deliverables
 - Following an initial meeting with key stakeholders⁵ and desk review of relevant documents⁶, develop an **inception report and work plan** to complete assigned tasks within the allotted time frame.
 - Conduct a **feasibility study** of financial mechanisms for scaling up renewable energy (RE) investments and based on the findings, provide recommendations for energy performance contract (EPC) and/or other viable arrangements.
 - Develop and deliver a **training program** to support EPC pilot participants with the “onboarding” process. Curriculum topics should be included in the training program design.
 - Preparation of an **Energy Performance Contract template** for energy service companies (ESCOs) using the findings from the feasibility study
- Expectations for workplan
- Draft workplan
- Rationalization and alignment of workplan with Chief Technical Advisor’s workplan under the auspices of—and approval of—the National Project Coordinator

3.3 Initial review

Desk study – provide the necessary rationale to pursue an EPC for implementing EE applications and RE installations without drawing from public operating or capital expenditure budgets, and to find partners willing to share in the risks of RE and EE installations.

EPC Workshop – identify the viable decisionmakers and stakeholders and ensure they are engaged.

EPC Template – provide recommended implementation arrangements to map and expedite rollout of the EPC template for EE and RE installations.

Trust fund (support) – accelerate the establishment of the CCTF including assistance to define the utility of the funds for the purposes of EE products and RE technology diffusion into commercial and residential sectors. CCTF funds can be used to cover upfront developmental costs, and loan guarantees and partial loan finance. The energy finance expert consultancy needs to establish

⁵ Key stakeholders may include the Ministry of Finance, Ministry of Public Works, Independent Regulatory Commission (IRC) and Energy Service Companies

⁶ Such as, but not limited to UNDP LCDP project document, institutional strategies, implementation frameworks, GCOD policies and applicable regulations

sources of financing for the CCTF, for example from the Green Climate Fund, World Bank, Inter-American Development Bank, Caribbean Development Bank and potentially through commercial sources. In addition, this consultancy assignment will support the CTA in developing a roadmap for the CCTF.

Finance context – cost of installed solar PV in Dominica is US\$ 3.00-5.50 / watt with a battery storage system. Assuming that a 2.5 kW installation is required for each household, a US\$ 7,500 investment would be required which may be difficult to finance for a large number of households in Dominica.

3.4 Indicative finance-related barriers

Initial review of direct and indirect barriers to energy finance strengthening in Dominica includes:

- Lack of institutional capacity to drive the low-carbon agenda: no energy champions to promote climate-contributive development; and lack of knowledge of risk profiles for clean energy and climate projects
- Lack of institutional knowledge extends to green buildings and efficient lighting and background in financial risks, trade-offs and opportunities which lead to sub-optimal lending terms that feature high interest rates, short tenors, mismatched collateral, etc.
- And while Dominica has made modest progress in improving the availability and accessibility to financing for RE and EE, there remains a lack of awareness among lenders on the benefits and financial performance of RE/EE technologies.

There are a number of recommendations for addressing and removing finance-related barriers:

- Public-private partnerships
- Viable financing structure for e.g. energy performance contracts (to be expanded upon in the feasibility study that is part of the assignment):
 - Contributions from project
 - Coverage by ESCO
 - Seed finance from government
- Like much of the Caribbean region, Dominica has some basis for the ESCO model, including at least one operating energy service company.

3.5 Risks

Several potential, primary barriers to implementation related to this assignment have been identified. Accompanying resolutions have also been mapped.

Risk	Risk Category	Mitigating Actions
Lower fossil fuel prices reduce government urgency on RE and EE priorities	Low	<ul style="list-style-type: none"> - The Project maps financing elements for implementing Dominica's LCDP and CCTF creating an enabling framework for financing low carbon development - RE and EE have both exhibited declining costs and price stability trends - Fossil fuel pricing remains volatile which further reinforces a commitment to RE and EE
Tentative response from stakeholders to the Energy Performance Contracting information and training sequence	Low	The Project has direct support from the Ministry for Environment, Rural Modernisation and Kalinago Upliftment. Engagement (content, workshops, etc) with respect to RE and EE design, finance as well as the development of the CCTF will benefit from this support and is expected to eliminate any paucity, or slow, responsiveness to engagement.
Capitalizing CCTF	Moderate	The Project needs to develop the model for seed financing for the CCTF which will be used for catalyzing RE and EE project development. The potential to identify and unlock sources of finance and funding for the CCTF depends on the integrity of the Trust Fund model and its fit in the Dominica context. The CCTF can be modeled on other trust funds that have successfully been established (under similar circumstances to Dominica). The responsive structure of the CCTF to the EE and RE context will increase the likelihood of donors and funders (public and private) to commit capital to the CCTF.

3.6 Organisations

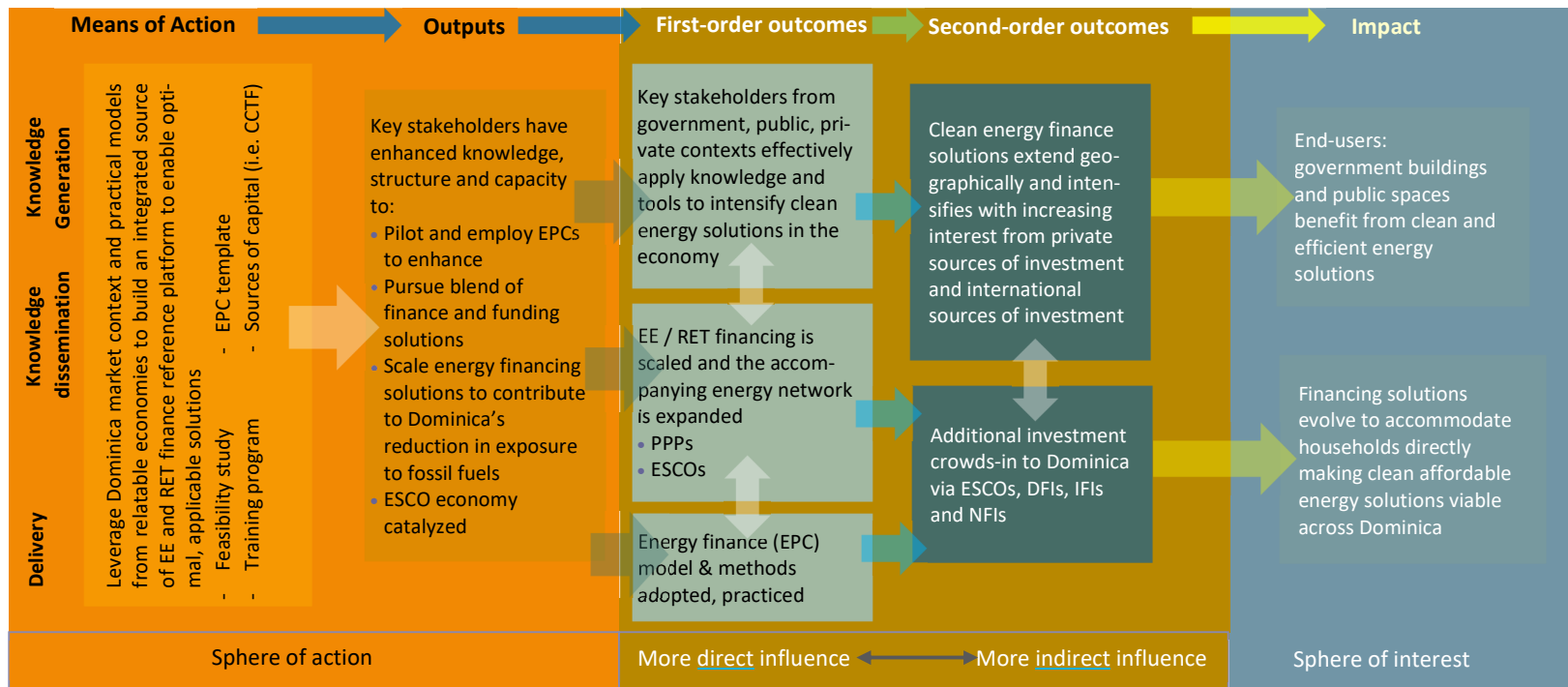
A number of organisations will be included in the network of this assignment both directly and indirectly. The assignment will seek to develop knowledge-value for all organisations that are engaged as stakeholders.

- DOMLEC—Dominica Electric Power Company (51% owned by Canadian firm; other shareholders Dominica social security)
- Ministry of Trade, Energy and Employment
- IRC—Independent Regulatory Commission
- Ministry for Environment, Rural Modernisation and Kalinago Upliftment
- Ministry of Finance and Investment
- Ministry of Public Works and Ports

- EMS Limited—a Dominica-based ESCO (energy efficiency and PV panels)
- Finance institutions (e.g. Caribbean Development Bank, Green Climate Fund, World Bank, Inter-American Development Bank,



4 Theory of Change





4.1 Theory of Change context

In the Inception Phase, a Theory of Change⁷ was developed in order to articulate the target, ambition and logical flow of the assignment's intended approach. This Theory of Change is predicated on coordinated action in the following ways:

Project level | The project team constitutes an entity for executing critical deliverables and eliminating mainline barriers such that energy efficiency products and practices and renewable energy technologies can be piloted, implemented, diffused and scaled. Within the project team, it is critical that information and knowledge integrate seamlessly in order for energy finance deliverables to align with energy-related technical and policy elements.

Institutional level | The energy finance assignment will develop solutions as defined by UNDP and the National Project Coordinator. Outputs will be curated to fit stakeholders within the evolving energy ecosystem in Dominica, e.g. Energy Performance Contracting for efficient products such as LEDs in public contexts and solar photovoltaic installations. In addition, they will reflect the policies and products, e.g. the country's Low Carbon Development Path and Climate Change Trust Fund.

Stakeholder level | This assignment aims to advise and guide stakeholders in their to clean energy by demonstrating, sharing and reinforcing content and knowledge of financing practices, financial products and sources of finance.

⁷ Theory of Change used here builds on a model from the ILO, a UN agency



Feasibility study of financial mechanisms for scaling up RE investments in Dominica

Provide recommendations for Energy Performance Contracting and/or other viable arrangements

17. MARTS 2021

Indhold/Contents

Project N°: Kimisha Thomas,
Project Manager UNDP Dominica
Document N°.:
Version 3
Revision

PM Thom Thorsch Krader
QA Jan Gellert (MSc
Engineering)
Project Point Thom Thorsch
Krader

1	Abbreviations	4
AP	Action plan	4
2	Overview	5
3	Introduction	5
3.1	Energy performance contracts	7
3.2	Key characteristics of energy performance contracting projects	7
3.3	Energy efficiency EPC	8
3.4	Solar PV EPC	8
4	The clean energy context in Dominica	9
4.1	Dominica's Nationally Determined Contributions (NDC)	11
4.2	Energy efficiency in the NDC	12
4.3	Solar PV and other renewables in the NDC	12
5	Rationale for pursuing an EPC for implementing EE applications and RE installations in public areas (without drawing from public operating or capital expenditure budgets)	13
5.1	Energy performance contract benefits	13
5.2	Energy performance contract finance	14
5.3	Energy performance contract challenges	15
5.3.1	Types of EPC challenges	15
5.4	Barrier analysis	15
5.5	SWOT analysis	16
6	Energy performance contract delivery structures	17
7	Preliminary action	24
8	Governance structure for the EPC concept (Dominica)	25
8.1	Roles and responsibilities of relevant government departments and agencies to provide oversight and manage the financial mechanism	25
9	Procurement recommendations	26
9.1	Procurement procedure	26
9.1.1	Public service contract	27
9.1.2	Publication of a contract notice	27
9.2	ESCO expression of interest	29

9.3	Contents of tenders	29
9.4	Evaluation of tenders	30
9.4.1	Evaluation criteria	31
9.5	How an ESCO (energy service company) can be formally engaged	31
9.5.1	The EPC Process	32
9.6	How an ESCO will complete detailed audits and assessments of public buildings (where interventions are conducted)	34
9.7	A system that will be used for measuring and monitoring energy saved, to be used as a basis for remuneration for ESCOs engaged, taking into account existing systems which may be adopted e.g. RETScreen as applicable	35
9.7.1	Measurement and verification	36
9.7.2	Non-compliance	37
9.7.3	Final balance	37
9.7.4	RETScreen	37
10	Develop resources such as template agreements: Contracts	37
11	Indicators, plans and procedures for testing, monitoring and managing the performance and impact of the pilot financing mechanism with a view to its potential to scale up investments in the public sector	38
11.1	M&V and Impact	39
12	Project recommendations	42
<hr/>		
	Appendix 1 : Contract Template	45
<hr/>		

1 Abbreviations

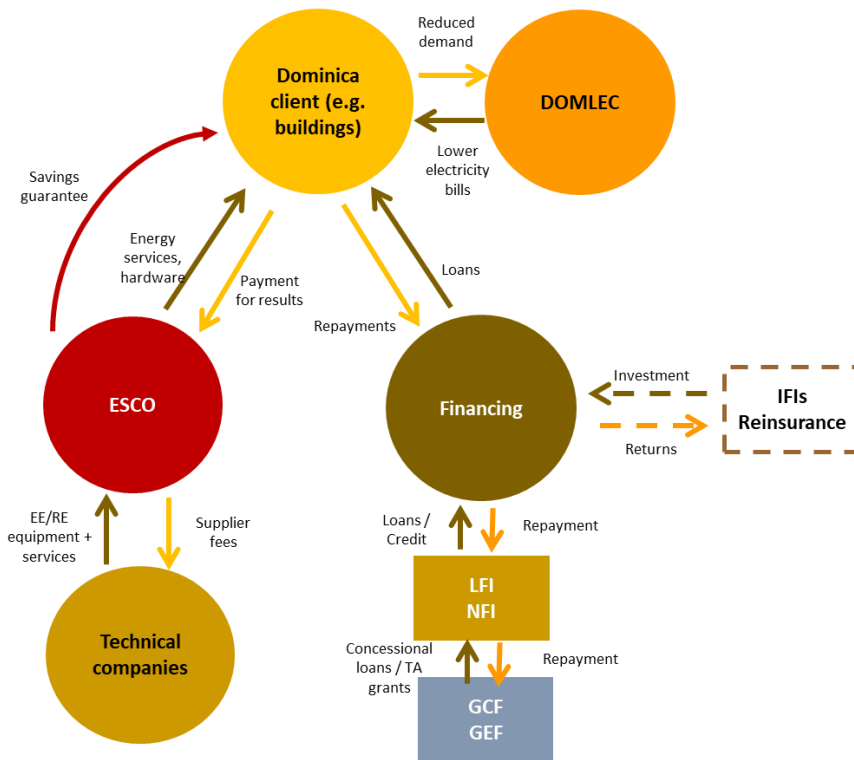
AP	Action plan
DOMLEC	Dominican Electricity Services Ltd.
ESCO	Energy Service Company
EPC	Energy Performance Contract
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
LFI	Local Finance Institution
IFI	International Finance Institution
NFI	National Finance Institution
TA	Technical Assistance

2 Overview

This feasibility study, prepared for UNDP Dominica, analyses energy performance contracting and related financing solutions for the Commonwealth of Dominica. The analysis considers energy efficiency and renewable energy solutions for the public sector including existing and new buildings and technologies, particularly solar photovoltaic installations. In addition to key findings, the report includes comparative assessments and guidelines for a methodology and recommendations.

The report shows that a shared savings energy performance contract model appears to be an especially good fit for the Dominica context with strong potential for attracting financing and maximising impact. The contents are intended to foster activity in energy performance contracting in the Commonwealth and to catalyse baseline financing, including from international finance institutions such as the Inter-American Development Bank, Caribbean Development Bank, the Green Climate Fund, the Global Environment Facility and domestic, regional and international commercial sources.

Figure: Dominica energy performance contracting network (recommended)¹



3 Introduction

Clean energy and energy efficiency projects carry the inherent risk that the benefits they are intended to generate do not materialize as planned. Energy performance contracts (EPCs) address that uncertainty by guaranteeing that measurable energy savings (or generation) will be achieved; and if not, the costs will be assumed by a third party. In effect, EPCs transfer the energy project performance

¹ NIRAS, adapted from UNDP Environmental Finance Services and EU Towards Transparent Energy Performance Contracting Markets (Transparence), 2015

risk to service providers, contractors and suppliers. An important principle of energy performance contracting is that the investments in more efficient or cleaner energy technologies are paid for over time and factored by the value of energy savings that are attained. Further, such savings (or revenue generation in the case of rooftop solar installations) will cover the upfront costs of clean energy investments. Capturing upfront costs is critical because typically these are barriers to making green improvements.

Under an energy performance contract, a service provider such as an energy service company (ESCO) implements a project to deliver energy efficiency, or renewable energy, solutions and uses the stream of income from the cost savings, or the renewable energy produced (monetized through savings versus diesel or through feed-in tariffs), to repay the costs of the project. Essentially, the ESCO will not receive its payment unless the project delivers the energy results as contracted.

Dominica is targeting the implementation of energy efficiency mechanisms in government and commercial buildings. It also has the ambition to introduce or enhance renewable energy into its supply mix, for instance, through the installation of solar PV panels on rooftops of government and commercial buildings or facilities. The Commonwealth's Draft National Energy Policy references energy efficiency capacity measures include public education programs; encouraging consumers to use energy-efficient appliances; encouraging appliance suppliers to import reliable and energy-efficient appliances; requiring energy labelling on appliances; establishing building efficiency standards; encouraging energy audits (for hotels and households); encouraging equipment retrofits in homes and commercial buildings; developing an energy-efficiency equipment-retrofit plan for public buildings and streetlights.²

Dominica also has a rich amount of clean energy resources with the greatest commercial potential in the Lesser Antilles. These include solar PV, hydro, geothermal and wind. Any power generated from these technologies—on a commercial or utility scale—could be exported regionally

Key elements:

- An energy service company undertakes the energy efficiency or renewable energy development project
- A contract between the service provider and the property owner needs to be structured based on outcomes so that compensation is based on demonstrated performance
- There is a viable method for measuring and verifying energy generation (e.g. solar photovoltaic) or energy savings

The approach is based on the transfer of technical risks from the client to the ESCO based on performance guarantees given by the ESCO. Under an energy performance contract, the service provider's remuneration is based on demonstrated performance; a measure of performance is the level of energy savings or energy service. An EPC is a means to deliver infrastructure improvements to facilities that lack energy engineering skills, manpower or management time, capital funding, understanding of risk, or technology information. Cash-poor, yet creditworthy customers are therefore good potential clients for an EPC.³

² Swedish Energy Agency, Best practice in utilizing energy and climate policies to develop NDC mitigation targets in the Caribbean, 2018

³ Energy Performance Contracting, Joint Research Centre, European Commission, updated Sept 2020

The main emphasis is on implementing EE investments aimed at reducing the energy consumption in physical terms as opposed to simply trying to decrease the energy bill in financial terms (e.g. through renegotiating the energy supply conditions). The integration of Renewable Energy Sources often features in such investments; and savings-based EE services are delivered. Performance risks are transferred to the private sector partner through adequate financing mechanisms that ensure a guaranteed level of energy savings.

3.1 Energy performance contracts

Most agreements between customers and ESCOs are underpinned by energy performance contracts. The EPC commits the ESCO to installing energy savings (or renewable energy) equipment; provides a performance guarantee; and establishes the terms for payments to the ESCO. These payments are intended to be less than the financial savings realized by the project. The two most common types of EPCs are referred to as a (1) shared savings or (2) guaranteed savings model.⁴

Under an EPC, the owner of a facility engages a contractor to design and deliver energy efficiency measures. EPCs usually require the contractor to perform all necessary works to implement the identified efficiency measures. Such works may involve investment, such as a capital expenditure, in construction or equipment, the provision of necessary funding and the delivery of related services. EPCs can contain elements of rental, service, leasing, purchase and loan arrangements, which makes them inherently complex.⁵

In the context of an EPC, the contractor (ESCO) generally finances and undertakes an initial capital investment in order to improve the energy efficiency of an existing facility. Energy efficiency measures can concern new and/or upgraded equipment as well as other improvements. The capital investment undertaken can be in removable assets and/or nonremovable assets. The remuneration of the EPC-contractor is linked to the energy savings achieved through the upgraded equipment and structures and through the other measures carried out.⁶

The capital expenditure undertaken by the EPC contractor is repaid from the revenues it realizes over the duration of the EPC contract. Furthermore, the contractor (ESCO) decides which assets are to be installed and when they should be replaced or changed during the term of the contract. In the case where the necessary savings were not achieved as contracted, the service provider (e.g. ESCO) is on the hook to cover loss. After the contract ends, all benefits related to the cost savings accrue to the client (in Dominica, this would be the government or commercial property owner).⁷

3.2 Key characteristics of energy performance contracting projects⁸

- Turnkey service: The EPC provider delivers all the services required to design and implement a comprehensive energy saving project at the customer's facility, from initial energy audit to measurement and verification of savings.

⁴ International Energy Agency (IEA), Energy service companies (ESCOs), 2018

⁵ Winther, T., et al. Journal of Energy Efficiency. Energy performance contracting (EPC): a suitable mechanism for achieving energy savings in housing cooperatives? Results from a Norwegian pilot project

⁶ Sustainable Energy Authority of Ireland, A Guide to Energy Performance Contracts and Guarantees

⁷ The Statistical Treatment of Energy Performance Contracts, European Commission, Dec 2019

⁸ EU, Energy Performance Contracting Manual, Transparence, 2013

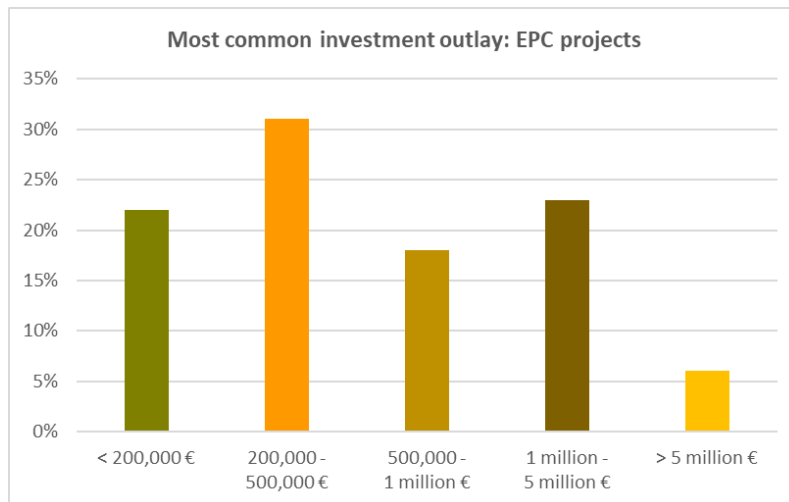
- No need for up-front capital: Energy efficiency investments are repaid directly from energy savings and related financial savings, so there is no need for upfront capital from the customer.
- Risks for customers minimised: The EPC provider assumes the contractually agreed performance risks of the project.
- Savings guaranteed: The EPC provider guarantees the achievement of the contractually agreed level of savings and is obliged to compensate savings shortfalls.
- Support in securing financing: The capital to finance the EPC project can either be supplied out of the client's own funds or by the EPC provider or a third party.
- Financing by the EPC provider is an option, not a necessary part of the EPC project.

3.3 Energy efficiency EPC

Energy performance contracting is most common as a market solution for energy efficiency in buildings. In addition to delivering energy savings, EPCs have inherent economic benefits such as fostering public private partnerships, transferring project risks to the private sector, use of innovative financing solutions.

Note that energy efficiency projects for buildings or facilities are not necessarily 'big ticket' projects as compared to large-scale renewable energy installations like wind, hydro or concentrating solar arrays. In fact, the most common size of energy efficiency projects (lighting, insulation, window upgrades) in Europe is between €200,000 to €500,000.

Figure: EPC project sizes (in Euros)⁹



3.4 Solar PV EPC

While performance contracts have not traditionally incorporated renewable energy systems, contracts have increasingly incorporated photovoltaic (PV) systems as part of an overall building energy service strategy.¹⁰

For the Dominica context, there are several options for financing a photovoltaic system. These include (1) purchasing, owning and operating the system where the Dominica client would be responsible for

⁹ NIRAS, via EU Towards Transparent Energy Performance Contracting Markets (Transparens), 2015

¹⁰ Rickerson, Integrating PV into Performance Contracts: Barriers and Trends, 2004

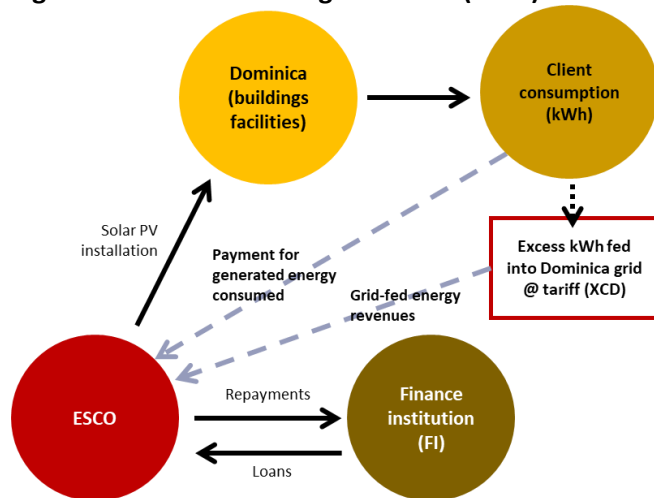
all elements of operation and takes on all the risk, while reaping all benefits; (2) leasing the system where the Dominica client is responsible for system performance while paying a monthly fee to the owner; and (3) the Dominica client contracts with an energy service company. The ESCO develops and owns the system and is responsible for its design, installation, operation and performance—the client buys the generated energy from the ESCO under contracted terms and timelines.

In the third option above, an ESCO owns the PV system and is responsible for its acquisition, installation, operation and maintenance. The system is installed with the objective to supply sufficient generated energy to the client, which pays the ESCO for each generated unit (measured in kWh). If the generated energy exceeds client demand, it can be sold into the power grid, assuming such connection is in place.¹¹

Advantages of the photovoltaic ESCO model to the Dominica client:

- No (or low) initial investment.
- Low overhead since ESCO is responsible for the system's operation and maintenance.
- Risk management transferred to the ESCO.
- Client only pays for the generated energy.
- An additional advantage is that the expertise and scale of the ESCO can equate to better, more efficient management of the PV system than if the client managed it directly.

Figure: Guaranteed Savings Contract (solar)¹²



4 The clean energy context in Dominica

Like much of the Caribbean Community, Dominica is heavily reliant on imported fossil fuels, especially for use in transportation. The Commonwealth has an installed capacity of 26.74 MW (2017) consisting of 6.64MW of hydropower and 20.1 MW of diesel-powered units (more than 70% of total). The annual

¹¹ ESCO Business Model: For the creation of photovoltaic (PV) energy for self-consumption and injection of the excess energy into the grid in accordance with Chilean law, GIZ, 2016

¹² ESCO Business Model: For the creation of photovoltaic (PV) energy for self-consumption and injection of the excess energy into the grid in accordance with Chilean law, GIZ, 2016

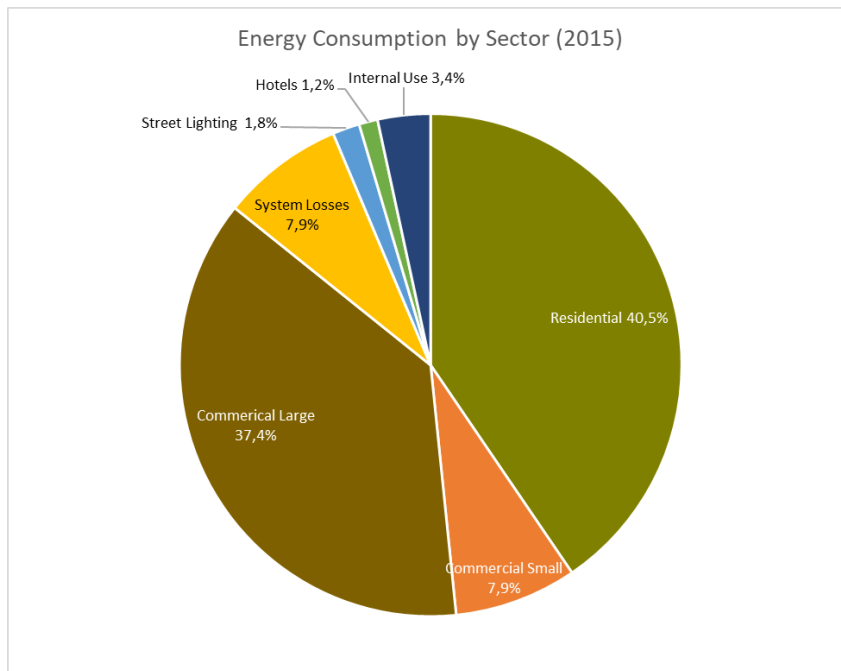
cost of its imported diesel has been estimated at EC\$116.65 million (US\$43.39 million)—nearly 12% of GDP.¹³

Its high electricity costs (the highest in the Caribbean) constitute a real obstacle for numerous sectors, with the direct and indirect consequence of curtailing growth and parallel activities linked to the country's sustainable development.¹⁴ The 2015 electricity rates in Dominica were \$0.39 per kilowatt-hour (kWh) that is higher for commercial customers, higher than the Caribbean regional average of US\$0.33/kWh. Grenada (\$0.34/kWh and \$0.44/kWh for commercial), St Lucia (\$0.33/kWh), St Vincent US\$0.26/ kWh.

Like many island nations, Dominica is reliant on imported fossil fuels, leaving it vulnerable to global oil price fluctuations that directly impact the cost of electricity.

However, Dominica is not as reliant on imported fossil fuels as other islands in the region with approximately 28% of its installed capacity covered by renewables (mainly hydropower). And in addition to hydropower, the country possesses significant potential in geothermal, solar photovoltaic and wind.

Figure: Energy Consumption in Dominica¹⁵



Dominica has implemented several energy efficiency and renewable energy projects to date, including:¹⁶

¹³ World Bank, 2014

¹⁴ Ministry of Environment, Rural Modernisation and Kalinago Upliftment, Third National Communication to the United Nations Framework Convention on Climate Change, 2020

¹⁵ National Renewable Energy Lab, Energy Transition Initiative: Islands, 2015

¹⁶ National Renewable Energy Lab, Energy Transition Initiative: Islands, 2015

- 2007: A program sponsored by Cuba replaced 280,000 incandescent light bulbs with compact fluorescent bulbs in Dominican households.
- 2008: Rosalie Bay Resort installed a 225-kilowatt (kW) wind turbine that produces 596 megawatt-hours (MWh) annually. This was the first renewable energy project to be interconnected to the DOMLEC grid. An additional 1-kW turbine is in operation, but is not connected to the grid.
- 2009: DOMLEC installed 26,000 smart meters as part of its Automated Meter Infrastructure (AMI) project.
- 2013 and 2014: A government-led initiative installed LED streetlights.

Dominica has high solar potential with a solar resource of 5.6 kWh per square meter per day and also has approximately 30 MW of wind power potential, some of which is under development. After reviewing nine wind studies, DOMLEC concluded that Crompton Point, located in Saint Andrew, has a potential of 10 MW of wind power and that an additional 20 MW of wind potential is available elsewhere in the country.

Geothermal potential in Dominica is also robust, with estimates ranging from 300 MW to 1,390 MW. The country is expected to develop more than 100 MW of geothermal power and has secured funding for early-stage investment through the World Bank's Geothermal Development Plan. The island may be able to secure additional international and private sector funding for these projects. Additionally, the staff of Dominica's Ministry of Public Works, Energy, and Ports participated in an intensive geothermal training program administered by the Energy and Climate Partnership of the Americas, whose goal is to train technicians to build capacity in geothermal development.

4.1 Dominica's Nationally Determined Contributions (NDC)

Dominica's emission-reduction target is considered detailed and ambitious compared with other Caribbean Community countries because its NDC is expressed as a reduction compared to a base year (2014) emissions (as opposed to business-as-usual emissions for 2030).¹⁷ Dominica's NDC indicates that it was developed based on several national assessments and strategies, including its Low Carbon Climate Resilient Development Strategy.

Setting the emissions reduction target compared to 2014 emissions means that any growth in energy consumption between 2014 and 2030 will essentially be GHG emissions-free (i.e. entirely renewable). The overall target is broken down in detail, attributing specific absolute reductions (in gigagrams) resulting from ten identified measures, including solar PV and energy efficiency. Further, each of the measures has been assigned an individual timeline for implementation.

The priority of the Government of Dominica is to implement the comprehensive Strategic Program for Climate Resilience contained in the Dominica Low Carbon Climate Resilient Strategy (2012). Taking into account its common but differentiated responsibility and limited capabilities to address climate change, Dominica's NDC committed to reduce gross greenhouse gas (GHG) emissions below 2014 levels (164.5 gigagrams) by 39.2% by 2025; and 44.7% by 2030.

By 2030, total emission reductions per sector (according to the NDC) are:

- Energy industries – 98.6% (principally from harnessing of geothermal resources);
- Transport – 16.9%;

¹⁷ Swedish Energy Agency, Best practice in utilizing energy and climate policies to develop NDC mitigation targets in the Caribbean, 2018

- Manufacturing and construction – 8.8%;
- Commercial/institutional, residential, agriculture, forestry, fishing – 8.1%;
- Solid waste – 78.6%.

4.2 Energy efficiency in the NDC

With respect to energy efficiency, the actions targeted in Dominica's NDC are:

- An Energy Efficiency programme that will include the Manufacturing, Commercial and Institutional sectors. Market-based mechanisms are to be introduced to enhance the uptake of these programmes. The EE programme for Dominica will be designed and implemented to address the specific issues of this country and shall focus on retrofitting of energy efficient lighting, air-conditioning, appliances and a vigorous education and awareness drive.

Estimated installation costs and factors of Dominica's energy efficiency strategy, defined in its NDC, were based on audits of similar experiences in the Latin America region. Parameters include:

- Program Timing: 2016-2025
 - Forecasted Emissions Reduction: 5.2 Gigagrams (Gg)
 - Cost Estimate: US\$2.3 million
- Dominica's NDC also references a streetlighting project

Replace Streetlights in Portsmouth with Off-grid Light Emitting Diode (LED) Fixtures:

- 368,100W HPS streetlights in Portsmouth
- project targets the replacement off-grid LED streetlights
- Program Timing: 2016-2025
- Forecasted Emission Reductions: 0.36 Gg
- Installation Cost Estimate: US\$1.2 million

4.3 Solar PV and other renewables in the NDC

- Solar photovoltaic conversion program for the hotel and hospitality sector. The solar PV programme will comprise the installation of solar PV panels and related equipment on the roofs (and in some cases, the grounds) of buildings in this sector.
 - Program Timing: 2016-2025
 - Forecasted Emissions Reductions: 0.24 Gg
 - Capital Cost Estimate: US\$1 million
- Solar PV conversion program for Commercial, Institutional and Manufacturing Facilities. This program will include: schools, universities, hospitals, commercial buildings, manufacturing plants, government buildings, municipal facilities, etc. Estimates have been made to derive anticipated GHG reductions based on lessons learned from similar conversions undertaken in the region.
 - Program Timing: 2017-2025
 - Forecasted Emission Reductions: 0.86Gg
 - Capital Cost Estimate: US\$2.7 million
- Another project identified in the NDC is the Off-Grid Hybrid Wind, Solar, Biodiesel Generator Back-up in Off-grid Mini-Grid Configuration for South-East and East Coast of Dominica (three

separate projects). In order to increase power system reliability and reduce energy costs for the residents in these locations, off-grid mini-grids, powered with hybrid wind and solar PV power plants (and hydro if available), with bio-diesel generator back-up, are proposed as a possible viable alternative. Three separate mini-grids, estimated at 500kW each, comprising 500kW of wind energy and 200kW of PV, with bio-diesel generator back-up for each, are proposed.

- Program Timing: 2017-2025;
- Forecasted Emission Reductions: 2.92Gg;
- Capital Cost Estimate: US\$9 million

5 Rationale for pursuing an EPC for implementing EE applications and RE installations in public areas (without drawing from public operating or capital expenditure budgets)¹⁸

As countries' energy markets shift away from subsidized clean energy solutions, governments, municipalities and property owners need to identify new models to underwrite their energy transitions. Energy Performance Contracting (EPC) is such a mechanism, offering an integrated solution to the final user, including planning, financing, installation and monitoring of RES systems, helping to overcome barriers such as access to financing for project developers, lack of certification schemes, insufficient public support.

Energy performance contracts are used in the context of a public-private partnership where a fee-for-service model is applied. The Government of the Commonwealth of Dominica (through the Ministry of Environment, Rural Modernisation and Kalinago Upliftment and potentially other agencies such as the Ministry of Housing and Urban Development and the Ministry of Finance and Investment) defines and provides incentives to building owners to identify and install renewable energy systems. However, the responsibility of installation and maintenance is allocated to service providers from the private sector. EPCs create the opportunity to the end-user to install energy efficiency and renewable energy measures in their facilities without having to structure and make an upfront investment in hardware, technology and equipment.

There are myriad advantages for end-users: energy saving tasks are outsourced to external service providers, who are remunerated based on their performance; long-term, guaranteed cost savings with zero or minimal investment are provided; technical risks and responsibilities are covered by the energy services provider; the planning process is coordinated by the services provider; energy consumption is reduced; refurbishment of buildings and facilities; asset value of the premises is increased; the end-user's climate impact is reduced in line with mandates, etc.

5.1 Energy performance contract benefits

Among the fundamental advantages of EPCs is that they enable the engagement of clean energy expertise for government agencies, municipalities, commercial building owners, etc. that are otherwise not sufficiently aware of potential energy efficiency (EE) or renewable energy (RE) opportunities.

"Therefore, a partnership between public building owners or managers and a qualified company with the necessary expertise (and possibly a large range of additional services such as maintenance, finance and/or guarantees) is an attractive solution."¹⁹

¹⁸ Frangou, M., et al. Journal of Renewable Energy. Renewable energy performance contracting in the tertiary sector, 2018

¹⁹ European Investment Bank, Guidance on Energy Efficiency in Public Buildings, 2013

EPC benefits include:²⁰

- avoidance of upfront costs through third-party financing or on-bill repayment schemes;
- payments based on results, allowing the transfer of technical risk from Dominica's public partners to energy service providers;
- Dominica's energy security is strengthened, through the replacement of fossil-fuel energy and reduction in demand;
- economic efficiency, through the installation of more energy efficient systems and controls, reducing utility bill costs and providing a funding source for building renewal projects;
- economic development through increased building and renovation activity;
- environmental stewardship due to significant reductions in energy use;
- improvements of indoor air quality which may not otherwise have been possible due to funding constraints;
- access to life cycle energy services, including marketing, design capability, installation, financing, maintenance and measurement of energy management technologies;
- access to shared-savings contracts, where clients effectively pay for energy services from a portion of the actual energy bill savings.

5.2 Energy performance contract finance

A standard EPC engagement provides a comprehensive set of energy efficiency, renewable energy and distributed generation measures. Service offerings include an energy audits, the installation of solutions that fit the needs of a select facility and long-term monitoring to verify project savings.

Clean energy projects depend on significant upfront investment and face a long payback period through energy bill savings. Municipalities and governments do, however, have access to an array of funding solutions offered through banks and other third-party financial institutions.²¹

- Tax-exempt lease-purchase (TELP) agreement – combines energy savings and the cost of the hardware lease payments into alignment over the life of the EPC contract. Can be defined as an operating or capital expense which has implications for whether it is claimed as debt.
- Capital lease – energy equipment acquisition through instalment payments with little or no upfront capital required. Here, the capital equipment is owned by the financing organisation and leased to the government/client. At contract termination, ownership transfers to the government/client.
- Revolving loan pool – by bundling projects over multiple sites, these pools offer lower interest rates than for a single project site.
- Power purchase agreements – install energy efficiency or onsite renewable energy systems without investment upfront. The energy efficiency or renewable energy assets are legally owned by a separate entity. In another example, a third party could install a solar photovoltaic system on a government or commercial property in Dominica and agree to buy the resulting energy at a set price for a specific term (e.g. 15–20 years).

²⁰ European Investment Bank, Guidance on Energy Efficiency in Public Buildings, 2013

²¹ J.P. Morgan, Energy Performance Contract, Financing as a Strategy, 2013

5.3 Energy performance contract challenges²²

While there are unmistakable benefits from energy performance contracts, clients and energy service providers or companies (ESCOs) face challenges in undertaking EPC projects. This is especially the case on the client side. The complexity of the EPC concept and the baseline calculations that are required are seen as the biggest challenges in the process. ESCOs are obviously more familiar with the concept of EPCs than clients but encounter challenges as well (at different points in the transaction curve).

5.3.1 Types of EPC challenges

Technical challenge: Public building owners or users often lack the technical background and expertise to understand EE methods and technologies for reducing energy consumption and/or replacing the consumption of fossil fuels with renewable energy sources. The first challenge is to ensure that public building managers are conscious that there is a gap between the level of energy consumption of the facility they are administering and the level which could be achieved if a specific energy conservation effort were to be employed and its financial value.

This lack of awareness can usually be explained by the absence of methods for monitoring energy consumption and physical energy parameter regulations. A further technical challenge is to demonstrate that there are proven technologies, methods and services that can be used to substantially reduce energy consumption or substitute the energy consumed with other forms that could be less expensive and/or less polluting.

ESCOs, when implementing EPCs, will install a measurement system with a twofold objective: it will help the energy manager of the building to reduce energy consumption and it will create the measurement and verification (“M&V”) framework that the ESCO needs to estimate the level of savings achieved.

Economic challenge: Demonstrating the cost effectiveness of EE projects can be problematic. Because of fluctuating energy prices, there may be no incentive to save when budgets are allocated on an annual basis—it may be difficult to convince managers to undertake projects which might become uneconomic when energy prices decline. And if operating costs are matched by the government’s operating budget, public authorities may have little incentive to reduce building or property costs. Therefore, guarantees regarding the profitability of energy investments are key, from a technical (physical savings) and economic (financial savings) standpoint.

Finance challenge: Public agencies can encounter difficulties in raising finance for energy investments. For instances, energy efficiency investments can sometimes be overlooked. Additionally, the capacity of public entities to access forms of financing, such as debt, can be limited, especially for smaller economies and smaller projects.

5.4 Barrier analysis

Energy performance contracts can be effectively used to accelerate the implementation of energy efficiency (and renewable energy) solutions. There are several significant barriers that could hamper the development of these types of energy access projects, including:

²² European Investment Bank, Guidance on Energy Efficiency in Public Buildings, 2013

Barrier	Description	Strategy
Lack of trust by investors and financiers in the returns of projects (energy savings or energy generation)	Energy performance contracts include assurance clauses or a guarantee . If the level of energy savings is not met, then the service provider (ESCO) reimburses the difference to the client or investor, using pre-determined utility rate calculations or contracted amounts. ²³	Establish viable performance criteria in the contract. And institute vigorous performance measurement.
Lack of information i.e. insufficient information on the components (for EE or RE) and a lack of independent performance information on service providers and their projects.	Monitoring and verification information is a key component in energy performance contracts. Information on service provider experience can be solicited in the tender stage.	Intervention begins with a baseline measuring energy that would have been used if an energy performance contract hadn't implemented. <ul style="list-style-type: none"> • This is generally informed by detailed analyses of historical trends. • Then it's compared with the amount of energy that has actually been used.
Low energy prices	If Dominica's energy prices are low (i.e. from diesel or hydro sources) then energy savings become less of a priority. However, this has less of an impact on solar PV investments.	The commitment to clean energy in Dominica is a climate priority – supported by the Commonwealth's nationally determined contributions (NDC) and its low-carbon development strategy.
Access to finance ²⁴	Local financial institutions may not have necessary technical background and capacities to properly assess an EPC project. And local ESCOs may not have sufficient credit-worthiness.	Finance solutions may come from international sources e.g. international finance institutions such as the Green Climate Fund, IADB or Caribbean Development Bank. And foreign ESCOs may be the EPC provider.

5.5 SWOT analysis

The business case for energy performance contracting in Dominica is assessed through the review of its strengths, weaknesses, opportunities and threats—conventionally known as a SWOT analysis. A SWOT provides a snapshot of market conditions in Dominica with respect to EPC uptake, taking into account internal factors such as resources and external factors such as trends. The key elements in Dominica include the need for supportive government policy, an engaged investment landscape and the availability of technical service providers, locally and regionally.

Figure: SWOT for Dominica

²³ EURACTIV, *Lack of trust hampers energy efficiency services industry*, 2020

²⁴ QualitEE (EU Horizon 2020), *Country Report on the Energy Efficiency Services Market and Quality: Italy*, 2018

<p style="text-align: center;">Strengths</p> <ul style="list-style-type: none"> • Dominica's clean energy commitment • Low presence of clean energy (market availability) • EPC improves building performance and market value • Minimal own investment • CO₂ emissions reduction • Investment in clean tech • Risk transfer to private sector (technical, financial) 	<p style="text-align: center;">Weaknesses</p> <ul style="list-style-type: none"> • Complexity of EPC process (tendering, procurement, contracting, M&V) • Transaction costs of EPC • Duration of contract period (no flexibility) • Lack of ESCOs and service providers in Eastern Caribbean • Duration of payback period may not align with short-term expectations
<p style="text-align: center;">Opportunities</p> <ul style="list-style-type: none"> • Increased energy efficiency in buildings • Attractive to external investors • Project funding from GCF, GEF, IFIs • A counter to volatile fossil fuel prices • Emissions targets (Dominica's NDC) • Energy and cost savings • High potential in public properties • Lower maintenance costs of buildings • Public private partnerships 	<p style="text-align: center;">Threats</p> <ul style="list-style-type: none"> • Lack of information and knowledge about energy performance in buildings • Complexity of EPC process • Doesn't fit short-term planning • Lack of best practice examples in Caribbean Community • Lack of awareness about energy savings • Enabling environment needs to come online (e.g. Climate Change Trust Fund and clean energy expertise in government)

6 Energy performance contract delivery structures

There are several models of energy performance contracting which reflect different levels of responsibility, risk and the amount of capital required.²⁵ The main EPC delivery options for Dominica to consider are:

I Guaranteed Energy Savings Contracts

In a performance-based, guaranteed energy savings contract, an entity such as an Energy Service Company (ESCO) guarantees a specific reduction in energy use if required operations and maintenance procedures are adapted and operating schedules are adhered to, not necessarily tied to cost savings as utility rates and building operations may change over a defined length of time. If the guarantee is not met due to the failure of equipment, hardware and software specified by the responsible ESCO, then the ESCO pays the owner the difference based on agreed-upon contractual utility rates—for the annual performance period.

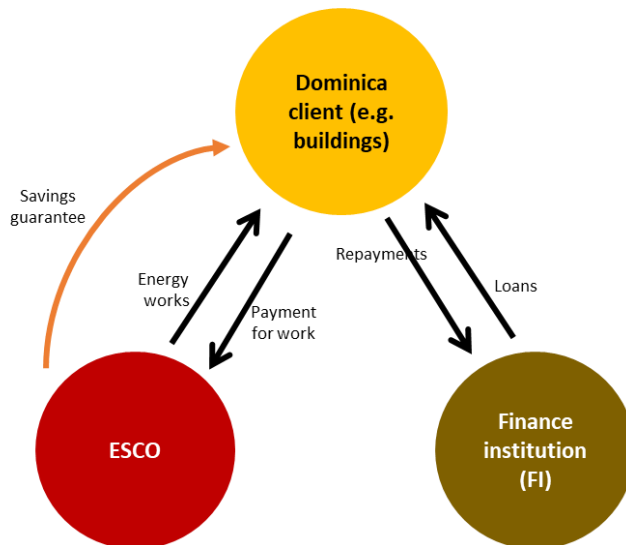
How it works:²⁶

²⁵ Government of Hawaii, Pros and Cons of Guaranteed vs. Shared energy savings, 2013 (<https://energy.hawaii.gov/wp-content/uploads/2012/06/Pros-and-Cons-of-guaranteed-vs.-shared-energy-savings-2013.pdf>)

²⁶ Adapted by NIRAS from: A Guide to Energy Performance Contracts and Guarantees, SEAI

- a The customer (e.g. a Dominica Government or commercial building owner) contracts an ESCO to implement the work; and the ESCO guarantees the energy savings (or generated energy, in the case of solar PV).
- b ESCO assumes performance risk through its savings guarantee.
- c Customer may pay for certain installations while withholding a portion of payables until savings have been verified.
- d Customer may also pay an ongoing fee to ESCO to verify savings annually (or for equipment maintenance); if this is stipulated in the contract.
- e If the savings $<$ than what was contracted, the ESCO pays the customer the difference between what was achieved and what was guaranteed.
The savings are valued on a fixed energy price agreed at the contracting outset.
- f Risk: A guaranteed energy savings contract means the ESCO assumes the performance risk and the customer takes the energy price risk. The financing party (finance institution, bank or public investment fund (i.e. the CCTF)) assumes the credit risk.

Figure: Guaranteed Savings Contract²⁷



II Shared Savings Contracts

Under the shared savings contract model, an ESCO provides financing as well as project development and implementation costs. The ESCO also defines a payment structure where its compensation is a share of the utility cost savings, based on an agreed percentage split. The ESCO receives the largest share in the beginning stages of the project due to its upfront investment. However, the ESCO share may decrease over time depending on several factors including the terms of the agreement and changes in the utility rates which occur during the

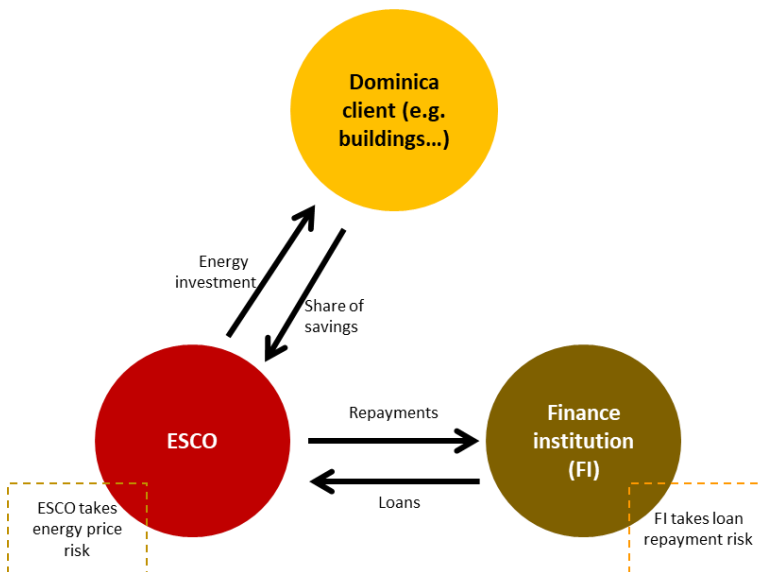
²⁷ Adapted by NIRAS from: A Guide to Energy Performance Contracts and Guarantees, SEAI

project period. The central advantage of this model is that sharing savings incentivizes the client to—in the case of improved efficiency contracts—minimize energy use.

How it works:²⁸

- a ESCO and project owner agree upon the targeted (guaranteed) consumption savings.
- b The two parties also agree upon an estimated increase in future utility costs over the term of the contract.
- c ESCO finances directly or gets financing to purchase hardware (e.g. efficiency upgrades or, in the instance of solar PV, modules, batteries, inverters, etc.).
- d Savings from improved performance are used by ESCO to repay loan or its debt for financing the project.
- e The monetary value is the measured consumption savings times actual utility rates (using utility bill reconstruction). This may revert to the ESCO or be shared, e.g. 85% to ESCO and 15% to project/facility owner.
- f ESCO typically retains ownership of the asset.
- g Risk: the financial institution carries risk that the ESCO cannot repay the loan.
Risk: the ESCO carries risk based on prevailing energy prices, i.e. energy price risk.
- h Assumption: This model requires the ESCO to have the capacity to borrow and to have projects with revenue streams that will ensure the loans can be repaid. Therefore, the ESCO should be large enough to have access to affordable financing (equity or debt).²⁹

Figure: Shared Savings Contract³⁰



III Comparison of EPC Guaranteed Savings and Shared Savings models³¹

Under a **guaranteed savings contract** the ESCO takes over the entire performance and design risk; for this reason it is unlikely to be willing to further assume credit risk. The customer is

²⁸ A Guide to Energy Performance Contracts and Guarantees, SEAI

²⁹ International Energy Agency (IEA), Energy Service Companies (ESCOs), 2018

³⁰ NIRAS adaptation from: A Guide to Energy Performance Contracts and Guarantees, SEAI

³¹ European Commission, European Energy Efficiency Platform, 2003 (<https://e3p.jrc.ec.europa.eu/articles/energy-performance-contracting>)

financed directly by banks or financial institutions; an advantage of this model is that finance institutions are better equipped to assess and handle customer's credit risk than ESCOs. The customer repays the loan and assumes the investment repayment risk. If the savings are not enough to cover debt service, then the ESCO has to cover the difference. If savings exceed the guaranteed level, then the customer pays an agreed upon percentage of the savings to the ESCO. Usually the contract also contains a provision that the guarantee is only good, i.e. the value of the energy saved will be enough to meet the customer debt obligation, provided that the price of energy does not go below a stipulated floor price.

Given that guaranteed savings schemes are designed to function in countries with a well-established banking structure, high degree of familiarity with project financing and sufficient technical energy expertise within the banking sector, it is not certain that this model is applicable in Dominica. In addition, the guaranteed savings concept is difficult to use in introducing the ESCO concept in **developing markets** because it requires customers to assume investment repayment risk. However, it fosters long-term growth of ESCO and finance industries: newly-established ESCOs with no credit history and limited own resources would be unable to invest in the project they recommend and may only enter the market if they guarantee the savings and the client secures the financing on its own.

Conversely a **shared savings model** means that the client takes over some performance risk as opposed to credit or finance risk like in the guaranteed model. This ESCO repays the loan and takes over the credit risk. The ESCO therefore assumes both performance and the underlying customer credit risk. In addition such contractual arrangement may give rise to leveraging problems for ESCOs, because ESCOs become too indebted and at some point financial institutions may refuse lending to an ESCO due to high debt ratio. The ESCO is essentially collateralizing the loan with anticipated savings payments from the customer, based on a share of the energy cost savings. The financing in this case goes off the customer's balance sheet.

A situation where savings exceed expectations should be taken into account in a shared savings contract. This setting may create an adversarial relationship between the ESCO and customer, whereby the ESCO may attempt to under-estimate the energy savings potential and then receive more from the 'excess savings'.

Furthermore, to avoid the risk of energy price changes, it is possible to stipulate in the contract a single energy price. In this situation the customer and the ESCO agree on the value of the service upfront and neither side gains from changes in energy prices: if the actual prices are lower than the stipulated floor value, then the consumer has a windfall profit, which compensates the lower return of the project; conversely if the actual prices are higher than the stipulated ceiling, then the return on the project is higher than projected, but the consumer pays no more for the project. In effect this variation sets performance in physical terms with fixed energy prices, which makes the approach resemble guaranteed savings approach.

The shared savings concept is considered a good introductory model in developing markets because the client assumes no financial risk—this is especially relevant for Dominica. From the ESCO's perspective, the shared savings approach has the added value of the financing service. However this model does not tend to suit small ESCOs because projects based on shared savings rapidly become too highly leveraged and unable to contract further debt for subsequent projects. Therefore, the shared savings concept has the potential to limit long-term market growth, i.e.

small or new ESCOs are unlikely to enter the market if such agreements dominate. At the same time, to market opportunities will focus on small, short-payback period projects.

Table: EPC Guaranteed Savings compared with Shared Savings³²

	Guaranteed Savings model	Shared Savings model
Service provider	ESCO	ESCO
Key elements	Implementation of energy saving measures (ESM) with ongoing monitoring & verification services to provide guaranteed energy savings.	Implementation of ESM to provide cost savings associated with the overall energy bill.
Complexity		Shared savings contracts are more complicated than guaranteed savings contracts.
Energy savings potential	High - comprehensive and detailed approach covering both supply and demand side.	High - ESCO's primary focus and incentive is for energy cost savings with technical operation requirements as secondary.
Guarantees	The ESCO guarantees performance related to the level of energy saved throughout the contract life (i.e. to energy cost savings in constant prices).	Not necessarily applicable. But the ESCO may guarantee a minimum performance related to cost of energy saved in current prices throughout the contract life.
Payment	Payment derived from the energy savings achieved in constant prices of the base year.	Payment linked to the current energy prices.
Risk	Assumes technical design, implementation and performance guarantee risks.	Assumes performance risk, risk of energy price change (depends on current prices) and customer credit risk.
Energy savings	Based on measurements before and after implementation. And also on the measurement and verification system applied, where the more, the better.	Depends on quality of measurement. In general, the more independent the measurement, the more transparent are the energy savings.

IV Managed Energy Savings Agreement

In a MESA, a fund pays a facility's utility bill directly and charges the building owner a fixed monthly fee. In another scenario, an ESCO sells a portfolio of improvements to a third-party ownership company. The Owner receives utility cost savings, remits a set percentage back to third party, and retains the balance. The project may be off balance sheet. The ESCO operates and maintains the improvements under a separate contract. OR The equipment is financed and owned by the ESCO. The Owner continues to pay the utility bills and pays the ESCO a portion of the savings. Due to the large up-front investment, a greater percentage of savings goes to the ESCO.

V Energy as a service³³

Energy-as-a-service is a model where customers pay for an energy intervention without having to make any upfront capital investment. This can take the form of a subscription for lighting, cooling or management of energy usage to deliver the desired energy service. In the electricity sector, this model provides customers with energy services, such as lighting, in exchange for a

³² Table source: Eu.ESCO, 2011

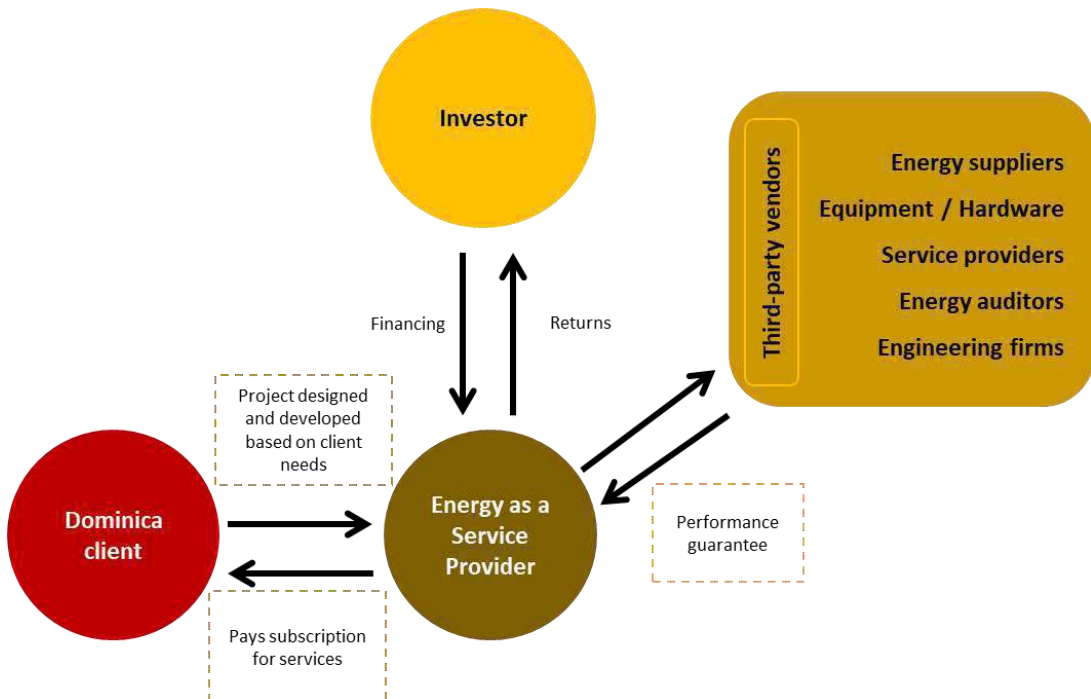
³³ Deloitte, Energy-as-a-service: The lights are on. Is anyone home?, 2019

recurring fee. The customer benefits from avoiding upfront costs for electrical equipment or software, or device management while still benefiting from the use of the device.

In addition, the energy-as-a-service model enables access to better technologies and innovative services.³⁴ Further, the customer pay for the output of the asset as opposed to purchasing the asset itself. Features of this model include:

- No upfront investment required by Dominica client
- Financing (from investor) through loans, capital leases or bonds
- No ownership of equipment
- No performance risk responsibility
- Term of contract in the range of 5 to 20 years

Figure: Energy as a Service Model³⁵



VI Energy-as-a-service: solar³⁶

On-site solar panels provide community benefits by reducing the need for electricity from the power grid (energy that is typically produced using carbon-emitting resources), for transmission and distribution line upgrades, and for additional generation capacity. Rooftop solar installations can also reduce customers' electric bills however the upfront costs, combined with

³⁴ For an example of this model, please see: [Light as a service: green performance in Schiphol Airport](#)

³⁵ Adopted by NIRAS from: Deloitte, Energy-as-a-service: The lights are on. Is anyone home?, 2019

³⁶ Resources for the Future, Energy-as-a-Service: A business model for Expanding Deployment of Low-Carbon Technologies, 2019

uncertainties about future energy prices and concerns about technology maintenance, can inhibit customers.

The **energy-as-a-service model** for solar can overcome those barriers while providing advantages—electricity cost savings and environmental benefits—without having to purchase or maintain the system. Under a solar lease or power purchase agreement, a solar services company installs and maintains a solar system on a homeowner's roof, at no upfront cost, that supplies the household with electricity for the duration of the contract, typically 15 or more years. The solar provider retains ownership of the system and charges the customer for the service, through either a monthly lease for the system or a PPA for the power the system produces. These rates typically offer either cost savings or cost certainty for the consumer relative to retail electricity rates. The solar provider receives monthly revenue as well as benefits from policy incentives e.g. an investment tax credit for the system's generation. Because its revenue depends on system performance, the provider has an incentive to design and install the best possible system for each customer, and thus incentives between the customer and the provider align.

The solar lease involves a fixed monthly payment for use of the panels, and a solar power purchase agreement is payment for the electricity that the system generates at a predetermined price per kWh, which is lower than the utility's retail rate, yielding savings for the customer.

VII Other options

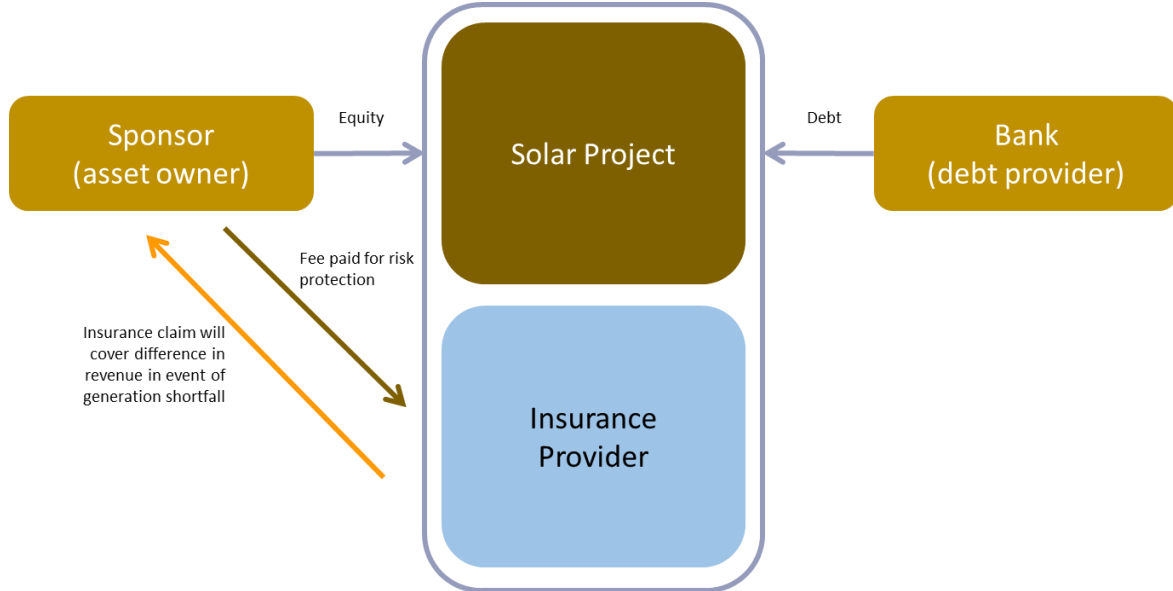
- **Energy supply contract** – An ESCO takes over operation and maintenance of the equipment and sells the output (e.g. cooling, lighting, etc.) to the customer. Costs for all equipment upgrades are covered by the ESCO. But ownership remains with the customer.
- **Equipment leasing** – supplier installs the equipment and maintains it with payments financed by verified savings.
- **Property assessed clean energy (PACE)** – a financing mechanism that enables low-cost, long-term funding for energy efficiency and renewable energy projects. PACE financing is repaid as an assessment on a property's tax bill and is processed the same way as other local public benefit assessments.
- **Green mortgages** – an energy efficient mortgage (or "green mortgage") is a loan product that allows borrowers to reduce their utility bill costs by allowing them to finance the cost of incorporating energy-efficient features into a new housing purchase or the refinancing of existing housing.

VIII Adjustments for models

Within these models there are options that adjust risk according to scenarios and where an ESCO's compensation is not 100% based on the level of savings achieved. These options include a **performance payment** arrangement might state that 80% of ESCO fees are fixed with 20% variable based on the extent to which savings are verified as contracted. Under a **gain-share agreement**, an ESCO receives a percentage of the value of the savings achieved. And in a **performance guarantee**, the final payment to an ESCO is made once savings reach a particular milestone.

Solar revenue ‘put’ insurance – this is an insurance product and credit enhancement that guarantees a contracted percentage (e.g. 90%) of a solar project’s energy generation. It takes into account intermittence caused by weather (clouds) and other risks.³⁷

Figure: Insurance – Solar revenue put structure³⁸



7 Preliminary action

When considering a project on energy savings in buildings/facilities or for renewable energy generation, it is critical to first determine the initial situation. Based on such analysis, energy saving measures to improve the energy efficiency (or RE installation) of the building are codified and proposed. The final combination of energy efficiency or clean energy measures that will be implemented depends on the financial or economic analysis of the available options.

Based on the primary information or possibly inspection of buildings, the initial draft solution is prepared. The solution includes list of the measures to be taken into account together with volume of necessary investments and energy consumption cost reduction potential (calculated based on the reference energy consumption scenario). On the basis of this information the customer makes a decision as to whether further procedures are acceptable for him. The initial draft solution is usually prepared by the ESCO or EPC process facilitator.³⁹

³⁷ World Bank, Enabling Institutional Investment in Climate Smart Infrastructure, 2020

³⁸ Adapted from kWh Analytics and the World Bank, Enabling Institutional Investment in Climate Smart Infrastructure, 2020

³⁹ EU Transparence, EPC Manual for Beginner Markets, 2013

8 Governance structure for the EPC concept (Dominica)

An energy performance contract is a market-based mechanism. Therefore its governance structure should be intentionally light but efficient. The balance of responsibility should be placed with the ESCO, which takes on project risk in exchange for its revenue share.

8.1 Roles and responsibilities of relevant government departments and agencies to provide oversight and manage the financial mechanism

A network of Dominica entities is necessary to establish and manage the energy performance contracting mechanism. This network should include governmental, policy, technical and financial knowledge and insight within the context of the Commonwealth.

The following is an indicative and intended to be iterative and further defined and developed:

DOMLEC – responsible for procuring a service provider e.g. an energy service company (ESCO). The public procurement procedure should be prepared in cooperation with an energy performance contracting (EPC) process facilitator, who is able to define the appropriate procurement criteria and prepare the contract specification documentation and who will help to evaluate the tenders received.⁴⁰

Suggested responsibility: overseeing procurement of energy service provider

Ministry of Environment, Rural Modernization and Kalinago Upliftment – should serve as the focal point for EPC development. This should include responsibility to approve project origination and development (if that falls to another ministry or agency, the Ministry of Environment should at least retain responsibility to provide counsel). This includes for energy efficiency and renewable energy projects that will pursue energy performance contracts. Other agencies or ministries may need to be consulted on policy or technical feasibility for given contexts (e.g. Ministry of Blue and Green Economy or the Ministry of Housing and Urban Development).

Suggested responsibility: focal point for EPC development and implementation roadmap

Ministry of Finance – fiduciary responsibility for EPC contracting, transfers and transactions.

Suggested responsibility: enable and ensure transactions i.e. work with banks on risk guarantees, etc.

Independent Regulatory Commission (IRC) – Commonwealth of Dominica's electricity regulator covering licensing, rates, policy, standards and services.

Suggested responsibility: establish rules and guidelines for EPC and provide transparent guidance on transactions.

EMS Limited – a Roseau-based ESCO (working with both energy efficiency and solar projects) in Dominica and the Eastern Caribbean region.⁴¹

Suggested role: EMS could serve as project facilitator but this would potentially eliminate it as a project bidder.

Funding agencies – Dominica's emerging Climate Change Trust Fund can help to connect EPC project to other initiatives that, as a bundle, will be of interest to international finance institutions

⁴⁰ EU Transparency, EPC Manual for Beginner Markets, 2013

⁴¹ [EMS Ltd Homepage](#)

and funds, e.g. Inter-American Development Bank (IADB), Caribbean Development Bank, Green Climate Fund and the Global Environment Facility.

Suggested role: finance or fund transactions.

Note: The Green Climate Fund made a US\$ 20 million concessional loan (plus technical assistance grant) in Salvador (through a national finance institution and the Inter-American Development Bank) to develop its energy efficiency and ESCO ecosystem. The 15-year project is ongoing and includes US\$ 20 million in co-financing (also structured in loans). The loan will contribute to a credit line (and revolving fund) available for local banks to fund small and medium-sized energy efficiency projects at concessional rates, to be repaid through future energy savings, i.e. energy performance contracting.

9 Procurement recommendations

Once an energy efficiency (or renewable energy) project has been identified and approved for development in Dominica, a decision must be made to use an energy performance contract. When that has been decided (and approved), the procurement of an EPC provider is the subsequent step in the process. The public procurement procedure should be prepared in cooperation with an EPC process facilitator, who is able to define the appropriate procurement criteria and prepare the contract specification documentation and who will help to evaluate the tenders received.

The EPC procurement procedure in the private sector is less demanding and time consuming. However, some essential parts of the public procurement procedure may be used to obtain the best tender (e.g. tender evaluation, demand definition, etc.) also for private companies.⁴²

The recommended procedure process is:

9.1 Procurement procedure

The procurement procedure in Dominica should begin with the consent of the building or facility owner for the EPC project. From the perspective of the ESCO, it is necessary to have a certain guarantee on the future manner of the utilization of the building or facility accepted by the owner with respect to approval of future commitments to clean energy or energy efficiency.

As Dominica is developing this project for the public sector, the energy performance contract provider (e.g. an ESCO) procurement procedure must comply with the Commonwealth's national public procurement regulations.⁴³ The purposes of this legislation are to "require competition" and ensure transparency in the public procurement process and make proceedings transparent. In Dominica, it may be covered under one of the following:

- Public supply contract
- Public works contract

⁴² EU Transparency, EPC Manual for Beginner Markets, 2013

⁴³ Commonwealth of Dominica, Public Procurement and Contract Administration, Act 11, 2012

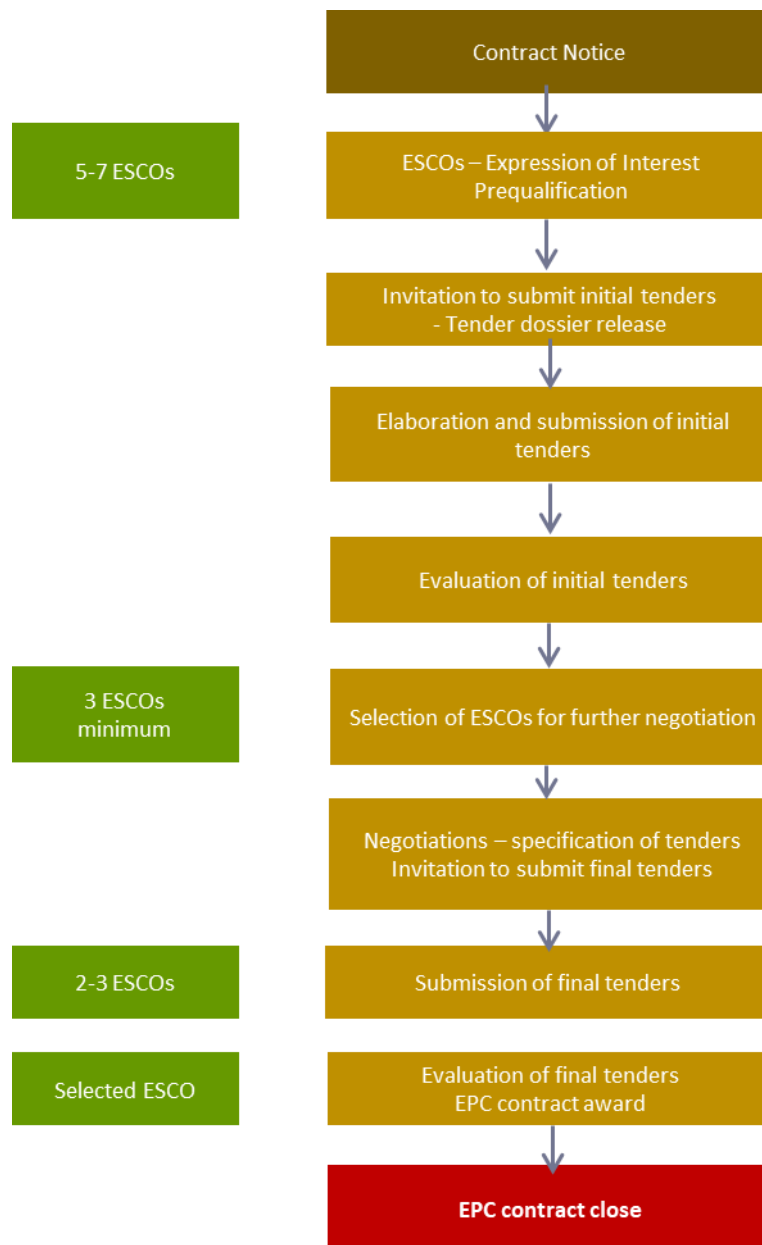
9.1.1 Public service contract

EPC projects can be complex so open procedures may not be suitable. Therefore a procurement procedure that is amendable is recommended “when the nature of the works, supplies, or services or the risks attaching thereto do not permit prior overall pricing.”⁴⁴ Tenders (i.e. bids) can be adjusted during the negotiations with tenderers (i.e. bidders) within the award procedure. However, if the project is straightforward and there is no expectation that content will need to be adjusted after submission of tenders, an open procedure can be applied. The type of tender may also be dependent on total expected price of procurement and the authorization that requires in Dominica.

9.1.2 Publication of a contract notice

The public procurement procedure has to be officially announced. This publication of a contract notice serves as preliminary notification to potentially interested energy service companies. The announcement should contain general information on the type of procurement as well as required qualifications of the potential applicants. If foreign energy service companies are invited to bid, this should be communicated in the notice. The requesting entity, as the contracting authority, must publish this contract notice in a local public procurement bulletin, including tendering procedures and an indication of the price above the threshold value.

⁴⁴ European Union, EPC Manual for Beginner Markets, 2013

Figure: Recommended EPC public procurement procedure:⁴⁵

* Number of ESCOs recommended for consideration may not be available in Dominica or the Caribbean Community.

⁴⁵ European Union, EPC Manual for Beginner Markets, 2013

9.2 ESCO expression of interest

The expression of interest in the EPC opportunity from energy service companies should contain the following information:

- Fundamental prequalification criteria (proof of legal incorporation, etc.)
- Professional criteria (certificate evidencing corporate registration, trade authorisations necessary for performing the public contract, additional certifications issued by professional organisations, etc.)
- Financial and economic and financial criteria (applicant's recent financial performance e.g. turnover, profit and loss statement, evidence of insurance, etc.).
- Technical criteria (a list of substantial analogous contracts concluded recently, a description of technical facilities available to the applicant, and other documents demonstrating the technical capabilities of the applicant such as quality certification (e.g. ISO 14000)).

These documents will need to be checked and verified by the Dominica client (potentially represented by the facilitator). Only the applicants meeting all defined criteria should be invited to submit initial tender.

9.3 Contents of tenders

ESCOs that provide and meet the initial requirements (see 6.2) should be provided with a tender dossier from the Dominica project owner (potentially through a facilitator) containing the following content:

- a pre-intervention energy audit, assuming it has been completed;
- technical underlying materials comprising project documentation, technical and revision reports;
- information about energy consumption at the site and about the integrity of respective facilities and buildings;
- calculation of reference energy consumption, i.e. comparable baseline information;
- specification of the mandatory measures demanded by the client;
- specification of detailed terms and conditions of the contract (place of public contract performance, onsite inspection of the place of performance, the deadline for submission of tenders, the method of tender price calculation, specification of contractual terms and conditions, etc.);

Within the dossier some of the fundamentals of the project should also be requested. This information should be requested from the bidders:

- proposal of energy saving measures including technical description;
- all related procurement and instalment that is expected;
- expected method of financing of the energy investments;
- expected guaranteed energy savings;
- measurement and verification in agreed periods.

For solar PV-related tenders, any initial information on theoretical generation capacity, tariff rates, etc. should be included.

9.4 Evaluation of tenders⁴⁶

Evaluation methodology and criteria can be developed by the client but should be informed by expertise, potentially provided by a bid facilitator, who may be retained by the client. The evaluation criteria as well as the weights of the criteria should be the same for all tenderers and should be specified in the tender dossier. The criteria must include quantitative aspects (e.g. energy or emission savings), qualitative aspects (e.g. energy management level, quality of energy and efficiency technology equipment) and financial aspects of bids.

- **Quantitative criteria**

Reviews should include the special preferences of the client or the environmental benefits of the project, such as emissions savings or energy savings in the physical units. If a specific volume of energy savings in physical units is required (as opposed to cost savings), it can be set as a minimum requirement. For a solar PV performance contract, a minimum target of generation should be noted.

Note that the service lifetime of technical equipment within energy systems in buildings is conventionally approximated at 15 years. Solar PV panels and accompanying hardware is generally assumed at 20 years. The length of the evaluation period, which should be the same for all tenderers, needs to be articulated carefully.

In addition, a tender dossier should require that applicants specify the amount of energy savings to be achieved as well as warranties of attainment and the time period of such warranties.⁴⁷

- **Qualitative criteria**

Some criteria are not easy to measure. Those criteria that are more difficult to measure can be used in an assessment but must be employed carefully in order to eliminate any subjectivity in assessing them. Potential metrics include:

- energy management level (proposal of system measuring and monitoring);
- compatibility of the proposed energy savings measures with the existing system;
- quality of the technology hardware, service life, etc.;
- method of problem-solving and maintenance level;
- proposed system or curriculum for training of staff;
- project organization;
- exhibited capacity to provide maintenance services immediately and responsively; and
- company references and qualification of the personnel (CVs).

- **Financial criteria**

The financial profile is the most critical feature of a tender submission—and its evaluation. Bids need to include a forecast of the present value of the monetary benefits and the costs in the tendered EPC project. This is expected to be in the form of the net present value (NPV) of the project.

⁴⁶ European Union, EPC Manual for Beginner Markets, 2013

⁴⁷ QualitEE Project, Guidelines of European Technical Quality Criteria for Energy Efficiency Services, 2020

In this circumstance, the NPV reflects the sum of all the discounted incoming cashflows (for an energy efficiency project, this is operational cost savings) and outgoing cashflows which is effectively payments to the energy service company, including costs of equipment installed, financial services and M&V. For a solar PV contract, NPV can be measured as guaranteed generation achievement (and capital expenditures (CAPEX), operational expenditures (OPEX)), aggregated over the project lifecycle.

Other financial metrics—as opposed to NPV—could be used, such as internal rate of return (IRR) of the EPC project. Some assumptions also need to be made for the financial case and included in bids. These include:

- The discount rate that should reflect the financial situation of the client.
- The period for which the criteria will be applied – only contract duration, or as otherwise specified (e.g. post-contract).
- Scenario management e.g. if achieved savings exceed contracted or guaranteed levels between the client and the EPC provider (ESCO), how will such a dividend be divided?
- Or for the case of solar PV, how will the monetized returns from technology overperformance, e.g. returns from generation in excess of the targeted threshold, be divided?

9.4.1 Evaluation criteria

A tender dossier should explicitly spell out the weights that will be used to calculate bids and need to reflect their importance.

Figure: Example of weighting criteria:⁴⁸

Criteria	Weights
Financial: payback period cost breakdown IRR	25%
Technical: completeness of energy savings (or generation) estimate engineering approach	25%
Implementation: plan for making improvements monitoring savings	20%
Operation and maintenance: approach risk management	10%
Project management: qualifications of personnel	10%
Training: capacity building model	10%

9.5 How an ESCO (energy service company) can be formally engaged⁴⁹

Energy service companies (ESCOs) develop, design, build and finance (or arrange financing for) projects that save energy, reduce energy costs and decrease operations and maintenance costs at their customers' facilities. In general, ESCOs act as project developers for an extensive range of energy conservation measures and assume the technical and performance risks associated with a project.

⁴⁸ Danish Chamber of Commerce, 2013

⁴⁹ US Department of Energy <https://www.energy.gov/eere/femp/energy-service-companies-0>

ESCOs are distinguished from other firms that offer energy-efficiency improvements in that they use the performance-based contracting methodology. When an ESCO implements a project, the company's compensation is directly linked to the actual energy cost savings.

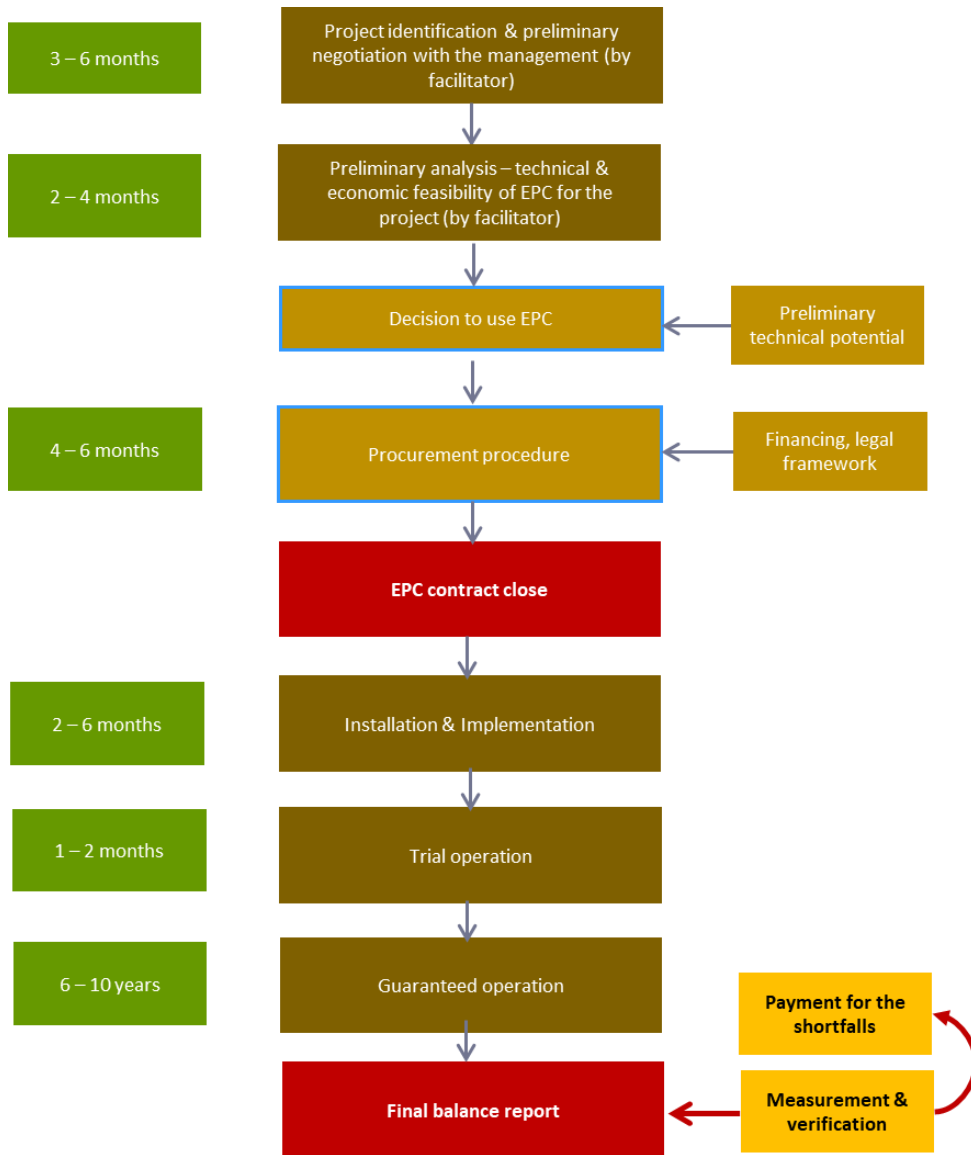
The substantial energy-efficiency retrofits and renewable energy technologies inherent in energy savings performance contract projects typically require a large initial capital investment and may have a relatively long payback period. The size of the Dominica project may not require a large scale of investment.

If there are debt payments, they will be tied to the energy cost savings guaranteed for the project, so the agency pays for the capital improvements of the EPC project with the money saved by the project (i.e., the difference between pre-installation and post-installation energy use and other related costs).

9.5.1 The EPC Process

The EPC procedure can require time and planning, from preliminary negotiations to handing over of the energy saving (or RET) hardware/equipment, trial operation and final balancing of the energy saving results of the project. The timing of the procedure will vary among the projects depending on Dominica's particular governance of energy performance contracts.

Figure: Recommended EPC process⁵⁰



⁵⁰ EU Energy Performance Contract Manual for Beginner Markets, 2013

9.6 How an ESCO will complete detailed audits and assessments of public buildings (where interventions are conducted)

Detailed energy audits (in the case of buildings and facilities) should include the collection or development of the following:⁵¹

- Building or facility plans
- Data about the building's materials
- Energy bills (electricity, oil, gas, biomass etc.)

In addition, the following should be undertaken by the energy service company:

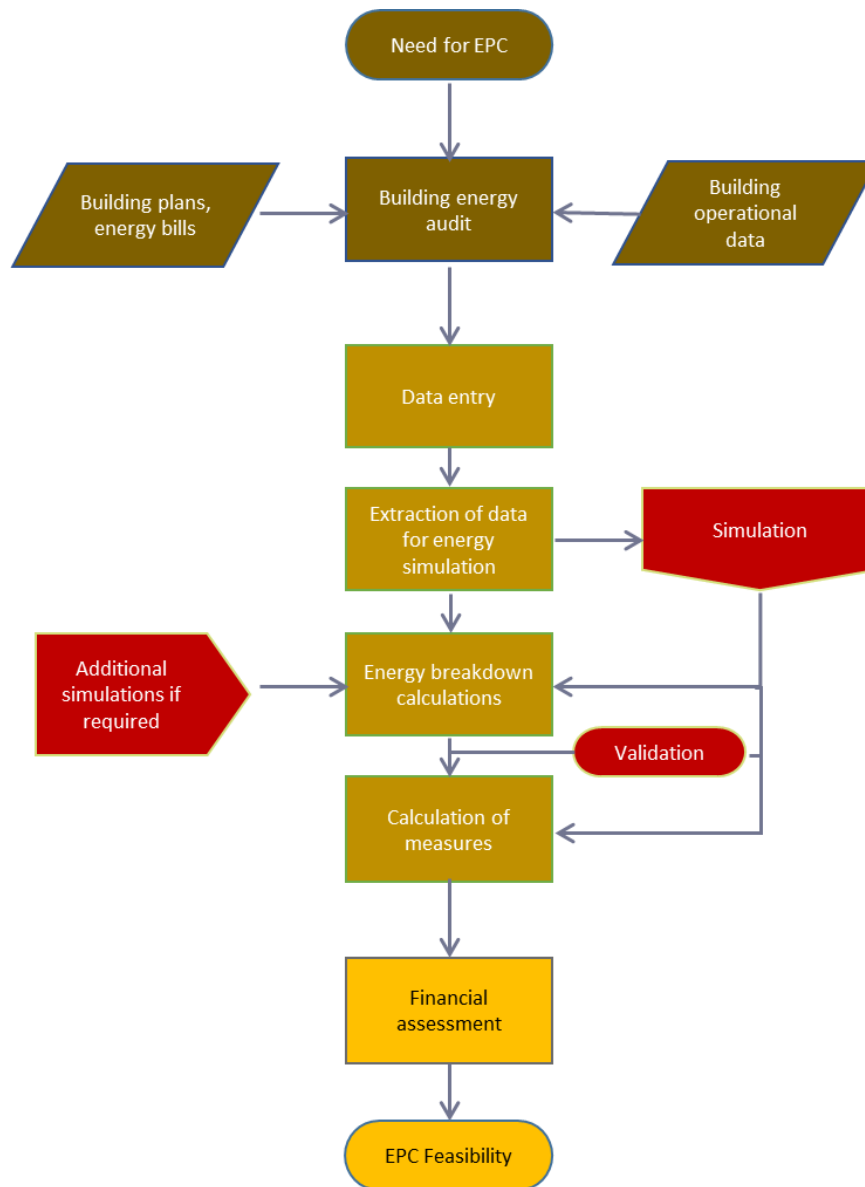
- Perform technical equipment inventory
- Collect building operational data, such as operation times and schedules, occupancy patterns, control systems (e.g. heating and cooling set-points) and occupancy levels
- Thermal simulation of the building (using appropriate simulation software)⁵²
- Calculate the energy breakdown, the savings achieved by standardized RES measures applied in the building and eventually to perform the financial assessment, resulting in a feasibility rating potential for EPC.

A central element of this methodology is the qualification of the person who conducts the energy audits, data collection, thermal simulation and prepares the data for use. In addition, the energy auditor should have the experience and capacity to define and recommend the proper energy interventions for each case. The qualified professional in energy efficiency and renewable energy systems will have the ability to be properly trained for the optional tool use in order to investigate the EPC feasibility of each case.

Further, there should be an independent investigation of interest of the owner/operator of the building for energy efficiency and renewable energy investments.

⁵¹ Frangou, M., et al. Journal of Renewable Energy. Renewable energy performance contracting in the tertiary sector, 2018

⁵² This is the application of a standardization and benchmarking framework

Figure: Recommended standardization and benchmarking methodology⁵³

9.7 A system that will be used for measuring and monitoring energy saved, to be used as a basis for remuneration for ESCOs engaged, taking into account existing systems which may be adopted e.g. RETscreen as applicable

After a trial operation, a professional supervision and check of the running and functionality of the measures should be undertaken to confirm that at least the agreed level of energy savings (or generation) is being achieved. Subsequently, typically after each year of operation, the attained energy savings are evaluated and if the declared level is not reached, the ESCO is contracted and required to reimburse the relevant amount to the customer. The review and assessment process should be delegated to a specialised

⁵³ Frangou, M., et al. Renewable energy performance contracting in the tertiary sector, Renewable Energy Journal, 2018

consulting firm. This can be (and often is) the EPC process facilitator who advised on organization and execution of the procurement.

9.7.1 Measurement and verification

The transparency and confirmation of the savings achieved will depend on the quality of measurement and verification (M&V) provided in the Dominica context. In general, the more independence of the M&V applied to the ESCO, the more material (proven) the energy savings will be.

Attained energy savings (and generated power in the case of renewable energy installations e.g. solar PV) are evaluated annually, and if the specified amount is not reached, the ESCO is obliged to reimburse the respective amount to the customer. This auditing process needs to be undertaken by a third party with technical energy expertise, e.g., the facilitating entity that advised on the procurement administration.

The guarantee of savings is set in the contract and the energy service company guarantees attainment of a specific metric. For instance:

- Annual volume of energy savings in physical units (e.g. kWh or MWh)

If savings are smaller than the guaranteed volume of savings, the corresponding amount is expected to be fully reimbursed by the ESCO to the client according to the contract. If the savings are higher than the guaranteed volume, excess savings are to be divided between ESCO and client according to the methodology established in the parties' contract.

During the contract period, the energy service company is expected to continuously supervise the functioning of the energy system it is responsible for. It is further expected to monitor energy consumption and to intervene in the case of undesirable action.

Measurement and verification practices allow **project performance risks** to be categorised, managed and allocated among the parties.⁵⁴ Performance-based projects in Dominica should be subject to international protocols such as the International Performance Measurement and Verification Protocol (IPMVP).^{55 56}

Once the contract is terminated, the client is fully responsible for operation. For Dominica, it may be important to include in the contract with the ESCO sequences of technical assistance and capacity building to ensure that the operation can be technically and effectively managed, post-contract.

⁵⁴ European Commission, European Energy Efficiency Platform, ESCO Monitoring and Verification

⁵⁵ The International Performance Measurement and Verification Protocol (IPMVP) can provide an overview of current best practice techniques available for verifying results of energy efficiency projects. The IPMVP is not intended to prescribe contractual terms between the customer and ESCO, although it provides guidance on some of these issues. Once other contractual issues are decided, this document can help in the selection of the measurement & verification (M&V) approach that best matches:

- the project costs and savings magnitude
- technology-specific requirements
- risk allocation between the client and ESCO

⁵⁶ <http://www.ipmvp.org>

Good measurement practices and verifiability are some of the most important elements in providing the confidence needed to secure funding for projects. Securing financing requires confidence that energy efficiency investments will result in a savings stream sufficient to make debt payments.

9.7.2 Non-compliance

If the achieved and confirmed energy savings are lower than the guaranteed and contracted savings (or generation) after re-calculation for average climate conditions, weather events, etc., then a specific protocol will need to be followed. The missing revenues/cost savings that were contracted will need to be paid by the ESCO to the client.

9.7.3 Final balance

At the end of the contractual period, the retained ESCO completes the project and fulfils all its contractual obligations. The ESCO will, according to its contract, submit a final report that details the fulfilment of all requirements according to the contract.

9.7.4 RETScreen

The Government of Canada's RETScreen site offers qualified bidder lists of ESCOs. The lists adhere to qualification protocols with tiers of experts based on experience with energy performance-based contracts. RETScreen's Qualified Bidders List is the initial component of the Canadian Government's evaluation process for EPC procurements. Further analysis and evaluation would need to be conducted in relation to the Dominica project and the potential call for international bids.

10 Develop resources such as template agreements: Contracts⁵⁷

The EPC contract between the ESCO and the Dominica client should contain guarantees of savings and also regulate allocation of financial and technical risks for implementation and operation during the duration of the project. Note that duration of an EPC project (for energy efficiency for buildings) is typically 10 years.⁵⁸ Key elements, which should be included in the EPC contract, are the following:⁵⁹

- Guaranteed savings – the ESCO guarantees a certain amount of yearly savings to be achieved throughout the duration of the contract. The contract has to clearly define what happens if the guaranteed savings are not achieved, i.e. there has to be a clear description of how the ESCO settles the negative difference between guaranteed savings and actual achieved savings. Further, it has to clearly define the procedure for the case of exceeding the guaranteed level of savings, which sets a method of distribution of access savings between the client and the ESCO.

⁵⁷ Additional contract information provided as an Appendix

⁵⁸ According to an European Union survey 71% of ESCOs reported up to 10 years (and 54% between 5-10 years) as the most common length of their EPC contracts – see European EPC market overview, Garnier (2013)

⁵⁹ EU Energy Performance Contract Manual for Beginner Markets, 2013

- Length of the contract.
- Volume of investment to bring the guaranteed savings and a commitment by the client to pay the investment after its installation.
- Clear definition of a reference scenario (baseline) of the future energy consumption that is to be set in physical units. For all financial and economic purposes, the reference scenario is calculated in current prices. The contract specifies a rate of inflation to be used for the reference scenario calculation.
- Obligation of the ESCO to provide a report on yearly savings evaluation that documents the actual amount of achieved savings in the respective year – in both physical and monetary units.
- Responsibility of the ESCO to design and implement the energy saving measures correctly.
- Obligation of the client to provide pre-agreed conditions for implementation of the energy saving measures.
- Planned duration of installation of the investment.
- Ownership transfer of the installed energy saving technologies to the client.
- Means of payment for the services and savings. Usually these are paid as a monthly fixed advanced payment agreed by both parties. At the end of each year of the contract, after the savings evaluation documented in the report on yearly savings, the payments are settled.
- Declaration of the purpose of operation of the facility on which the Energy Performance Contract is effectuated.
- Method of recalculation of the guaranteed savings in case any of the input parameters differs from the presumptions defined in the reference (baseline) energy consumption scenario.
- Final report – prior to the end of the paying-off period the ESCO hands over to the client the final report including the total amount of cost savings, guaranteed savings, given reduction in the price and bonuses calculated for the entire paying-off period, etc.

11 Indicators, plans and procedures for testing, monitoring and managing the performance and impact of the pilot financing mechanism with a view to its potential to scale up investments in the public sector

The development of standard procedures for measurement and verification (M&V) of savings is a critical aspect of energy performance contracts and particularly applicable to energy efficiency solutions (as opposed to generation technologies). Strong measurement practices and verifiability are necessary in order to attract financing, which requires evidence that energy efficiency investments will result in a savings stream that is sufficient for making debt payments. At the same time, viable measurement and verification practices allow project performance risks to be understood, managed and allocated among the parties.⁶⁰

⁶⁰ European Energy Efficiency Platform, ESCO Monitoring and Verification, 2020

Note that savings cannot be directly measured, since they represent the absence of energy use. Instead, savings are determined by comparing measured use before and after implementation of a project, making appropriate adjustments for changes in conditions.

M&V activities consist of the following:

- meter installation calibration and maintenance,
- data gathering and screening,
- development of a computation method and acceptable estimates,
- computations with measured data, and
- reporting, quality assurance, and third-party verification of reports.

Verifying (initially and repeatedly) is essential to guaranteeing that the installed equipment is able to produce the expected savings. Verification of the potential to achieve savings is referred to as **operational verification**, which may involve inspection, commissioning of equipment, functional performance testing and/or data trending. International Performance Measurement and Verification Protocol (IPMVP)-aligned M&V includes both operational verification and an accounting of savings based on specific site energy measurements before and after implementation of a project; and also any related adjustments.⁶¹

M&V is not just a collection of tasks conducted to help a project meet international performance measurement and verification protocol requirements. Properly integrated, each M&V task builds upon the other and helps to enhance and improve facility operation and maintenance of savings → and this serves the purpose of capturing impact and establishing a template for other investments to leverage and scale. M&V activities overlap (and should integrate) with other project efforts e.g. collecting data to both identify energy-saving measures and establish performance baselines, commissioning and operational verification of installed energy efficiency measures, and installing monitoring systems to track and maintain savings continuity. Identifying such project synergies and establishing roles and responsibilities of involved parties during project planning helps to establish a coordinated effort. This can leverage complementary scopes while also controlling M&V-related costs.

11.1 M&V and Impact

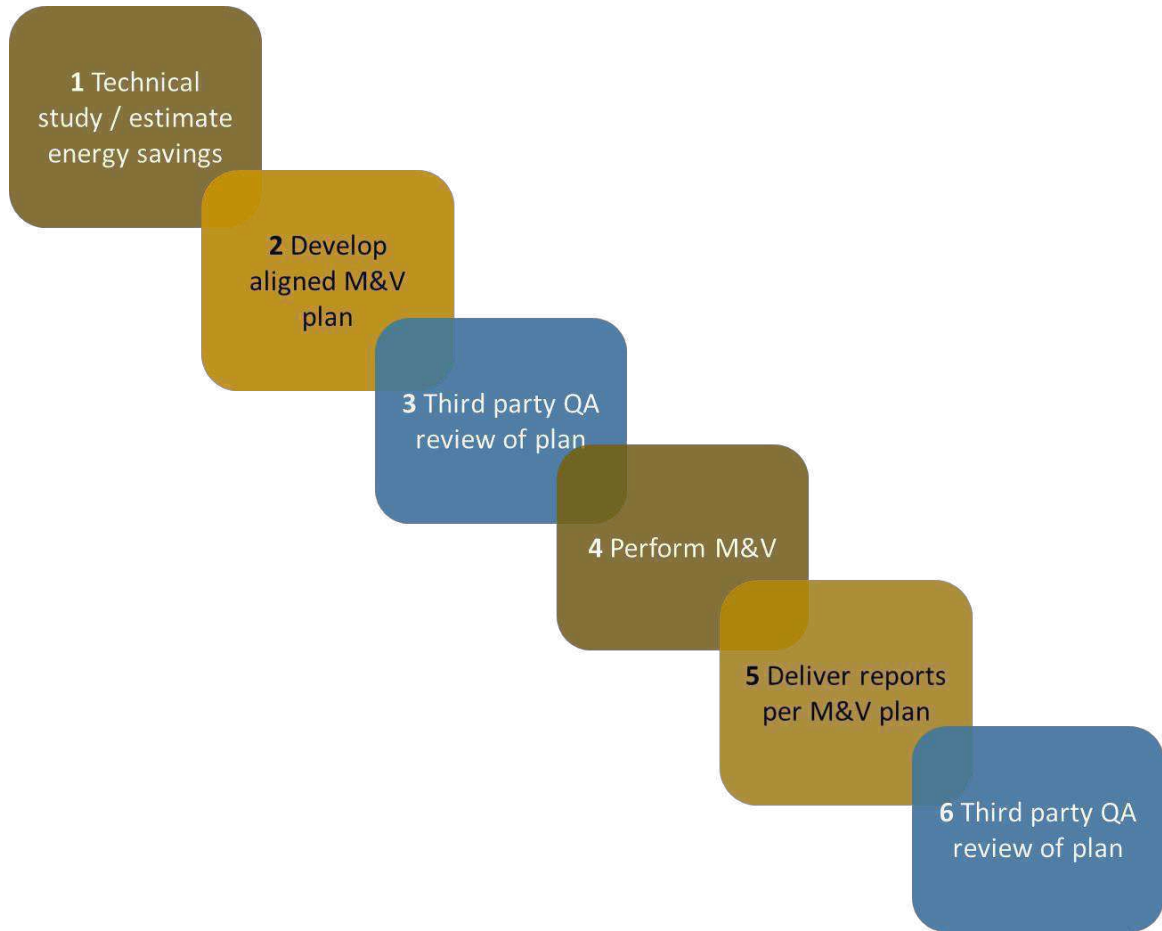
- Accurate determination of energy savings gives Dominica clients valuable feedback on their energy conservation measures
- Energy efficiency savings are the basis for performance-based financial payments or a guarantee in a performance contracts—this contributes to attracting finance for new projects and enhancing transparency
- Documenting impact and enhancing financing – an M&V plan increases the transparency and credibility of reports on the outcome of efficiency investments. Again this supports impact and transparency.
- M&V helps to impact and improve operations design. And it can help to improve emissions reporting—a critical element for international finance.

⁶¹ Efficiency Valuation Organisation, 2020

- Scalability – The Dominica Government can leverage M&V techniques to evaluate the savings at selected energy user facilities; and the savings determined by M&V activities at selected individual facilities can help predict savings at unmeasured sites in order to understand performance of other sites in Dominica and help to create scale.

The following figure shows the sequence of monitoring and verification activities that can play an important role in providing impact measurement integrity—an essential tool for attracting finance.

Figure: Recommended Monitoring activities for impact⁶²

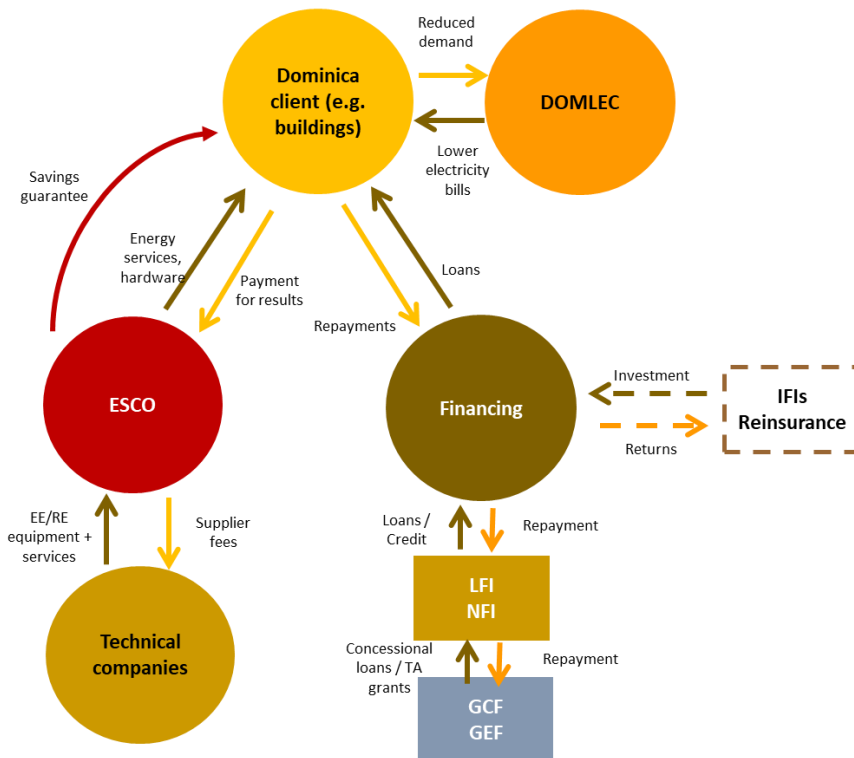


⁶² Efficiency Valuation Organisation, 2020

12 Project recommendations

This Report has shown that a shared savings energy performance contract model is recommended for adoption by the Government of Dominica because there is strong potential for attracting financing and maximising impact. In particular, there is potential for baseline financing from international finance institutions such as the Inter-American Development Bank, Caribbean Development Bank, the Green Climate Fund, the Global Environment Facility which can be augmented by domestic, regional and international commercial sources.

Figure: Dominica energy performance contracting network (recommended model)⁶³



As noted earlier, energy efficiency projects for buildings or facilities are not necessarily ‘big ticket’ projects as compared to large-scale renewable energy installations like wind, hydro or concentrating solar arrays. In fact, the most common size of energy efficiency projects (lighting, insulation, window upgrades) in Europe is between €200,000 to €500,000.

On the solar PV side, while several options have been presented, the recommended EPC pathway is to lease the system where the Dominica client contracts with an energy service company. The ESCO develops and owns the system and is responsible for its design, installation, operation and performance—the Dominica client buys the generated energy from the ESCO under contracted terms and timelines.

In the third option above, an ESCO owns the PV system and is responsible for its acquisition, installation, operation and maintenance. The system is installed with the objective to supply sufficient

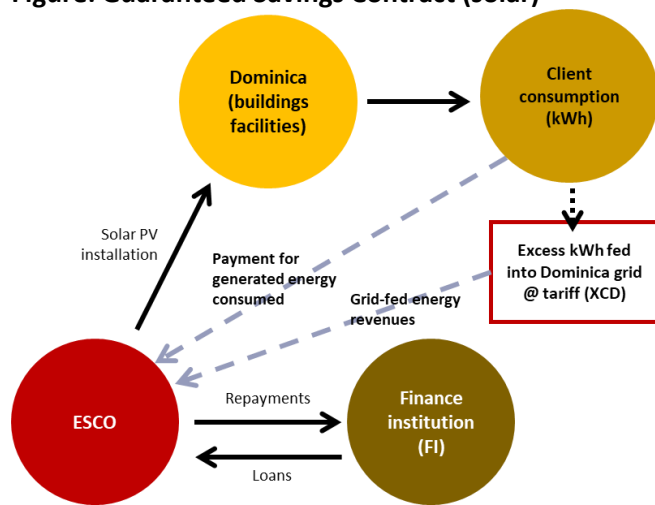
⁶³ NIRAS, adapted from UNDP Environmental Finance Services and EU Towards Transparent Energy Performance Contracting Markets (Transparence), 2015

generated energy to the client, which pays the ESCO for each generated unit (measured in kWh). If the generated energy exceeds client demand, it can be sold into the power grid, assuming such connection is in place.⁶⁴

Advantages of the photovoltaic ESCO model to the Dominica client:

- No (or low) initial investment.
- Low overhead since ESCO is responsible for the system’s operation and maintenance.
- Risk management transferred to the ESCO.
- Client only pays for the generated energy.
- An additional advantage is that the expertise and scale of the ESCO can equate to better, more efficient management of the PV system than if the client managed it directly.

Figure: Guaranteed Savings Contract (solar)⁶⁵



This Report has reviewed the prospects for energy performance contracting for a number of clean energy and climate-related scenarios. Particular energy options for Dominica that can be financed by Energy Performance Contracting or other third-party financing solutions.

Technology	System size (kW)	Unit capital cost (\$/kW)	O&M Costs (US\$ per kW/year)	Capacity factor (%)	Total annual output (MWh per year)	Life time (years)	Long run marginal cost (\$/kWh)
Solar PV Commercial scale (regional)	1 000	2.750	18	18%	1 577	20	0.15
Solar PV Utility scale (regional)	10 000	2.250	17	18%	15 768	20	0.18
Geothermal (Dominica)	10 000	5.200	149	85%	74 460	25	0.10
Commercial hydro (regional)	5 700	2.000	250	62%	31 000	20	0.09

⁶⁴ ESCO Business Model: For the creation of photovoltaic (PV) energy for self-consumption and injection of the excess energy into the grid in accordance with Chilean law, GIZ, 2016

⁶⁵ ESCO Business Model: For the creation of photovoltaic (PV) energy for self-consumption and injection of the excess energy into the grid in accordance with Chilean law, GIZ, 2016

Solar PV – Mature technology, although further improvements are expected. Dominica has abundant solar radiation. It is estimated that horizontal insolation averages roughly 5–6 kWh/m²/day. Some micro-scale PV systems are already in use by private parties. Rapidly dropping cost of solar PV means that there is potential for further development of solar PV.

Development of solar energy that includes training for solar energy conversions and related technologies, incentives for conversions of solar heating in homes and public buildings, feed-in tariffs for solar producers, design and construction of pilot grid-connected solar power facilities, and soft financing for communities and small-scale private solar power conversions;

Geothermal – Mature technology. Dominica hosts nine live volcanic centers and is ranked first in geothermal potential among islands of the Lesser Antilles. The Government has completed technical feasibility of some resource sites. The Government drilled an 11 MW production well and is in the process of developing a 10 MW power plant to serve the local electricity sector.

Hydropower – Mature technology already in use in Dominica. There is a possible 10–30 MW of untapped hydropower. There is also possibility to enhance the capacity of existing plants.

Feed-in-tariffs – Can play an important role in revenue opportunities for clean energy markets, including for cost offsets. Feed-in-tariffs are not fully implemented, operational and comprehensive in Dominica but in the proposal stage of rollout.

Appendix 1: Contract Template

These are the key elements to be considered for inclusion in an energy performance contract. They need to be adjusted or expanded upon to fit project, client and service provider contexts.

Contract Sections	Descriptions (where applicable)
Agreement	Parties
Commencement date	
Schedule	Confirm full project timeline and deliverable dates
Budget	Proposed by service provider or project owner
Approval	Dominica agency
Project financing	Loan or otherwise
Funding assistance	Government or 3 rd party
Monitoring & Verification	Energy use records and data
Installation, implementation and construction services	Preliminary evaluation, full evaluation, all specifications, parameters <ul style="list-style-type: none"> Based on agreed terms
Solicitation documents to secure proposals from qualified contractors	Parties
Bid solicitation	Programme and process for bids
Permits and approvals	Including certifications
Design of the project	
Construction or installation contracts	Including certifications
Responsibility waivers	E.g. workers compensation where applicable
Performance bonds	Service provider
Construction or installation	
Project schedule	
Location and access	
Adherence and accordance to requirements of construction	
Review of performance and Review of requests for change	
Monitor compliance	
Waiver (lien)	
Warranty (e.g. 1-year)	
Maintenance training	
Compensation	
Fee amount	
Interim payments	
Final payment	
Termination fees	
Fees for additional services	
Reimbursements for costs	
Cash flow	
Debt service and energy payments	Client
Annual Reconciliation Period	For each year during the term of this Agreement, the Total Energy Cost Savings, the Excess Energy Cost Savings, and the Annual Project Benefits will be calculated on a calendar-year basis. The "Annual Reconciliation Date" shall be the first day of the following February, at which time the calculation of the Total Energy Cost Savings, the Excess Energy Cost Savings, and the Annual Project Benefits shall take place. The first reconciliation will be for a partial year from the Commencement Date through the following

	year. Partial year reconciliations shall be prorated over the period for which energy savings are calculated.
Energy bills	The CLIENT agrees to provide, each month, consumption and billing data for electric and gas utilities and all other energy suppliers to PPESCO. Copies of energy bills shall be provided to PPESCO within seven days of their receipt by the CLIENT.
Calculation of energy and cost savings	Energy and Cost Savings shall be calculated as provided in respective schedule (i.e. Energy and cost savings guarantee)
Adjustments to base energy use	
Adjustments Resulting from Material or Operational Changes in Condition or Use of Facilities	<ol style="list-style-type: none"> 1. manner or frequency of use of the Facilities; 2. hours of operation of any equipment contained in the Facilities; 3. occupancy; 4. structure of the Facilities; 5. types of equipment used on the premises; 6. conditions affecting energy use in the Facilities, other than those caused by the installation of measures set forth in this Agreement, which reasonably could be expected to change the amount of energy used at the Facilities
Adjustments Resulting from Failure to Perform Adequate Maintenance	
CLIENT and SERVICE PROVIDER acknowledge that proper maintenance of the equipment is essential for achieving the projected energy savings. Should CLIENT fail to perform Proper Maintenance and Servicing, and should such failure reduce the level of utility savings during the loan repayment period, SERVICE PROVIDER shall, in consultation with CLIENT, adjust the Fixed Base Year Energy Use accordingly	
Energy and cost savings guarantee	
Guaranteed savings	
Annual review and reimbursement	
In recognition that an insufficiency in savings as described in the preceding paragraph for a given year may be a transient condition, such payments from Service Provider will be considered a no-interest loan. Service Provider shall be repaid any sums paid under Section (...) to the extent Total Energy Cost Savings in subsequent years produce an excess of savings that allows such repayment	
Service provider account for the benefit of client	Service Provider maintains line of credit with a financial institution with sufficient funds to cover (X%) of current year's projected annual project benefits.
Energy management services	
Monitoring and calculation of savings	
Routine review of equipment	
Energy training	
Assessment of maintenance needs	
Performance contract service fee	
Distribution of excess energy cost savings	
Insurance coverage	
Additional services	

Access to project records	
Hold Harmless Clause	
Hazardous materials	
Applicable laws	Parties insert
Severability	
Arbitration	
Index of schedules	<p>Schedule A – Scope of the Project: Description of the scope of the energy conservation and related work to be performed at [PROJECT LOCATION]</p> <p>Schedule B – Additional Maintenance and Service Activities</p> <p>Schedule C – Fixed Base Year Energy Use</p> <p>Schedule D – Energy and Cost Savings Guarantee</p> <p>Schedule E – Methods of Savings Measurement Verification</p> <p>Schedule F – Energy Rates for Savings Calculations</p> <p>Schedule G – Cash Flow Projection</p> <p>Schedule H – Service Provider Fee Schedule</p> <p>Schedule J – Service Provider Hourly Billing Rates</p> <p>Schedule K – Standards of Comfort</p>

Financing Clean Energy | Energy Performance Contracts

Commonwealth of Dominica
Ministry of Environment

19. MARCH 2021

Dominica Clean Energy Finance

Presentation

1. Dominica Context
2. Financing models
3. Energy Performance Contracts
4. Risk and responsibility
5. Measurement and verification
6. Strategies for reviewing proposals from Energy Service Companies

Dominica Clean Energy Finance

Climate context

The Commonwealth's Nationally Determined Contributions (NDC) includes **Energy Efficiency** for commercial, government and institutional buildings (retrofitting lighting, air-conditioning, appliances, awareness drive)

- Program Timing: 2016-2025
- Forecasted Emissions Reduction: 5.2 Gigagrams (Gg)
- Cost Estimate: US\$2.3 million
- There are other targets for streetlighting

Dominica Clean Energy Finance

Financing models

Dominica Clean Energy Finance

Financing models

Financing models for clean energy depend on hardware and maintenance costs, benefits sought and the cost recovery/investment horizon e.g. 25 years = long term

- Pay as you go – delivery financing mechanism for commercial and residential end users
- Blended finance – public or government finance that can take on early-stage, higher risk positions accompanied by private finance to catalyse uptake
- Power purchase agreement (PPA) – buying power generated by solar PV
- Market-based support mechanisms – tax incentives (investment-focused) | feed-in tariffs (generation-focused)

Dominica Clean Energy Finance

Financing solutions

For a residential or commercial/industrial rooftop PV system, the investment options are:

- Self-financing
- Retail debt or concessionary financing instruments, including mortgage-based loan, personal loan, and saving guarantee program.
- Solar crowdfunding (for loan or leasing) and solar third-party ownership models (pay-as-you-go business model, which allows payment for the power service without the high upfront cost)
 - This is yet to be demonstrated, especially where legal business structures and supporting policy are not fully implemented.

Dominica Clean Energy Finance

Energy Performance Contract – definition

Clean energy and energy efficiency projects tend to be financed through long-term funding and loans. These can take a long time to develop

Energy performance contracts (EPCs) provide near-term solutions and are project-specific. They also have key properties that address risk, uncertainty and financing.

Dominica Clean Energy Finance

Energy Performance Contracts

Under an **energy performance contract**, a service provider i.e. an energy service company (ESCO) implements a project to deliver energy efficiency or renewable energy solutions and uses the income from the cost savings or the renewable energy produced to repay the costs of the project.

Dominica Clean Energy Finance

EPC key elements

- An ESCO undertakes the energy efficiency or renewable energy development project
- A contract between the ESCO and the property owner needs to be structured based on agreed outcomes
- There needs to be a viable method for measuring and verifying energy generation or energy savings

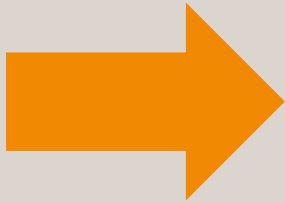
Dominica Clean Energy Finance




Renewable energy opportunities (Caribbean region)

- Financing terms typically require collateral, have interest rates ranging from 7% to 20% and tenors are typically 3-5 years.
- Few lenders offer tenors over 10 years. High costs of capital and short debt terms constrain market growth and weaken PV economics.
- Commercial PV system costs averaged \$2.88/W, with a high of \$4.00/W in Martinique and a low of \$2.00/W in Barbados.

Dominica Clean Energy Finance

Indicative solar PV prices in the region



Residential 	Average	\$3.85/W	Highest	Jamaica \$8.00/W	Lowest	Antigua \$1.50/W
Commercial 	Average	\$2.69/W	Highest	Martinique \$4.00/W	Lowest	Barbados \$2.00/W
Utility-Scale 	Average	\$3.20/W	Highest	Puerto Rico \$5.26/W	Lowest	Martinique \$2.00/W

Dominica Clean Energy Finance

Indicative solar PV prices in the region (US\$ / watt)



Dominica Clean Energy Finance

Energy Performance Contracts

Dominica Clean Energy Finance

EPC characteristics

- **Turnkey service:** The EPC provider delivers all the services required to design and implement a comprehensive energy saving project at the customer's facility, from initial energy audit to measurement and verification of savings.
- **No up-front capital:** Energy efficiency investments are repaid directly from energy savings and related financial savings, so there is no need for upfront capital from the customer.
- **Low risks** for customers: The EPC provider assumes the contractually agreed performance risks of the project.
- **Savings guaranteed:** The EPC provider guarantees the achievement of the contractually agreed level of savings and is obliged to compensate savings shortfalls.
- **Support in securing financing:** The capital to finance the EPC project can either be supplied out of the client's own funds or by the ESCO or a third party.

Dominica Clean Energy Finance

EPC opportunities

- Energy Efficiency – implementation of EE mechanisms in government and commercial buildings. These projects cost on average less than **US\$ 100,000**.
- Renewables – ambition to introduce or expand RE into its supply mix, e.g. through the installation of solar PV panels at government and commercial buildings or facilities. **Costs depend on the size of the project.**

Dominica Clean Energy Finance

Context

The Commonwealth's Nationally Determined Contributions (NDC) points to specific opportunities in **Solar PV** for commercial, government and institutional buildings

- Program Timing: 2017-2025
- Forecasted Emission Reductions: 0.86Gg
- Capital Cost Estimate: US\$2.7 million

Dominica EPC

Ideation

The GCF made a **US\$ 20 million** loan (plus technical assistance grant) in Salvador to develop its energy efficiency and ESCO ecosystem. The 15-year project includes US\$ 20 million in co-financing.

- Key feature: a credit line (and revolving fund) for local banks

Dominica EPC

Ideation

Solarize St John (USVI)

- Bundle PV projects for pricing purposes
- US\$1.50 per watt
- Crowdsourcing sustainability
- Government incentives covering 40% of a system up to US\$30,000

Dominica EPC

SWOT

Strengths

- Dominica's clean energy commitment
- Low presence of clean energy (market availability)
- EPC improves building performance and market value
- Minimal own investment
- CO₂ emissions reduction
- Investment in clean tech
- Risk transfer to private sector (technical, financial)

Weaknesses

- Complexity of EPC process (tendering, procurement, contracting, M&V)
- Transaction costs of EPC
- Duration of contract period (no flexibility)
- Lack of ESCOs and service providers in Eastern Caribbean
- Duration of payback period may not align with short-term expectations

Opportunities

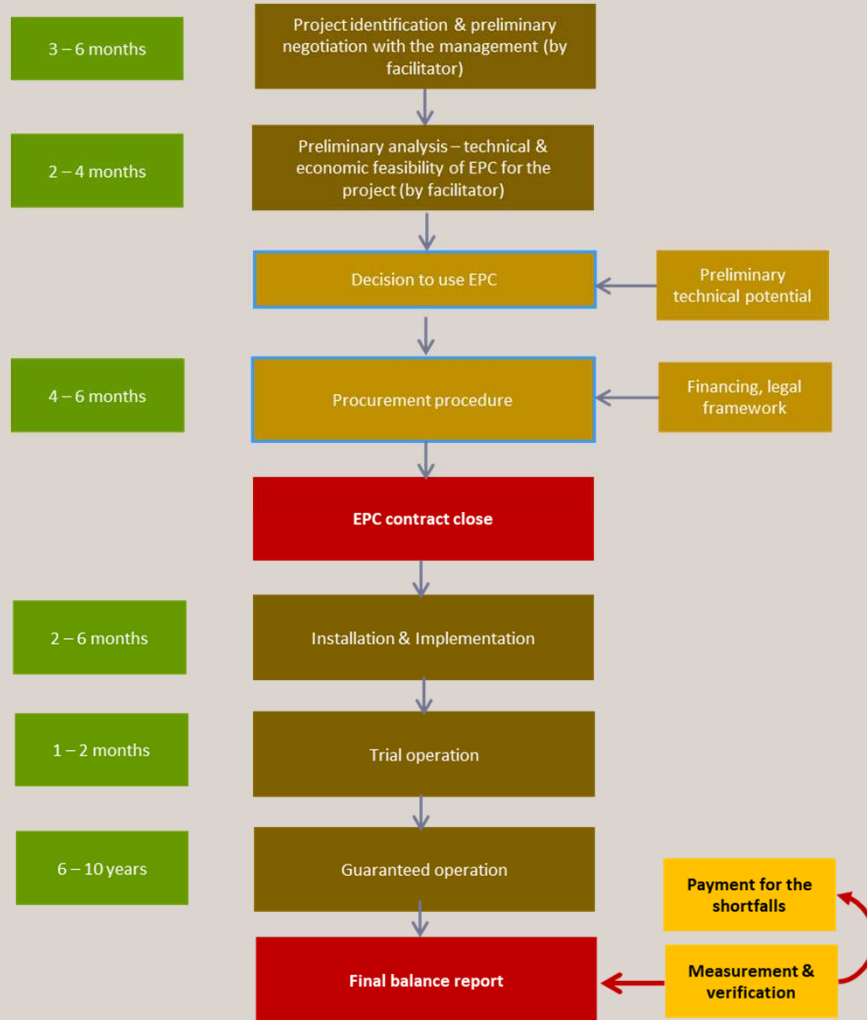
- Increased energy efficiency in buildings
- Attractive to external investors
- Project funding from GCF, GEF, IFIs
- A counter to volatile fossil fuel prices
- Emissions targets (Dominica's NDC)
- Energy and cost savings
- High potential in public properties
- Lower maintenance costs of buildings
- Public private partnerships

Threats

- Lack of information and knowledge about energy performance in buildings
- Complexity of EPC process
- Doesn't fit short-term planning
- Lack of best practice examples in Caribbean Community
- Lack of awareness about energy savings
- Enabling environment needs to come online (e.g. Climate Change Trust Fund and clean energy expertise in government)

Dominica EPC

EPC Process



Dominica EPC

Potential roles and responsibilities

Ministry of Environment, Rural Modernization and Kalinago Upliftment – should serve as the focal point for EPC development. This should include responsibility to approve project origination and development (if that falls to another ministry or agency, the Ministry of Environment should at least retain responsibility to provide counsel). This includes for energy efficiency and renewable energy projects that will pursue energy performance contracts.

DOMLEC – responsible for procuring a service provider e.g. an energy service company (ESCO)

Ministry of Finance – fiduciary responsibility for EPC contracting, transfers and transactions

Chamber of the Attorney General – legal guidance and support

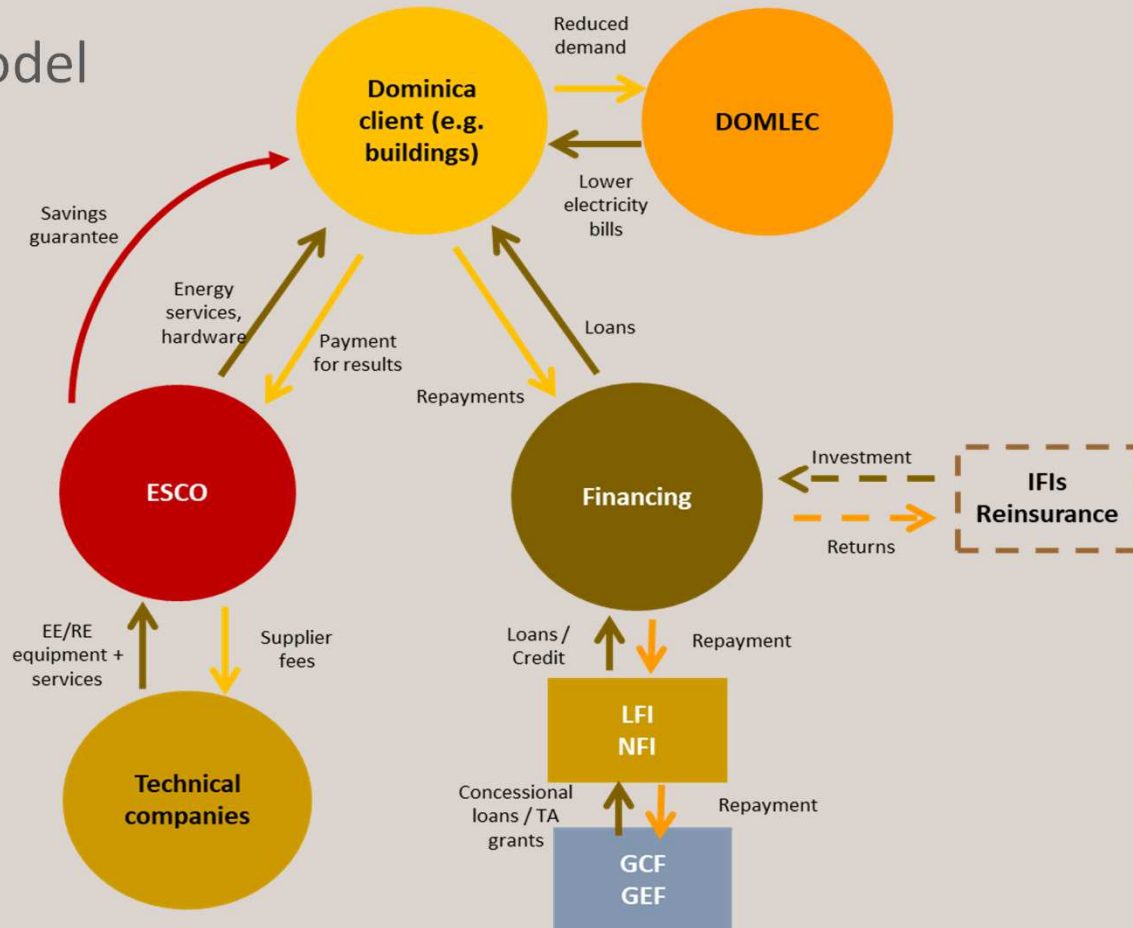
Independent Regulatory Commission (IRC) – Commonwealth of Dominica's electricity regulator. Suggested responsibility: establish rules and guidelines for EPC and provide transparent guidance on transactions.

Local private ESCO – or a regional ESCO

Funding agencies – The Climate Change Trust Fund can help to bundle the EPC project with other initiatives to grab scale and interest of IFIs e.g. Inter-American Development Bank (IADB), Caribbean Development Bank, Green Climate Fund and the Global Environment Facility.

Dominica EPC

Potential model



Dominica Clean Energy Finance

Risks & Responsibilities

Dominica EPC

Risks and EPCs

- EPCs transfer risk from end-user to a third party or service provider/ESCO. But those risks still remain:
 - Risk guaranteed savings are not achieved (EE)
 - Risk targeted generation (RE – PPA) not met
- Parties with responsibility:
 - Service provider
 - Financial institution
 - End-user
 - Government, utility, other intermediary

Dominica EPC

Risks and Responsibilities

EPC is designed to lessen the project risks of customers because it transfers technical risks from the client to the ESCO.

- Example – installation of LED lights: their maintenance and cost savings become responsibility of the ESCO.

However, clients can be at risk if they do not undertake basic due diligence on what they are investing in and what the costs are.

- Example – technology and prices (e.g. LEDs) should be known before contracting.
- Example – policies (e.g. feed-in tariffs) should be known prior to contracting.

Local Dominica financial institutions can also face risks e.g. payback periods, technology performance, etc.

Dominica EPC

Risks in contracts

- Contracts require specific references to targets, responsibility for delivery and agreed course of arbitration in order to define and mitigate risk

Dominica EPC

Risks / Barriers

Barrier	Description	Strategy
Lack of trust from investors	Energy performance contracts include assurance clauses or a guarantee.	Establish viable performance criteria in the contract
Lack of information on the project components (for EE or RE) or on service providers	Build this into the tender stage.	Intervention begins with a baseline measuring energy that would have been used if an energy performance contract hadn't implemented.
Low energy prices	Less of an impact on solar PV investments.	The commitment to clean energy in Dominica is a climate priority and not just a finance decision
Access to finance	Local financial institutions may not have necessary technical background and capacities to properly assess an EPC project. And local ESCOs may not have sufficient credit-worthiness.	Finance solutions may come from international sources e.g. international finance institutions such as the Green Climate Fund, IADB or Caribbean Development Bank. And foreign ESCOs may be the EPC provider.

Dominica Clean Energy Finance

Measurement & Verification

Dominica EPC

Importance of measurement and verification (M&V)

- There needs to be a method defined in the contract for **measuring and verifying** energy generation or energy savings
- Monitored and verified savings or generation must be done by a **third-party**
- The guarantee of savings is **set in the contract** and the ESCO guarantees attainment of a specific metric. For instance:
 - Annual volume of energy generation or savings in physical units (e.g. kWh or MWh)

Dominica EPC

Measurement and verification (M&V)

- During the contract period, the energy service company needs to **continuously** supervise the functioning of the energy system it is responsible for. It is further expected to monitor energy consumption and to intervene in the case of undesirable action.
- Performance-based projects in Dominica should be subject to international protocols such as the **International Performance Measurement and Verification Protocol**.
- For Dominica, it may be important to include in the contract with the ESCO delivery of technical assistance and capacity building to ensure that the operation can be technically and effectively managed, **post-contract**.

Dominica Clean Energy Finance

Strategies for reviewing tenders from ESCOs

Dominica EPC

Reviewing tenders

- Approach to the evaluation of proposals from service providers needs to be defined and applied.
- Evaluation methodology can be developed by the client but should be reviewed by a bid facilitator, who may be retained by the Dominica client.
- Criteria must include quantitative aspects (e.g. energy or emission savings), qualitative criteria (e.g. energy management level, quality of energy and efficiency technology equipment) and financial criteria.

Dominica EPC

Reviewing tenders

Quantitative

- Emissions savings or energy savings in the physical units. If a specific volume of energy savings in physical units is required (as opposed to cost savings), it can be set as a minimum requirement. For a solar PV performance contract, a minimum target of generation should be noted.
- The service lifetime of technical equipment within energy systems in buildings is approximated at 15 years. Solar PV panels and accompanying hardware is generally assumed at 20 years.

Dominica EPC

Tender reviewing

Qualitative

- Some reviewing criteria are not easy to measure. These include:
 - Firm's energy management level (its system measuring and monitoring);
 - Quality of the technology, hardware, service life being proposed;
 - Method of problem-solving and maintenance level;
 - Proposed system for training of staff;
 - Project organization;
 - **Capacity to provide maintenance services immediately.**

Dominica EPC

Tender reviewing

Financial

- The financial profile is the most critical feature of a tender submission—and its evaluation. Bids need to include an aggregate of the present value of all the monetary benefits and all the costs expected to be generated in in the EPC project.
- This is expected to be in the form of the net present value (NPV) of the project.

Dominica EPC

Tender financials

For a solar PV contract, NPV can be measured as guaranteed generation achievement (and capital expenditures (CAPEX), operational expenditures (OPEX)), aggregated over the project lifecycle.

Other financial metrics could be used, such as internal rate of return (IRR) of the EPC project.

Dominica EPC

Tender financials

Some assumptions also need to be made for the financial case and included in bids:

- The discount rate that should reflect the financial situation of the client.
- The period for which the criteria will be applied – only contract duration, or as otherwise specified (e.g. post-contract).
- Scenario management e.g. if achieved savings exceed contracted or guaranteed levels between the client and the EPC provider (ESCO), how will such a dividend be divided?
- For the case of solar PV, how will the monetized returns from technology overperformance, e.g. returns from generation in excess of the targeted threshold, be divided?

Thank you

NIRAS A/S

On behalf of UNDP

United Nations Development Programme



UNDP REIMBURSABLE LOAN AGREEMENT (RLA)

Date of
Agreement: 29
July 2020

Contract
Reference:
BBRSO84096

Vendor
No.:
00000060
95

MEMORANDUM OF AGREEMENT between the **UNITED NATIONS DEVELOPMENT PROGRAMME** (hereinafter referred to as "UNDP") and **NIRAS A/S** (hereinafter referred to as "The Company")

Whose Address is: **SORTEMOSEVEJ 19, ALLEROED 3450 DNK**

Whereby the Company will provide the services of **ENERGY AND FINANCE EXPERT FOR LCPD PROJECT**

The Company accepts this engagement of service with UNDP according to the terms and conditions hereinafter set forth.

1. Duties of Consultant: As set out in the ToR

The company shall make available **THOMAS THORSCH KRADER** (hereinafter called "The Consultant") who shall perform the duties according to the attached Terms of Reference, which shall form an integral part of this agreement. The services will be performed principally at **Barbados and the Eastern Caribbean – Dominica**.

2. Duration of Agreement

For a maximum duration of **Three and a half (3.5) months** This agreement shall commence on **29 July 2020** and shall expire no later than **15 November 2020**

3. Consideration

- a) For the services performed by the Company under the terms of this agreement and subject to the provisions of Article 5 below, UNDP shall reimburse the Company the sum of: **Sixty-Seven Thousand, Five Hundred United States Dollars** (US\$67,500.00)

Gross Per Day Worked Gross Lump Sum Equal Payments Other

- b) Other Reimbursable Items: Airfare DSA Terminal Expenses Others

- c) The Company will provide UNDP with the enclosed UNDP Certification of Payment Form(s) to claim payments per subsection 3a.
- d) The Company will provide a Company invoice (attaching receipts) to claim Other Reimbursable Items per subsection 3b.
- e) The Company will submit UNDP Certification of Payment Form and Company Invoices to: **kimisha.thomas@undp.org**
UNDP Office at **Barbados and the Eastern Caribbean - Dominica**
- f) Payments made in a currency other than US dollars will be made at the UN operational rate of exchange in effect on the day of payment and the Company will incur charges related to the payment. The Company is responsible for any taxes levied on the monies received under this agreement.

4. Rights and Obligations

- a) It is understood that the obligations of UNDP are limited to those expressly provided for in this agreement.
- b) This agreement shall not in any respect confer upon the Consultant the status of staff member of the UNDP.
- c) The Company will make available the services of the Consultant for the period noted above, and will remain responsible for actual payment of salaries, taxes and any other overhead administrative charges.
- d) It is understood that the Company will provide insurance and medical coverage for the Consultant. In particular, the Company will remain responsible for insuring the Consultant in the event of accident, illness, or death, whether or not such event occurs during service with UNDP.

- e) The rights and obligations of the Company are strictly limited to the terms and conditions of this agreement. Accordingly, the Company shall not be entitled to any benefit, payment, subsidy, compensation or entitlement, except as expressly provided in this agreement.
- f) The Company shall be solely liable for claims by third parties arising from negligent acts or omissions by the Company/Consultant in the course of performing this agreement, and under no circumstances shall UNDP be held liable for such claims by third parties.
- g) The title rights, copyrights and all other rights of whatsoever nature in any material produced under the provisions of this agreement shall be vested exclusively in UNDP.


5. Standard Conditions

UNDP standard conditions of procuring services shall apply to this agreement (Attachment A).

6. Effectiveness

This contract shall become effective on the date of signing of this Memorandum of Agreement, the execution by of the Consultant of the Side Letter (Attachment B), affirming his/her personal obligation to abide by the Covenants stipulated therein. This contract shall be in full force and effect until the services have been completed and all payments therefore have been made.

In witness whereof, the parties hereto agree with the terms and conditions of the agreement:

<p><i>Morten Pedersen</i> MORTEN PEDERSEN</p>	<p><i>27/7-2020</i></p>	 UNDP	<p>27-Jul-2020</p>
(The Company)	Date		Date

Please return a copy of this agreement to:

NIRAS A/S
 Sortemosevej 19 · DK-3450 Allerød · Denmark
 Phone +45 4810 4200 · Fax +45 4810 4300

MP.

Attachment A

**GENERAL CONDITIONS
FOR UNDP REIMBURSABLE LOAN AGREEMENTS (RLA)**

Article 1 - Independent Contractor

1. The Contractor shall be considered as having the legal status of an independent contractor. The Employees of the Contractor shall not be considered in any aspect as being officials or staff members of the United Nations Development Programme. The Contractor shall be solely responsible for all claims by such persons arising out of or in connection with their agreement by the Contractor. The Contractor shall inform such persons of the foregoing.

Article 2 - Contractor's General Responsibilities

1. The Contractor shall perform its obligations under the RLA with due diligence and efficiency and in conformity with sound professional, administrative and financial practices.
2. The Contractor shall act at all times so as to protect, and not be in conflict with, the interests of UNDP.
3. The Contractor shall be responsible for the services performed by its Employees. To this end, and without limiting the generality of the foregoing, the Contractor shall select reliable individuals who will perform effectively in the implementation of the RLA, respect the local customs and conform to a high standard of moral and ethical conduct.
4. The Contractor shall respect and abide by all applicable laws and regulations of the country in which the obligations under this RLA are to be performed and shall take all reasonable measures to ensure that its Employees do so.

Article 3 - Assignment of Personnel

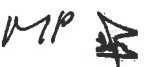
1. Other than persons specifically named in this RLA, no person shall be assigned by the Contractor to perform services in connection with this RLA until after the Contractor has notified the UNDP of the identity of such proposed persons and has provided the UNDP with their curricula vitae, and the UNDP has notified the Contractor of its approval of such assignments.

Article 4 - Removal of Personnel

1. If in the opinion of the UNDP any of the Contractor's Employees prove themselves incapable of substantially carrying out their duties and/or are fundamentally unsuitable for the services, it shall be at the discretion of the UNDP to decide if and when the employment of such Contractor's employees under the RLA shall be terminated and the Contractor be required to replace him. In this event the Contractor shall, on receipt of instructions from the UNDP, comply forthwith and shall assign new persons in accordance with the provisions of Article 3.
2. Such withdrawal or replacement shall not be a cause for suspension of the RLA.
3. Any costs or expenses resulting from any withdrawal or replacement of persons pursuant to paragraph 1 of this Article 4 shall be borne by the Contractor.

Article 5 - Indemnification and Insurance

1. The Contractor shall indemnify, hold and save harmless and defend, at its own expense, the UNDP, its officials, agents, servants and employees, from and against all suits, claims, demands and liability of any nature, including their costs and expenses, arising out of the acts or omissions of the Contractor or its Employees in the performance of this RLA. This provision shall extend to claims and liability in the nature of workmen's compensation claims and those arising out of the use of patented inventions or devices.
2. The Contractor shall provide and thereafter maintain all appropriate workmen's compensation and liability insurance to cover its Employees and any claims for death, bodily injury or damage to property arising from the execution of this RLA. The Contractor represents that the liability includes possible subcontractors.



3. The Contractor shall ensure that all policies of insurance referred to above, other than workmen's compensation, shall name the UNDP and, where appropriate, subcontractors concerned, as additional insured parties.
4. Upon request by the UNDP, the Contractor shall provide evidence, to the reasonable satisfaction of the UNDP, of the insurance referred to above and shall give the UNDP reasonable advance notice of any proposed changes related to such insurance.
5. The UNDP undertakes no responsibility to provide life, accident, travel or any other insurance coverage which may be necessary or desirable in respect of any persons performing services in connection with this RLA.

Article 6 - Sickness and Accident

1. If the Contractor's Employees fall sick in the period during which they are engaged on the RLA, the UNDP shall not be responsible for arranging or paying for medical treatment and attention.
2. The UNDP shall not be required to pay for the services of the Contractor's Employees for any period that the Contractor's Employees are incapacitated by sickness.
3. If in the opinion of the UNDP, any of the Contractor's Employees either has been or will be incapacitated by sickness for an unreasonable period or period then, and in that case, it shall be at the discretion of the UNDP to decide if and when the employment of the Contractor's Employee under the RLA shall be terminated and the Contractor be required to replace him. In this event, the Contractor shall on receipt of instructions from the UNDP comply forthwith and shall substitute for the Employee whose services are so terminated another and satisfactory person and the whole costs of such replacements shall be at the Contractor's expense.

Article 7 - Encumbrances

1. The contractor shall not cause or permit any lien, attachment or other encumbrance by any third party to be placed on file or to remain on file in any public office or on file with the UNDP against any monies due or to become due for any work done or services rendered in connection with this RLA, or by reason of any claim or demand against the Contractor.

Article 8 - Source of Instructions

1. The Contractor shall neither seek nor accept instructions from any authority external to the UNDP in connection with the performance of its services under this RLA. The Contractor shall refrain from any action which may adversely affect the UNDP and shall fulfill its commitments with the fullest regard for the interest of the UNDP.

Article 9 - Prohibition of Conflicting Activities

1. The Contractor and its personnel admitted into the country to perform services under this RLA shall not engage in any conflicting business or other activity in the country in which the services are to be performed or accept paid employment in contravention with the laws of the country.

Article 10 - Officials not to Benefit

1. The Contractor warrants that no official of the UNDP has been or shall be admitted by the Contractor to any direct or indirect benefit arising from this RLA or the award thereof. The Contractor agrees that breach of this provision is a breach of an essential term of this RLA.

Article 11 - Records, Accounts, Information and Audit

1. The Contractor shall maintain accurate and systematic records and accounts in respect of the performance of its obligations under this RLA.
2. The Contractor shall furnish, compile and make available at all reasonable times to the UNDP any records, accounts or other information, oral or written, which the UNDP may reasonably request in respect of the performance by the Contractor of its obligations under this RLA.

3. The Contractor shall allow the UNDP to inspect and audit such records, accounts or other information upon reasonable notice.

Article 12 - Confidential Nature of Documents

1. All maps, drawings, photographs, plans, manuscripts, records, reports, recommendations, estimates, documents and all other data compiled by or received by the Contractor under this RLA shall be the property of the UNDP, shall be treated as confidential and shall be delivered only to the authorized UNDP officials on completion of work under this RLA.
2. The Contractor may not communicate at any time to any other person, government or authority external to the UNDP, any information known to it by reason of its association with the UNDP which has not been made public except with the authorization of the UNDP; nor shall the Contractor at any time use such information to private advantage. These obligations do not lapse upon termination of this RLA with the UNDP.

Article 13 - Copyright, Patents and other Proprietary Rights

1. The UNDP shall be entitled to all intellectual property and other proprietary rights including but not limited to patents, copyrights and trademarks, with regard to documents and other materials which bear a direct relation to or are prepared or collected in consequences or in the course of the execution of this RLA. The Contractor, at the UNDP's request shall take all necessary steps, execute all necessary documents and generally assist in securing such proprietary rights and transferring the same to the UNDP in compliance with the requirements of the applicable law.

Article 14 - Use of Name, Emblem or Official Seal of the UNDP

1. The Contractor shall not advertise or otherwise make public the fact that it is a contractor with the UNDP. Also, the Contractor shall, in no manner whatsoever use the name, emblem or official seal of the UNDP or any abbreviation of the name of the UNDP in connection with its business or otherwise. This obligation does not lapse upon termination of the RLA.

Article 15 - Contractor's Default

1. If the Contractor shall fail to carry out the Services or any part thereof with due diligence and expedition, or shall refuse or fail to comply with any reasonable order given to it in writing by the UNDP, the UNDP may immediately give notice in writing to the Contractor to make good such failure or contravention.
2. Should the Contractor fail to comply with the notice referred to in Sub-Clause 15.1 either within seven days from receipt of such notice, or otherwise within such times as may be reasonably necessary for making it good, the UNDP without prejudice to any other right it may have under the RLA may, subject to the prior notification of the Contractor
 - (a) employ others to carry out that part of the Services which the Contractor shall have failed to carry out, or
 - (b) take the Services in whole or in part out of the Contractor's hands and recontract with others as may be appropriate.
3. If the cost to the UNDP of employing others to carry out part or all of the Services in accordance with Sub-Clause 15.2. exceeds the amount which would have become payable to the Contractor had it completed that part or all of the Services, then the UNDP shall have the right to charge such excess cost to the Contractor. The UNDP shall also have the right to retain part or all of any sum which would otherwise be due to the Contractor under the RLA and set such sum against the excess due from the Contractor.
4. If the Contractor fails to carry out the Services in part or in whole, the Contractor shall refund to the UNDP any advance payment made in respect of that portion of the Services not carried out.
5. Nothing in this Clause shall, in the event of a malfunction, prevent emergency action being taken by the UNDP to meet operational requirements but, if such actions result in the UNDP incurring additional costs in carrying out the Services, such reasonable costs shall be reimbursed to the Contractor by the UNDP provided such emergency action is not taken as a result of failure by the Contractor.

Article 16 - Audits and investigations:

16.1- Each invoice paid by UNDP shall be subject to a post-payment audit by auditors, whether internal or external, of UNDP or the authorized agents of the UNDP at any time during the term of the Contract and for a period of three (3) years following the expiration or prior termination of the Contract. The UNDP shall be entitled to a refund from the Contractor for any amounts shown by such audits to have been paid by the UNDP other than in accordance with the terms and conditions of the Contract. Should the audit determine that any funds paid by UNDP have not been used as per contract clauses, the company shall reimburse such funds forthwith. Where the company fails to reimburse such funds, UNDP reserves the right to seek recovery and/or to take any other action as it deems necessary.

16.2- The Contractor acknowledges and agrees that, at any time, UNDP may conduct investigations relating to any aspect of the Contract, the obligations performed under the Contract, and the operations of the Contractor generally. The right of UNDP to conduct an investigation and the Contractor's obligation to comply with such an investigation shall not lapse upon expiration or prior termination of the Contract. The Contractor shall provide its full and timely cooperation with any such inspections, post-payment audits or investigations. Such cooperation shall include, but shall not be limited to, the Contractor's obligation to make available its personnel and any documentation for such purposes and to grant to UNDP access to the Contractor's premises. The Contractor shall require its agents, including, but not limited to, the Contractor's attorneys, accountants or other advisers, to reasonably cooperate with any inspections, post-payment audits or investigations carried out by UNDP hereunder.

Article 17 - Anti-terrorism:

- The Contractor agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received under this Contract are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Contract.

Article 18 - Security:

18.1 The responsibility for the safety and security of the Contractor and its personnel and property, and of UNDP's property in the Contractor's custody, rests with the Contractor.

18.2 The Contractor shall:

- (a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the services are being provided;
- (b) assume all risks and liabilities related to the Contractor's security, and the full implementation of the security plan.

18.3 UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this contract. Notwithstanding the foregoing, the Contractor shall remain solely responsible for the security of its personnel and for UNDP's property in its custody as set forth in paragraph 3.1 above.

Article 19 - Termination for Insolvency

1. The UNDP may at any time terminate the RLA by giving written notice to the Contractor, without compensation to the Contractor, if the Contractor becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the UNDP.

Article 20 - Termination for Convenience

1. The UNDP, may by written notice sent to the Contractor, terminate the RLA, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the UNDP's convenience, the extent to which performance of Services under the RLA is terminated, and the date upon which such termination becomes effective. This shall be no fewer than 30 days from the date of the letter issued by the UNDP detailing its intent to terminate the RLA.
2. In the event of any termination no payment shall be due from the UNDP to the Contractor except for the Services satisfactorily performed in conformity with the expressed terms of this RLA.

Article 21 - Force Majeure

1. The Contractor shall not be liable for termination for default if, and to the extent that, its delay in performance or other failure to perform its obligations under the RLA is the result of the event of Force Majeure.
2. For the purposes of this Clause, "Force Majeure" means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the UNDP either in its sovereign or contractual capacity, wars, fires, floods, epidemics, quarantine restrictions.
3. If a Force Majeure situation arises, the Contractor shall promptly notify the UNDP in writing of such condition and the cause thereof. Unless otherwise directed by the UNDP in writing, the Contractor shall continue to perform its obligations under the RLA as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
4. If the Contractor is rendered permanently unable, wholly or in part, by reason of Force Majeure to perform its obligations under this RLA, the UNDP shall have the right to suspend or terminate this RLA with a period of notice to the Contractor of seven (7) days.

Article 22 - Arbitration

1. Any controversy or claim arising out of, or in connection with this RLA or any breach thereof, shall unless it is settled amicably by direct negotiation, be referred to arbitration in accordance with the UNCITRAL Arbitration Rules then obtaining. Such arbitration shall be conducted under the auspices of the International Chamber of Commerce ICC (where contract activities are conducted outside the United States of America) or the American Arbitration Association AAA (where the contract activities are more closely connected with the United States of America) which shall also serve as the Appointing Authority under the Rules.
2. All parties shall be bound by the arbitration award rendered in accordance with such arbitration, as the final adjudication of any such controversy or claim.

Article 23 - Privileges and Immunities

1. Nothing in or relating to this RLA shall be deemed a waiver, express or implied, of any of the privileges and immunities of the United Nations including its subsidiary organs.

Article 24 - Tax Exemption

1. Section 7 of the Convention on the Privileges and Immunities of the United Nations provides, inter alia, that the UN including its subsidiary organs, such as the UNDP, are exempt from all direct taxes and from custom duties in respect of articles imported or exported for its official use. Accordingly, the Contractor authorizes the UNDP to deduct from the Contractor's invoice any amount representing such taxes or duties. Payment of such corrected invoiced amount shall constitute full payment by the UNDP. In the event any taxing authority refuses to recognize the UNDP exemption from such taxes, the Contractor shall immediately consult with the UNDP to determine a mutually acceptable procedure.

Article 25 - Amendments

1. No modification of or change in this RLA, waiver of any of its provisions or additional contractual provisions shall be valid or enforceable unless previously approved in writing by the parties to this RLA or their duly authorized representatives in the form of an amendment to this RLA signed by the parties hereto.



Attachment B

Side Letter

UNDP Barbados and The Eastern Caribbean
 UN House
 Marine Gardens
 Hastings
 Christ Church
 Barbados

Dear Sir/Madam:

Subject: ENERGY AND FINANCE EXPERT FOR LCPD PROJECT

1. I refer to para 6 of the Reimbursable Loan Agreement between **NIRAS A/S** and UNDP, dated 7/29/2020.
2. I affirm any personal obligation to comply with undertaking as contained in the covenants applicable to the consultant in the Standard Conditions of the Contract. I also affirm that my employment in connection with the contract will include, as my personal obligation, continued cooperation with UNDP after the conclusion of the Reimbursable Loan Agreement to the extent necessary to clarify or explain any report or recommendations made by me. This obligation shall be independent of my obligation to **NIRAS A/S** under our employment contract.
3. I understand that UNDP's confirmation of this side letter is necessary to make the Reimbursable Loan Agreement effective.
4. The project deliverables and payment schedule are outlined in the table below:

DELIVERABLE	DUE DATE	AMOUNT US\$
Inception report	2020-08-07	6,750.00 USD
Feasibility study with detailed recommendations for the EPC arrangements, and templates for agreements and EPCs	2020-09-07	20,250.00 USD
Training program delivered to support EPC pilot participants	2020-10-05	20,250.00 USD
Energy Performance Contract template prepared, negotiated and approved	2020-11-09	20,250.00 USD

Sincerely yours,



Consultant

Confirmed:

UNDP

MP

DocuSign Envelope ID: C80B71C9-0BD1-49BA-9B5E-1BD0FAF9B8A5

ocuSign Envelope ID: 0AEB0810-AD60-4E62-9221-F83C5E0B0996

MP.

**Certification of Payment****1. For Personnel use only**

Name: Contract No.:
 Project Number: Fee: (per diem)
 Project Title: Duration:
 Starting Date: Expiry date: Expected number of work days per week:
 Nationality: Vendor No.:
 Allotment Number(s): Index no.:
 MOD Number(s):

2. To be completed by the subscriber

Please type or print and **mail original and first and second copies**, along with your travel claim upon completion of travel, to: United Nations Development Programme, One United Nations Plaza, New York, NY 10017.

Attention: (*Finance Officer*)

Room No.:

I certify that the dates indicated below are an accurate account of the services and duties performed under the terms of this contract.

Countries visited	Dates worked		No. of days worked	Total Payable
	From	To		

Please note that payment will be made in the currency of the subscriber's usual residence, unless otherwise indicated in Article 3 of the Special Service Agreement, or paragraph 2 of the Reimbursable Loan Agreement. Payments in other than US dollars will be made at the UN operational rate of exchange in effect at the time payment is made. Bank charges related to payment will be borne by the subscriber.

Please make payment as indicated below:

Name of Bank: Account title:
 Address: Account number:
 Currency of Account: Social Security or Tax Identification No.:
 (if applicable)
 Signature: _____ Date: _____

3. To be completed by Area/Requesting Officer

Please check appropriate box Final report accepted Assessment sheet attached:
 Final report not accepted Second Assessment to be added:

I certify that the work was satisfactorily performed during the above mentioned dates.

Signature: _____
 Name: _____

Date:

4. To be completed by the Certifying Officer

Please process the payment of _____ to the subscriber in accordance with the payment instructions given above.
 Travel Claim received

Certifying Officer

Certifying Bureau/Division

Date

M.P.

M.P.

**AMENDMENT NO. 01 TO THE CONTRACT
BETWEEN
THE UNITED NATIONS DEVELOPMENT PROGRAMME (“UNDP”)
AND
THOMAS KRADER (“COUNTERPARTY”)**

Reference is made to the Contract, number BRB-ICC_2020_84096 entered into on 29 July 2020 by and between the UNITED NATIONS DEVELOPMENT PROGRAMME (“UNDP”), and **THOMAS KRADER** (the “Counterparty”), and together with UNDP, the “Parties”

WHEREAS the CONTRACT provides that any modification thereto shall require an amendment in writing between the Parties, duly signed by the authorized representatives of UNDP and THOMAS KRADER

WHEREAS THOMAS KRADER has requested and UNDP has agreed to amend the Contract in order to to extend the date for completion of the services and to change the contract end date to 24 March 2021

NOW THEREFORE, the Parties agree:

1. The relevant provisions indicated below are hereby amended as follows:

N°	Deliverable	Contracted Due Date	Amended Due Date
3	Training program delivered to support EPC pilot participants	5 October 2020	17 March 2021
4	Energy Performance Contract template prepared, negotiated and approved	09 November 2020	19 February 2021

(2) Except as expressly modified herein in accordance with paragraph 1, all other terms of THOMAS KRADER as previously amended shall remain unchanged and shall continue in full force and effect.

(3) This Amendment will come into effect as of the date of last signature hereof by UNDP and THOMAS KRADER.

For UNDP:



Ugo Blanco

Title: Resident Representative a.i.

Date: 16 December 2020

For Consultant



Thomas Krader

Title: Climate Finance Lead, Niras A/S

Date: 20 January 2021

Payment Request

PR01

Date: 21 March 2021



Empowered lives.
Resilient nations.

Voucher #

In accordance with the activities as defined in the Annual Work Plan (AWP), we hereby request UNDP to make the following direct payment to the payee below

Project ID and Title	00091623 - Low Carbon Development Path Project
Total Amount	USD 27000.00
Purpose of Payment	Inception Report; Feasibility Study
Payee:	Name: Thomas Thorsch Krader (NIRAS) Due date: March 21, 2021 Invoice No.: 102005086; 102004870 Payment mode requested: EFT <u>For EFT:</u> Bank Name: DANSKE BANK Account number: 445101721

Chart of Accounts

Project ID	Activity	Donor	Fund	Budget Account	Currency & Amount
00091623	OUTCOME 1	10003	62000	71200	USD 27000.00

Certification: The authorized official hereby certifies:

- that this payment has not previously been made;
- that this payment is in accordance with the Annual Work Plan (AWP);
- that this payment is covered by funds available in the project budget;
- that this payment is for goods and services that have been delivered to the satisfaction of the requesting agency;
- that copies of invoices and other supporting documentation will be available for audit verification.

Prepared By:
Project Associate:

Name: Elizabeth Robinson
Date: March 20, 2021

Approved By:
Project Manager/Coordinator:

Name: Mohammad Nagdee
Date: 23-Mar-2021

Approved By:
Deputy Resident Representative

Name: Ugo Blanco
Date: 23-Mar-2021

For UNDP Finance Use Only		
Receiving Date	Returning Date	Remarks