Technical Assistance Response Plan – Terms of Reference

CLIMATE TECHNOLOGY CENTRE & NETWORK

Country	Commonwealth of Dominica
Request ID#	**2021000043**
Title	Technical and economic feasibility of solar units and water storage on public buildings in Dominica
NDE	Ministry of Environment Rural Modernisation and Kalinago Upliftment.
Proponent	Mr. Edgar Hunter Senior technical Advisor Ministry of Environment Rural Modernisation and Kalinago Upliftment Phone: +767 266 5358 Email: huntere@dominica.gov.dm

Summary of the CTCN technical assistance

Dominica is reliant on imported fossil fuels, leaving it vulnerable to global oil price fluctuations that directly impact the cost of electricity. The implementation of small-scale solar generation systems can support the energy transition in Dominica.

However, the island does not have a detailed analysis to identify the feasibility and benefits of expanding self-sufficient renewable energy generation solutions that can reduce the dependency of fossil fuels and increase the island energy self-sufficiency with low carbon technologies.

In terms of water supply, there are no official programs to promote water capture and storage systems that could help the island to minimize difficulties in the water supply during the dry seasons.

The overall objective of the technical assistance is to develop a technical and economic feasibility analysis of small solar generation units and water storage systems on public buildings in Dominica.

The present technical assistance has been designed to provide information and decision-making tools for the case of implementing solar generation and water capture and storage systems in public buildings. The findings and results of this technical assistance could be later replicated by other energy and water consumers.

The Ministry of Environment, Rural Modernization and Kalinago Upliftment is the climate change focal point and environmental regulatory entity that will coordinate the technical assistance and will support the interaction with other local stakeholders such us the Domical Electricity Company (DOMLEC), the Dominica Association of Industry and commerce (DAIC), and the Dominica Manufacturers Association (DMA).

The technical assistance is limited to a maximum duration of 8 months.

Agreement:

(If possible, please use electronic signatures in Microsoft Word file format)

National Designated Entity to the UNFCCC Technology Mechanism
Name: Edgar Hunter

Proponent (signature of the Proponent is optional)
Name: Michael Savarin

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Title: Senior Technical Adviser Ministry of Environment, Rural Modernisation and Kalinago Upliftmrnt

Date: October 8, 2021

Signature:

Title: GCF National Program Coordinator Ministry of Economic Affairs, Planning, Resilience, Sustainable Development, Telecommunications and Broadcasting

Date: Oct

Signature:

UNFCCC Climate Technology Centre and Network (CTCN)

Name: Rose Mwebaza
Title: CTCN Director
Date:October 8, 2021
Signature:

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19 Oct 2021

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1. Background and context

The current response plan has been developed by the Ministry of Environment Rural Modernisation and Kalinago Upliftment, with the support of the CTCN.

The aim is to contribute to the ongoing efforts for the implementation of Dominica's Low Carbon Development Pathway (DLCDP) as expressed in the National Climate Resilient and the Low carbon Climate Development Strategy and provide decision making information for promoting alternative renewable energy generation sources and implementing resilience measures in the water sector in public buildings that can be escalated to other users.

According to Dominica's National Energy Plan (drafted in 2011 and revised it in 2014), the objective is using sustainable and indigenous resources to make electricity generation on the island self-sufficient by 2020. It does not set binding targets but describes a scenario in which Dominica becomes a net exporter of electricity from its geothermal resources.

Renewable energy installations have the potential to lower the fuel charge portion of electricity rates and increase the reliability of electricity services through appropriate planning and operating procedures. Small solar energy generation units can become in additional mechanisms toward the energy transition in Dominica.

In terms of water resources, Dominica has abundance of rivers and is considered by other Caribbean countries as an alternative source of water supply in times of need. Supply systems are generally adequate to satisfy the demands of the communities. However, at some periods during the dry season, intermittent shortages can be experienced in a few of the systems (FAO, 2015[1])

The Integrated Water Resources Management (IWRM) Policy mentions that in order to minimize problems associated with droughts, the Dominican Government will encourage and support optimization of the storage facilities to contain wet season runoff for use in the dry periods.

Besides, in order to minimize difficulties in the water supply, the Government will like to promote harvesting and utilizing rainwater from roof catchments for individual households in cisterns or on a small scale in surface storage tanks in areas of water deficit, and developing a program to support retrofitting public buildings with water efficiency/conserving measures.

2. Problem statement

Accordingly the Energy Transition Initiative[2], 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. The implementation of small scale solar generation systems can support the energy transition in Dominica.

However, the island does not have a detailed analysis to identify the feasibility and benefits of expanding self-sufficient renewable energy generation solutions that can reduce the dependency of fossil fuels and increase the island energy self-sufficiency with low carbon technologies. These self-sufficient energy solutions can be off-grid or on-grid systems. The first ones are completely independent from the electricity grid and rely on batteries when there is not solar irradiation, and the second ones are still connected and use the electricity grid as an energy back-up.

[1] Source: Country profile-Dominica. FAO, 2015. http://www.fao.org/3/ca0431en/CA0431EN.pdf
[2] Source: Energy Snapshot, Dominica. Energy Transition Initiative. National Renewable Energy Laboratory (NREL), 2015. https://www.nrel.gov/docs/fy15osti/62704.pdf

In terms of water supply, there are no official programs to promote water capture and storage systems that could help the island to minimize difficulties in the water supply during the dry seasons.

Associated barriers to the implementation of solar generation systems and water capture/storage systems have been already identified and can be summarized as:

- Scarce experience on stand alone solar systems in the island
- No reliable studies that supports taking decisions to electricity consumers on the feasibility of stand-alone solar systems and installation of water capture and storage systems
- Need to identify key local actors along the value chain of solar power generation and to develop strategies to effectively develop a solar market
- Need for identifying business models to execute solar and water capture/storage investments
- Need to address potential synergies but also conflict of interest between stakeholders in the electricity sector in the scenario of sales of electricity surplus to the grid

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3. **Logical Framework for the CTCN Technical Assistance:**

(Guidance: Please note that multiple activities lead to one Output, and multiple Outputs lead to one Outcome. There can be several Outputs, but only one Outcome description capturing the CTCN technical assistance. Deliverables are the products or services to be delivered to the NDE/Proponent/CTCN based on the Activities and the Outputs.)

	Month							
	1	2	3	4	5	6	7	8
Objective: Assess the viability of installing solar units and water storage units in public buildings is Dominica								
Outcome: Technical and economic feasibility study of solar units and water storage on public buildings in Dominica								
Output 1: Development of implementation planning and communication documents								
Activity 1: *All implementers must undertake the following activities at the beginning and at the end of the CTCN technical assistance.* i) A detailed work plan of all activities, deliveries, outputs, deadlines and responsible persons/organisations and detailed budget to implement the Response Plan. The detailed work plan and budget must be based directly on this Response Plan; ii) Based on the work plan, a monitoring and evaluation plan with specific, measurable, achievable, relevant, and time-bound indicators used to monitor and evaluate the timeliness and appropriateness of the implementation. The monitoring and evaluation plan should apply selected indicators from the Closure and Data Collection report template and enable the lead implementer to complete the CTCN Closure and Data collection report at the end of the assignment (please refer to item iv below and section 14 in the Response Plan); iii) A two-page CTCN Impact Description formulated in the beginning of the technical assistance and update/revised once the technical assistance is fully delivered (a template will be provided); iv) A Closure and Data Collection report completed at the end of the technical assistance (a template will be provided).								
Deliverable 1: i) Detailed work plan ii) Monitoring and evaluation plan iii) CTCN Impact Description iv) Closure and Data Collection report								
Output 2: Identify relevant stakeholders for the project								
Activity 2.1: Identify relevant stakeholders in the public sector i) Identify key stakeholders involved in the management of public buildings and relevance to the project ii) Analyze the involvement and influence of the national electricity provider and private sector stakeholders								

iii) Face to face coordination meeting with representatives of key stakeholders to present the project scope, collect data and relevant information and coordinate support for following activities. Procure a balanced representation of women and men. The project Team Leader and all International Experts will participate in the face to face meeting if the sanitary conditions allow								
Activity 2.2: Identify relevant stakeholders in the value chain for fostering small solar generation units and water capture and storage systems i) Identify key stakeholders like technology providers, installation services, and maintenance companies. ii) Organize round tables with stakeholders to know the current situation of the value chain in Dominica. Procure a balanced representation of women and men and include a gender perspective in the discussion topics. Local experts will lead these round tables iii) Identify gaps and provide recommendations to overcome such gaps.								
Deliverables 2: - Report containing detailed stakeholders map with classification by type and sector, and potential participation in a solar energy/water capture market, gap analysis and recommendations. - Report on coordination meeting and round tables, list of participants disaggregated by gender, using the template will be provided by the CTCN	X							
Output 3: Review of solar generation units and water capture/storage units for buildings already present in Dominica and in other similar islands								
Activity 3.1: Identification and analysis of stand-alone solar generation units for buildings present in Dominica. i) Collect data regarding location of generation units, type of unit, capacity, size, working regime, working status (on duty, off-duty, damaged, etc.), efficiency, yield (compared to building's consumption), maintenance needs, etc. ii) Analyze the units' endurance against climate events (preventive measures, protection systems, storage possibilities, etc.). iii) Analyze financing schemes/strategies (if any) that enable the installation of such generation units in Dominica. Indicate if these schemes were connected to international cooperation programs or governmental initiatives (national or regional). iv) Identify gender considerations in the solar units already present in Dominica								
Activity 3.2: Identification and analysis of water capture/storage units for buildings present in Dominica. i) Collect data regarding location of water capture/storage units, type of system, capacity, size, operation, maintenance needs, water usage, water treatment and water quality monitoring, etc. ii) Analyze associated health risks (water quality issues, mosquito proliferation, etc.) of capture/storage units. iii) Analyze the units' endurance against climate events (preventive measures, protection systems, storage possibilities, etc.).								

iv) Analyze financing schemes/strategies (if any) that enable the installation of such capture/storage units in Dominica. Indicate if these schemes were connected to international cooperation programs or governmental initiatives (national or regional). v) Identify gender considerations in the water units already present in Dominica								
Activity 3.3: Review similar solar generation units and buildings water capture/storage present in similar islands. i) Prepare a summary of the available solutions in similar islands including: type of technology, capacity, operation, efficiency, connection to the grid (for the case of energy generation systems), endurance against climate events, maintenance, health risks and water quality monitoring (for water units), etc. ii) Review of international case studies and lessons learned on implementation of small solar generation units and buildings water capture/storage in other similar islands, enabling factors such as regulatory framework, incentives, financing opportunities. iii) Identify gender considerations in the solar and water units already present in similar islands								
Activity 3.4: **Virtual seminar** for sharing experiences on state-of-the-art of solar generation and water capture/storage solutions for buildings. Organize a seminar with different experts on solar generation and water capture/storage solutions for buildings in the Caribbean with the objective of promoting south-south cooperation in the region through the presentation of successful cases, and exchange lessons learned. Procure a balanced participation of women and men and include a gender perspective in the discussion topics								
Deliverable 3: Report including: - Identified small solar generation units and water capture/storage units for buildings in Dominica and collected data. - Review of generation units and water capture/storage units for buildings present in similar islands. - Case studies and lessons learned. Summary and results of the regional virtual workshop and list of invitees and participants disaggregated by gender, using the template will be provided by the CTCN		X						
Output 4: Analysis of current electricity and water consumption patterns in public buildings, and selection of appropriate technical options								
Activity 4.1: Create a database of public buildings and identify the potential market size								

i) Collect information by surveys and secondary information sources about public buildings like: type of building (school, hospital, administrative building, etc.) location, electricity and water consumption (if possible disaggregated by usage), and consumption patterns. ii) Analyze building's potential to host solar power and water capture/storage solutions. iii) Engage and hold meetings/calls with the buildings' owners/managers to collect all necessary information in the most promising facilities for using solar systems and water capture/storage units. iv) Prioritize public buildings based on potential for hosting solar power generation and water capture/storage solutions and interest of building's owners/managers. v) Estimate the market size for installing solar and water capture units in public building								
Activity 4.2: Identification of technological solutions Based on collected data, identify the most suitable technological options for solar power generation and water capture/storage. This includes modular options for easy scalability. Once the technologies that seems the most suitable for public buildings in Dominica have been chosen, the implementer will provide design recommendations for the different component of the systems including, but not limited to the: − Analysis of the electricity grid to check compatibility of solar system components. − Recommendations on the application of the best possible design practices for photovoltaic solar systems, following international regulations. − Identification of system components suitable for the particular meteorological conditions of the island, such as: temperature, humidity, atmospheric salinity, etc. − Design of recommendations to ensure that photovoltaic solar units and water capture/storage systems are designed to operate under typical climatological conditions of the island, such as: storms, strong winds and lightning. − General specifications of a monitoring system to follow the operation of the solar units and water capture/storage systems and their possible novelties. − Description of what should be the minimum content of a training program in the operation and maintenance of solar units and water capture/storage systems − Include gender considerations in the technical solution − Other relevant criteria								
Deliverables 4: - Buildings database, list of prioritized buildings and report on buildings profile analysis - Estimation of the market size for solar units and water capture/storage systems				X				

- Description of adequate technology solutions for solar units and water capture/storage systems including design recommendations such us the listed in Activity 4.2								
Output 5: Financial feasibility analysis and modeling scenarios of electricity generation and water capture/storage, costs and savings								
Activity 5.2: Modeling scenarios of electricity generation and water capture/storage i) Prepare different scenarios for electricity and water supply (e.g. covering 30%, 50%, 80% of buildings electricity/water consumption with solar energy and rainfall water). ii) Analyze the feasibility of these scenarios considering the buildings capacity of hosting solar generation and water storage units.								
Activity 5.2: Financial analysis i) Using the information collected in the previous activity, analyze the financial viability of the recommended technological solutions. The analysis must consider energy, water and cost savings, maintenance and repair costs, capital investment, investment return, etc. ii) Analyze the financial viability in the case of revenues from selling electricity surplus to the grid.								
Activity 5.3: Drafting recommendations for financing options and validation with the NDE and key stakeholders i) Provide recommendations on financing options that could be implemented to foster the installation of solar generation and water capture units like national programs, international donors, etc. ii) Organize a **virtual discussion meeting** with the NDE and key stakeholders involved in the financial options to include their inputs								
Deliverables 5: -Report on scenarios and financial feasibility of the technical solutions, recommendation on good practices for the solar and water capture/storage systems implementation, financing schemes and business models. -Report on discussion meeting with a list of participants disaggregated by gender					X			
Output 6: Analysis of impacts on climate change mitigation goals in the energy sector, public buildings resilience, and other co-benefits of the project								
Activity 6.1: Estimate the contribution of the project results to the national priorities set for the energy sector and mitigation goals in the NDC								
Activity 6.2: Analyze the energy and water supply resilience of public buildings in case of extreme climate change events. Estimate the benefits of having autonomous energy generation and water capture systems in terms of social and economic impact. Include gender considerations in the analysis								

Activity 6.3 Organize a **virtual workshop** with the NDE and key stakeholders involved in the potential implementation of solar systems and water capture/storage units to share results of the identification of impacts and co-benefits, and to include their inputs								
Deliverables 6: - Report on estimations and conclusions of the impact of the stand alone solar units and water capture/storage systems on mitigation and resilience objectives to climate change, and other co-benefits. - Report on virtual workshop with NDE and stakeholders, list of participants disaggregated by gender, using the template will be provided by the CTCN						X		
Output 7: Revision and analysis of the current technical, policy and regulatory, organization capacity, and financial barriers								
Activity 7.1: Analyze the current framework for small solar generation units and water capture systems. i) Analyze the current legal, technological and financial framework for solar generation and water capture systems in Dominica, identify barriers for the implementation of these systems and provide recommendations to overcome them. ii) Analyze the specific framework and barriers for energy surplus sale to the grid and provide recommendations to manage these barriers. iii) Organize a **virtual discussion meeting** with the NDE and key organizations from the government involved in the potential implementation of solay and water systems to share results and receive comments								
Deliverables 7: - Report on the existing legal, technical and financial framework and barriers for incorporating stand alone solar units and water capture/storage systems, including the especial case of energy surplus sale to the grid. - Report on virtual discussion meeting, list of participants disaggregated by gender							X	
Output 8: Capacity building and dissemination of results								
Activity 8.1: Design and prepare dissemination material targeting public officers and general public to present the project results. The content will be agreed with the project coordination from the NDE and CTCN								
Activity 8.2: Organize a public event to present the project results and invite public sector representatives and private sector stakeholders. Procure a balanced participation or women and men								
Deliverables 8: - One digital booklet with key findings for public officers and general public - Report on dissemination public event, list of participants disaggregated by gender, photographic registry. The coordinator of the assistance in CTCN will provide the corresponding template								X

4. **Resources required and itemized budget:**

Please provide an indicative overview of the resources required and itemized budget required to implement the CTCN technical assistance, including for M&E-related activities, using the table below. Important to note that minimum 1% of the budget should explicitly target gender specific activities related to the technical assistance (please see section 10 for further information on gender). Once the Response Plan is completed, a Response Implementation partner(s) will be selected by the Climate Technology Centre (CTC). A detailed activity-based budget for the CTCN assistance will be finalized by the CTCN and selected Implementer.

Activities and Outputs	**Input: Human Resources** *(Title, role, estimated number of days)*	**Input: Travel** *(Purpose, national vs. international, number of days)*	**Inputs: Meetings/events** *(Meeting title, number of participants, number of days)*	**Input: Equipment/Material** *(Item, purpose, buy/rent, quantity)*	**Estimated cost** *Please accumulate the costing at Activity and Output level and provide an estimated costing range for each activity and the total Response Plan*	
					Minimum	**Maximum**
Output 1: Development of implementation planning and communication documents	*TL 4* *E1 2* *E2 2* *E3 1* *E4 1* *L1 0* *L2 0* *L3 0*	*None*	*None*	*None*	7,000	8,000
Output 2: Identify relevant stakeholders for the project	*TL 7* *E1 8* *E2 8* *E3 0* *E4 0*	*TL, international and local team participation in face to face coordination meeting. 1 day*	*Activity 2.1: Face to face coordination meeting 8 participants approx. 1 day*	*None*	32,100	36,300

	L1 6 *L2 6* *L3 7*	*Local experts' participation in round tables* *1 day*	*Activity 2.2. Round tables with stakeholders* *8 participants approx.* *1 day*			
Output 3: Review of solar generation units and water capture/storage units for buildings already present in Dominica and in other similar islands	*TL 10* *E1 14* *E2 14* *E3 0* *E4 0* *L1 8* *L2 8* *L3 2*	*None*	*None*	*None*	32,000	37,600
Output 4: Analysis of current electricity and water consumption patterns in public buildings, and selection of appropriate technical options	*TL 2* *E1 3* *E2 3* *E3 0* *E4 0* *L1 6* *L2 6* *L3 4*	*None*	*None*	*None*	10,400	11,200
Output 5: Financial feasibility analysis and modeling scenarios of electricity and water consumption, costs and savings	*TL 4* *E1 5* *E2 5* *E3 15* *E4 0* *L1 1*	*None*	*None*	*None*	20,900	24,000

	L2 1 *L3 0*					
Output 6: Analysis of impacts on climate change mitigation goals in the energy sector, public buildings resilience, and other co-benefits of the project	*TL 8* *E1 4* *E2 4* *E3 2* *E4 0* *L1 0* *L2 0* *L3 3*	*None*	*None*	*None*	13,500	14,400
Output 7: Revision and analysis of the current technical, policy and regulatory, organization capacity, and financial barriers	*TL 4* *E1 2* *E2 2* *E3 4* *E4 12* *L1 2* *L2 2* *L3 0*	*None*	*None*	*None*	18,000	20,800
Output 8: Capacity building and dissemination of results	*TL 6* *E1 7* *E2 7* *E3 1* *E4 1* *L1 5* *L2 5* *L3 2*	*TL, international and local team participation in public event* *1 day*	*Activity 8.2: Organize a public event to present the project results* *40 participants approx.* *1 day*	*One digital booklet with key findings for public officers and general public.*	29,900	33,300
Estimated range of costing for the entire Response Plan					**163,800**	**185,600**

5. **Profile and experience of experts**

Based on the required Human Resources identified in section 4 (Resources required and itemized budget) please provide a description of the required profile of all involved experts for the implementation of the CTCN Response Plan.

Experts required	Brief description of required profile
Please use the same titles for all experts as applied in section 4.	*Please provide a short description of expertise and experience needed (education, sectors of expertise, years of experience, country experience, language requirements, etc.).*
Team Leader (TL) and Climate Change Expert	Engineer, ecologist, economist or related with M.Sc in sustainability and/or renewable energies or related areas. Minimum 15 years of professional work experience. Minimum 10 years of experience in the analysis and design of climate change solutions for buildings. Experience in the area of renewable energies, energy markets, SDG and the content of NDCs. Work experience with public entities, private sector and international cooperation. Experience in coordinating projects that involve the management of interdisciplinary work teams and the involvement of different stakeholders. Work experience of at least 3 years in the Caribbean and/or small state islands. Fluency in English required.
Renewable Energy Expert (E1) with focus on small solar generation systems	Engineer, ecologist, economist or related with M.Sc in sustainability and/or renewable energies or related areas. Minimum 10 years of working experience in the analysis and design of small solar generation solutions for buildings. Experience working with different stakeholders. Extensive knowledge of technical solutions for the implementation of solar generation in buildings and experience conducting analysis of chain values, technical and market barriers for this technology. Work experience of at least 5 years in the Caribbean and/or small state islands. Fluency in English required.
Water Capture Expert (E2)	Engineer, ecologist, economist or related with M.Sc in sustainability and/or water management or related areas. Minimum 10 years of working experience in the analysis and design of water capture and storage solutions for buildings. Experience working with different stakeholders. Extensive knowledge of technical solutions for the implementation of water capture and storage in buildings and experience conducting analysis of chain values, technical and market barriers for this technology. Work experience of at least 5 years in the Caribbean and/or small state islands. Fluency in English required.
Financial Expert (E3)	Economist, engineer or related with M.Sc in economy, finance, or related areas. Minimum 10 years of working experience in the financial evaluation of projects related to climate change adaptation solutions. Experience working with different stakeholders. Extensive knowledge of the energy markets, modalities of energy surplus sale, estimation of

	revenues. Experience with Private/Public partnerships and innovative business models for renewable projects financial sustainability. Experience on the analysis of financial barriers. Work experience of at least 5 years in the Caribbean and/or small state islands. Fluency in English required.
Legal Expert (E4)	Lawyer or related with M.Sc in Policy, or related areas. Minimum 10 years of working experience in the analysis of regulatory frameworks for the implementation of renewable energies, energy surplus sale. Experience working with different stakeholders. Experience on the analysis of legal barriers. Work experience of at least 5 years in the Caribbean and/or small state islands. Fluency in English required.
Local expert. Solar energy (L1)	Economist, engineer or related with advanced studies in the environmental field. Minimum 10 years of work experience in the environmental or energy field and 5 years of working experience in renewable energy. Experience working with different stakeholders in the energy sector of Dominica. Experience in the systematization of processes and elaboration of reports that involve consultation of different types of actors. Group work experience and different participatory methodologies. It is expected that the local expert will be based in Dominica or with the availability to travel frequently and for long periods of time in Dominica. Fluency in English required.
Local expert. Water management (L2)	Economist, engineer or related with advanced studies in the environmental field. Minimum 10 years of working experience in environment management in public or private facilities. Experience working with different stakeholders in the water sector of Dominica. Experience in the systematization of processes and elaboration of reports that involve consultation of different types of actors. Group work experience and different participatory methodologies. It is expected that the local expert will be based in Dominica or with the availability to travel frequently and for long periods of time in Dominica. Fluency in English required.
Local expert. Gender (L3)	Communication professional, Anthropologist, sociologist or related areas with experience in the design and execution of social research, inclusion of gender perspectives, design of instruments and application of research techniques such as participants observation, interviews, surveys, design and moderation of focus groups. Minimum three years of experience in the Caribbean. It is expected that the local expert will be based in Dominica or with the availability to travel frequently and for long periods of time in Dominica. Fluency in English required.

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6. **Intended contribution to impact over time**

The technical assistance is expected to impact directly the energy matrix and the water supply of Dominica, making the island less dependent of fossil fuels and more resilient to climate change. It will also contribute to the development of the market for solar generation technologies.
The quantification of the activities with the NDCs goals and their contribution to SDGs will analyzed during the project implementation.

7. **Relevance to NDCs and other national priorities**

Dominica Nationally Determined Contribution (NDC)
The NDC proposes mitigation measures to enhance resilience such as the "Solar Photovoltaic (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." pg. 9.

National Resilient Development Strategy

Water Resource Management chapter: "Managing water quantity and quality 24/7 is a challenge especially due to the frequency of weather systems and occasional droughts. Efforts at improving supply management through intake relocation and reinforcement, water storage tank construction and consolidation of supplies will have to continue. Storage tanks capacity capable of maintaining supplies during the period of intake and water line restoration should continue to increase." pg. 86

"The policy for solar power development includes encouraging, where economically viable, the installation of solar energy technologies on all new public sector buildings". pg. 46

Low Carbon Climate Resilient Development Strategy

The Low-Carbon Development Pathway includes Harnessing of solar energy resources. Measures: "iii. Evaluate viable photo-voltaic technology options for Dominica" and "vi. Establish soft financing for community and small scale private solar power conversions" pg. 52

8. **Linkages to relevant parallel on-going activities:**

The report from NREL[3] mentions that the Island has interesting opportunities for clean energy transformation. Wind, solar, and geothermal resources, paired with expanding hydropower offer the greatest potential for renewable energy development in Dominica. Few policies currently support renewable energy development, but none inhibit them.

Dominica has been engaged in different project aimed to foster the development of different renewable energy sources.

Dominica 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.

Besides geothermal, Dominica has high potential for solar and wind power generation. Notwithstanding, Dominica has implemented only few renewable energy projects to date. For example, a project in the Rosalie Bay Resort with a 225-kilowatt (kW) wind turbine that produces 596 megawatt-hours (MWh) annually. This was the first renewable energy project to be

[3] Opcit. Ref 1

interconnected to the DOMLEC grid. An additional 1-kW turbine is in operation, but is not connected to the grid.

In addition, the Government of Dominica has undertaken a programme to make its public buildings more energy efficient and slash its energy bill, with the financial support from the Caribbean Development Bank (CDB), the European Union and the United Kingdom's Department for International Development (DFID).

However, there is no plan to promote the use of renewable energy systems in public buildings as a measure to reduce electricity from fossil fuels consumption. Nor have any analysis been carried out on the costs and benefits of electricity self-generation and the sale of energy surpluses to the grid.

9. **Anticipated follow up activities after this technical assistance is completed:**

The main efforts should be put into addressing the legal, technological and financial barriers for the development of solar energy and water capture/storage solutions in Dominica. At this sense, the following actions could be taken as follow-up activities for this technical assistance:

- Support the government to adapt and draft current or new regulations that will support the installation of small solar generation systems and their connection to the grid for energy surplus sale
- Design and organize different initiatives related to capacity building for installation, maintenance and repair of solar generation systems and water capture/storage systems.
- Design financing schemes that will enable the installation of solar generation and water storage units. This can be done by international cooperation projects and or national initiatives that foster the investment in climate change mitigation technologies.

10. **Gender and co-benefits:**

Imbedded in design of the activities:	The project will encourage the equitable participation of men and women in decision-making in relation to developing small solar units and water capture/storage systems. Furthermore, when assessing current capacities, in terms of demonstration and development projects, gender-related topics will be addressed. The gender balance in the sector will be determined and affirmative measures will be proposed to reduce gaps. The following potential indicators, proposed by CTCN, are suggested: ● Number and percentage of women and men who attend planning and participatory consultation meetings; ● Number of men and women members of technical teams and demonstration and development projects, by profession with a particular focus on those in decision making or leadership roles in the planning process.
Gender and co-benefits intended as result of the activities:	The technical assistance will set out a pathway for the development of the country that will bring economic, environmental, social and cultural co-benefits with an emphasis on gender equality. These co-benefits could include: creation of new jobs in the solar value chain, increased resilience of public buildings in case of damage of infrastructure for extreme climatological events, increased renewable energy utilization and reduced dependence on fossil fuels, and the promotion of a culture of sustainable development among the population.

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11. **Main in-country stakeholders in implementation of the technical assistance activities:**

Using the table below, please list and describe the role of in-country stakeholders, participants and beneficiaries who will be involved in or directly consulted during implementation of the assistance.

In country stakeholder	Role in implementation of the technical assistance
Ministry of Environment, Rural Modernisation and Kalinago Upliftment (NDE)	Climate Change Focal Point and environmental regulatory entity with oversight industrial processes. The NDE will coordinate the technical assistance and will support the interaction with other stakeholders
Domical Electricity Company (DOMLEC)	Private company which owns the national electricity grid and distribution network. A key stakeholder in all national industrial development efforts. DOMLEC will provide relevant information and will be consulted by interviews and workshops
Dominica Association of Industry and commerce (DAIC)	National private sector organization for advocacy and service to business operations. An important stakeholder for the development of linkages between technology providers. DAIC will provide relevant information and will be consulted by interviews and workshops
Dominica Manufacturers Association (DMA)	National organization engaged in advocacy for the implementation of appropriate policy and procedures in support of manufacturing activities. DMA will provide relevant information and will be consulted by interviews and workshops

12. **SDG Contributions:**

*Instructions: Please complete the grey section below for **a maximum of three SDGs** that will be advanced through this TA. A complete list of SDGs and their targets is available here: https://sustainabledevelopment.un.org/partnership/register/.*

Goal	Sustainable Development Goal	Direct contribution from CTCN TA (1 sentence for top 1-3 SDGs)
1	End poverty in all its forms everywhere	
2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	
5	Achieve gender equality and empower all women and girls	
6	Ensure availability and sustainable management of water and sanitation for all	The project aims to support the installation of water capture/storage units to increase the autonomy of public buildings.
7	Ensure access to affordable, reliable, sustainable, and modern energy for all (consider adding targets for 7)	The project aims to support the installation of solar generation units to increase the autonomy of public buildings.
	7.1 - By 2030, ensure universal access to affordable, reliable and modern energy services	
	7.2 - By 2030, increase substantially the share of renewable energy in the global energy mix	
	7.3 - By 2030, double the global rate of improvement in energy efficiency	

Annex 1. Guidance Note for the Response Plan template

	7.a - By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology	
	7.b - By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support	
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
10	Reduce inequality within and among countries	
11	Make cities and human settlements inclusive, safe, resilient and sustainable	
12	Ensure sustainable consumption and production patterns	
13	Take urgent action to combat climate change and its impacts	*All TAs should indicate relevance to Goal 13 and at least one target below (13.1 to 13.b).*
	13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	Increased resilience of public buildings by incorporating solar generation and water capture units.
	13.2 - Integrate climate change measures into national policies, strategies and planning	Identify legal and regulatory barriers that influence the development of small solar generation systems.
	13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	
	13.a - Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible	
	13.b - Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	

13. **Classification of technical assistance:**

Please indicate primary type of technical assistance. Optional: If desired, indicate secondary type of technical assistance.

Please tick off the relevant boxes below	*Primary*	*Secondary*
☐ 1. Decision-making tools and/or information provision	x	☐
☐ 2. Sectoral roadmaps and strategies	☐	☐
☐ 3. Recommendations for law, policy and regulations	☐	☐
☐ 4. Financing facilitation	☐	x
☐ 5. Private sector engagement and market creation	☐	x
☐ 6. Research and development of technologies	☐	☐

☐ 7. Feasibility of technology options	x	☐
☐ 8. Piloting and deployment of technologies in local conditions	☐	☐
☐ 9. Technology identification and prioritisation	☐	☐

Please note that all CTCN technical assistance contributes to strengthening the capacity of in country actors.

14. **Monitoring and Evaluation process**

Upon contracting of the implementing partners to implement this Response Plan, the lead implementer will produce a monitoring and evaluation plan for the technical assistance. The monitoring and evaluation plan must include specific, measurable, achievable, relevant, and time-bound indicators that will be used to monitor and evaluate the timeliness and appropriateness of the implementation. The CTCN Technology Manager responsible for the technical assistance will monitor the timeliness and appropriateness of the Response Plan implementation. Upon completion of all activities and outputs, evaluation forms will be completed by the (i) NDE about overall satisfaction level with the technical assistance service provided; (ii) the Lead Implementer about the knowledge and learning gained through delivery of technical assistance; and (iii) the CTCN Director about timeliness and appropriateness of the delivery of the activities and outputs