

# Concept Note

Project/Programme Title: **TRANSITIONING TO PLUG-IN ELECTRIC VEHICLES:  
GRENADA (GTPEV)**

Country(ies): **GRENADA**

National Designated  
Authority(ies) (NDA): **DEPARTMENT OF ECONOMIC AND TECHNICAL  
COOPERATION (DETC)**

Accredited Entity(ies) (AE): **CARIBBEAN DEVELOPMENT BANK  
GRENADA DEVELOPMENT BANK**

Date of first submission/  
version number: *[YYYY-MM-DD] [V.0]*

Date of current submission/  
version number: *[YYYY-MM-DD] [V.0]*



### Notes

- The maximum number of pages should **not exceed 12 pages**, excluding annexes. Proposals exceeding the prescribed length will not be assessed within the indicative service standard time of 30 days.
- As per the Information Disclosure Policy, the concept note, and additional documents provided to the Secretariat can be disclosed unless marked by the Accredited Entity(ies) (or NDAs) as confidential.
- The relevant National Designated Authority(ies) will be informed by the Secretariat of the concept note upon receipt.
- NDA can also submit the concept note directly with or without an identified accredited entity at this stage. In this case, they can leave blank the section related to the accredited entity. The Secretariat will inform the accredited entity(ies) nominated by the NDA, if any.
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<b>A. Project/Programme Summary (max. 1 page)</b>			
<b>A.1. Project or programme</b>	<input type="checkbox"/> Project <input checked="" type="checkbox"/> Programme	<b>A.2. Public or private sector</b>	<input checked="" type="checkbox"/> Public sector <input checked="" type="checkbox"/> Private sector
<b>A.3. Is the CN submitted in response to an RFP?</b>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, specify the RFP: _____	<b>A.4. Confidentiality<sup>1</sup></b>	<input type="checkbox"/> Confidential <input checked="" type="checkbox"/> Not confidential
<b>A.5. Indicate the result areas for the project/programme</b>	<p><b>Mitigation:</b> Reduced emissions from:</p> <p><input checked="" type="checkbox"/> Energy access and power generation</p> <p><input checked="" type="checkbox"/> Low emission transport</p> <p><input checked="" type="checkbox"/> Buildings, cities and industries and appliances</p> <p><input type="checkbox"/> Forestry and land use</p> <p><b>Adaptation:</b> Increased resilience of:</p> <p><input type="checkbox"/> Most vulnerable people and communities</p> <p><input type="checkbox"/> Health and well-being, and food and water security</p> <p><input checked="" type="checkbox"/> Infrastructure and built environment</p> <p><input type="checkbox"/> Ecosystem and ecosystem services</p>		
<b>A.6. Estimated mitigation impact (tCO<sub>2</sub>eq over lifespan)</b>	12 Gg CO <sub>2</sub> e	<b>A.7. Estimated adaptation impact (number of direct beneficiaries and % of population)</b>	8%
<b>A.8. Indicative total project cost (GCF + co-finance)</b>	Amount: USD 42,850,500	<b>A.9. Indicative GCF funding requested</b>	Amount: USD38,921,400
<b>A.10. Mark the type of financial instrument requested for the GCF funding</b>	<input checked="" type="checkbox"/> Grant <input type="checkbox"/> Reimbursable grant <input type="checkbox"/> Guarantees <input type="checkbox"/> Equity <input checked="" type="checkbox"/> Subordinated loan <input type="checkbox"/> Senior Loan <input type="checkbox"/> Other: specify _____		
<b>A.11. Estimated duration of project/ programme:</b>	a) disbursement period: b) repayment period, if applicable:	<b>A.12. Estimated project/ Programme lifespan</b>	10 YEARS
<b>A.13. Is funding from the Project Preparation Facility requested?<sup>2</sup></b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Other support received <input type="checkbox"/> If so, by who:	<b>A.14. ESS category<sup>3</sup></b>	<input type="checkbox"/> A or I-1 <input checked="" type="checkbox"/> B or I-2 <input type="checkbox"/> C or I-3
<b>A.15. Is the CN aligned with your accreditation standard?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>A.16. Has the CN been shared with the NDA?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>A.17. AMA signed (if submitted by AE)</b>	Yes <input type="checkbox"/> No <input type="checkbox"/> If no, specify the status of AMA negotiations and expected date of signing:	<b>A.18. Is the CN included in the Entity Work Programme?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>A.19. Project/Programme rationale, objectives and approach of programme/project (max 100 words)</b>	<p>Brief summary of the problem statement and climate rationale, objective and selected implementation approach, including the executing entity(ies) and other implementing partners.</p> <p>The transportation sector is a large and growing GHG emitter in Grenada, accounting for 29% of the total emissions in 2014.</p> <p>Between 2000 and 2014, the GHG emissions increased by 31%. As Grenada imports its fossil fuels, gasoline and diesel prices are unstable due to the international oil market. This project will help Grenada transition to plug-in electric vehicles and electrify the vehicle fleet, thereby reducing GHG emissions from the transport sector. In the long run, the share of renewable energy will increase in the mix, further decarbonizing Grenada's transport sector.</p>		

<sup>1</sup> Concept notes (or sections of) not marked as confidential may be published in accordance with the Information Disclosure Policy ([Decision B.12/35](#)) and the Review of the Initial Proposal Approval Process ([Decision B.17/18](#)).

<sup>2</sup> See [here](#) for access to project preparation support request template and guidelines

<sup>3</sup> Refer to the Fund's environmental and social safeguards ([Decision B.07/02](#))

## B. Project/Programme Information (max. 8 pages)

### B.1. Context and baseline (max. 2 pages)

#### Grenada's Transport sector

In 2014, the domestic transportation sector in Grenada accounted for approximately 29% of their total greenhouse gas (GHG) emissions, making it the second-highest emitter of GHG emissions. Domestic transport along with electricity generation accounts for 70% of the total GHG emissions. Like most Small Island Developing States (SIDS), Grenada does not possess any known indigenous source of fossil fuel. It is highly reliant on the importation of fossil fuel (gasoline and diesel) for its energy needs, this is a huge expenditure for the government as a significant proportion of it is spent on fossil fuel imports. In 2013, Grenada spent 6% of its GDP on oil imports. Additionally, high reliance on imports leaves island vulnerable to the fluctuation of international oil markets (The Government of Grenada, 2017).

Between 2000 and 2014, the GHG emissions for domestic transport increased by 31%. This growth was mainly driven by an increase in vehicles due to economic growth, increased social desire and affordability of mobility. Vehicle stocks in Grenada are mainly composed of internal combustion engine vehicles (ICEV). Vehicle stocks have increased by almost 50% since 2010, from just under 26,000 private and commercial vehicles to approximately 38,000 vehicles in 2019. In the same period, the number of vehicles has increased from 244 vehicles per thousand population to 349. It is anticipated that with an increasing GDP per capita in the future, the total number of vehicles and the consequent GHG emissions will continue to increase on the island. Prediction of vehicle stocks as a function of GDP per capita shows that by 2025, there will be 400 vehicles per thousand people (total of approximately 45,000 vehicles) and 450 vehicles per thousand (50,000 vehicles) by 2030.

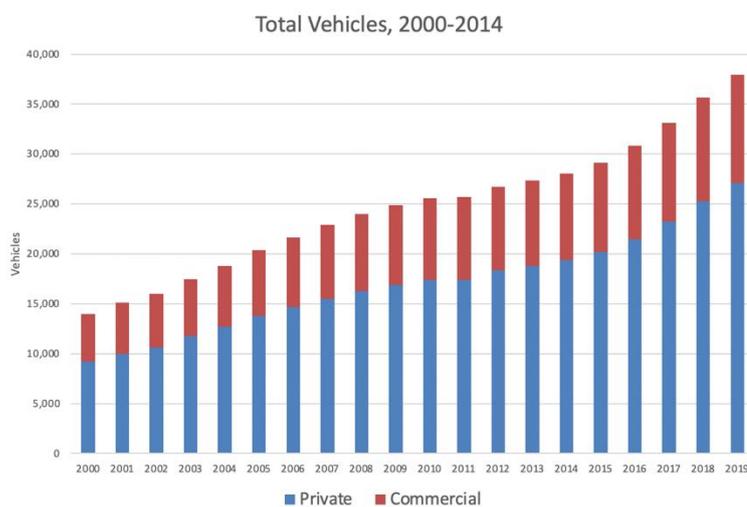


Figure 1: Vehicle stock in Grenada

Source: (Grenada Transport Board, 2020)

As the transport sector is an important mitigation sector, this project will help the country in decarbonizing their transport sector. The emissions can be further reduced by increasing the share of renewable energy for the electricity generation. In addition to mitigation benefits, electric vehicles (EV) can help bolster resiliency against natural disasters and EV batteries have the potential to serve as energy storage for the grid through vehicle-to-grid (V2G) technology (Viscidi, et al., 2020).

Although Grenada's total emissions are negligible in the global context, it remains vulnerable to the impacts of climate change. However, it is committed to fighting climate change and reducing its GHG emissions. In November, 2020, Grenada submitted an ambitious second nationally determined

contributions (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC). It has a target of reducing its GHG emissions by 40% of the 2010 levels by 2030 with interventions in the following sectors- energy including transport, waste, forestry and industrial processes and product use (IPPU). In order to achieve the NDC target, transport sector will play a crucial role. Analysis conducted to inform the NDC indicates that to achieve 40% reduction in energy sector (electricity generation and transport) by 2030, electric vehicle sales need to climb rapidly, with all new vehicles sold being electric by 2030.

Grenada's commitment to transition to plug-in vehicles has been reflected in national priorities and plans. The National Energy Policy (2011) recognizes the importance of the transport sector in its efforts to conserve energy and increase energy efficiency and makes mention of the potential to begin converting the islands' motor vehicle stock to an all-electric fleet. The Grenada conducted a Technology Needs Assessment project in 2018, it included the transportation sector for the mitigation component and stakeholders concluded that EVs should be considered as the sole technology for further analysis. The Grenada Technology Action Plan (2018) includes a project idea that focused on EVs entitled, Integrated PV systems and EV plug-in demonstration (IPEV) project. Grenada's National Climate Change Policy (2017) also calls for incentivizing and promotion of renewable energy and energy efficiency in the transport sector. The National Sustainable Development Plan (2020-2035) also stresses on the importance of implementing projects for transitioning to plug-in electric vehicles under Outcome 8: Energy Security and Efficiency. It further links the outcome to sustainable development goals (SDGs) - 7 (Affordable and Clean Energy), 11 (Sustainable Cities and Communities) and 13 (Climate Action).

The transport system in Grenada consists of both international and domestic components, with the chief modalities being transported by air, sea and road. The Grenada Transport Board oversees Grenada's Land transport affairs. There are no established legal frameworks or Government departments dedicated to the regulation and management of ground transportation in Grenada.

As mentioned above, most of the road transport sector are ICEV and run-on gasoline or diesel. It currently has a vehicle stock of 38,000 thousand vehicles. Out of these, approximately 27,000 vehicles are private transport (cars and jeeps), and the remaining 11,000 vehicles are commercial (trucks, buses, vans and pick-ups). At present, the island has 10 electric vehicles. In 2018, the road transport sector consumed approximately 7 million gallons of gasoline and 2 million gallons of diesel. All vehicles are imported in the country and there is a significant market for used vehicles, however, importation of new vehicles has been rising since 2006 (Emanuel & Gomes, 2014). It is expected that by 2030, Grenada will have 50,000 vehicles on the road, an increase of 31% since 2019. Most vehicle sales will be private vehicles (cars and jeeps).

*Table 1: Vehicle Stocks in Grenada, 2019*

Vehicle Type	Vehicle Stock (2019)
<b>Private</b>	
Cars	13,709
Jeeps	13,375
<b>Commercial</b>	
Trucks	2,358
Buses	2,360
Vans	2,573
Pick ups	3,344
Land Rovers	239
<b>Total</b>	<b>37,957</b>

Source: (Grenada Transport Board, 2020)

Grenada has a range of import duties for ICEV and EVs entering the country. The vehicle imports are taxed through four mechanism - environment levy (2%), a customer service charge (5%), value added tax (15%), and a duty plus excise tax rate (34-55%). To increase the uptake of EVs, in 2019, the Government

of Grenada announced a ban on vehicles exceeding 10 years. It implemented a 50% duty and tax concession on the import of electric and hybrid vehicles. In addition, it increased the import duty on used ICEVs – 127% for vehicles between the age of 1-4 years and 160% for vehicles over 4 years.

Electric vehicles lie at the intersection between electricity and transport. Grenada Electricity Services Ltd. (GRENLEC) is currently the sole utility engaged in generating, transmitting and distributing electricity for public use. Based on 2018 data, GRENLEC has a total generation capacity of approximately 55 MW spread across the tri-island nation, and with a high 99% electrification rate. GRENLEC has provided between 208 and 231 GWh per year over period of 2010–2018 to approximately 51,000 customers. Other actors on the supply side including GrenSol and GRASP focus on providing and connecting photo-voltaic systems for solar energy generation at the household level. Existing stipulations prevent electricity generation outside of GRENLEC's domain to grow beyond 1% of peak demand, which is currently estimated at 30 MW, translating to very limited scope for the expansion of independent power production in Grenada. This is been addressed in the ongoing reform process with the Public Utilities Regulatory Commission Bill (PURC), which will allow domestic and foreign investment in new projects for the generation of electricity, particularly for the renewable sources.

### **EVs in Grenada's 2020 NDC**

The analysis that informed the adoption of Grenada's 2020 NDC shows that Grenada will need to make a hard pivot toward the adoption of zero emission vehicles to meet its 2030 target of reducing GHG emissions by 40%. The analysis suggests that EVs will need to rapidly gain market share such that, by 2030, all new passenger vehicles and buses sold are electric. This corresponds to the sale of approximately 20,000 EVs by 2030, or approximately 50% of the vehicles sold over the whole period. While technically feasible, this will require a major shift toward electric mobility in the country.

### **Barriers**

There are key challenges that hinder the adoption of EVs in the country. Several barriers have been identified:

**High upfront cost:** While the battery prices have reduced by 85% since 2010, currently, EVs are significantly more expensive than internal combustion engine vehicles (ICEVs). Despite financial incentives in place, the cost of EV is higher. Hence, consumers bear the burden of high upfront cost. This has been identified as a critical barrier in the uptake of EVs.

**Lack of public awareness:** The lack of knowledge on the benefits of EV technology results in several misconceptions. There is a lack of awareness regarding EVs' lifetime cost. EV's have low maintenance costs and savings achieved due to no fuel usage can offset the higher upfront cost of EVs. While electricity cost is currently high in Grenada, this can be potentially reduced by increasing the renewable energy mix in the electricity grid so that electricity prices are not volatile due to international oil market.

**Lack of charging infrastructure:** Insufficient number of public charging stations can act as a limiting factor in the uptake of EVs. Consumers need to feel confident about their access to low-cost public chargers at all times. Installation of rapid charging infrastructure in public spaces will boost consumer's confidence. Moreover, there needs to be a sufficient number of EV repair

**Regulatory barriers:** Independent providers are increasingly becoming interested in deploying and operating charging facilities, which can help mass electrification of the transport sector. However, existing stipulations prevent electricity generation outside of GRENLEC's domain to grow beyond 1% of peak demand (currently estimated at 30 MW), translating to minimal scope for expanding independent power production in Grenada. The Public Utilities Regulatory Commission (PURC) is reforming its regulatory framework for the energy sector and is helping set the foundation for mass electrification of the transport sector. EV charging is identified as a potential source of demand growth and innovation by using smart metering and time-of-use tariffs to send economic signals to consumers, incentivize EVs, and

sustainably integrate EVs into the grid.

**B.2. Project/Programme description (max. 3 pages)**

The goal of this project is to reduce GHG emissions in the transport sector. The objective is to electrify the vehicle fleet by adopting plug-in electric vehicles.

This project is designed to address the key barriers identified in section B1. It includes five main components:

**Component 1: Revolving Loan Fund for concessional financing to reduce upfront cost of EVs**

This component seeks to provide financial support to defray a share of the significant upfront costs associated with the purchase of an EV relative to an ICEV. This credit would be paid back over the course of the life of the vehicle through the vehicle’s operating cost savings and would contribute to a revolving fund for ongoing impact.

As discussed in section B1, Grenada has a range of import duties for vehicles imported on the island. However, despite the import duty reduction on EVs and higher import duty for ICEVs, the upfront cost of EVs is higher by 26-45% when comparing a new ICEV and EV. As there is a significant import of old vehicles in the country, the upfront cost of EVs continues to be higher than ICEV. The difference in vehicle costs can be observed in Table 2.

*Table 2: Cost comparison for ICEVs and EVs*

	Vehicle type	MSRP (USD)	Import Duty (%)	Final Cost (USD)
Internal Combustion Engine Vehicle (ICEV)	New Toyota Corolla	20,025	60	32,040
	1-4 years old	15,000	127	34,050
	Over 4 years old	10,000	157.5	25,750
Electric Vehicle (EV)	Nissan Leaf 2021	31,670	28	40,538

Source: [www.nissanusa.com](http://www.nissanusa.com), [www.chevrolet.com](http://www.chevrolet.com), [www.toyota.com](http://www.toyota.com) and [www.tradegrenada.gd](http://www.tradegrenada.gd)

Despite the higher upfront cost, EVs have a lower total ownership cost (TCO). TCO consists of all the costs involved over the vehicle's lifetime, including upfront cost and recurring expense such as fuel and maintenance. As EVs operate on electricity and require less maintenance, EVs have lower TCO than ICEVs. There is a potential to reduce the TCO by reducing the electricity cost by increasing renewable energy in electricity generation.

While ICEVs have lower upfront costs than EVs today, research shows that EVs have the potential to reach cost parity with ICEVs by 2025. This will happen through battery cost and efficiency improvements and indirect reduction through increased volume production (McKinsey & Company 2019).

As the higher upfront cost of the EV is a significant barrier in the uptake of EVs, this component will help reduce the higher upfront cost of EV and defray it over a longer period using a revolving fund with concessionary loans for the purchase of electric vehicles.

This project will aim to provide financial support to the purchase of 8000 -10,000 EVs over the first five years of the project. This will help Grenada align with the trajectory necessary to achieve its NDC objectives. Loan volumes are intended to fully or mostly cover the estimated difference between the cost of a new EV and a new ICEV, evaluated on an annual basis. Loans will be provided on a long-term basis intended to align with the life of the vehicle. Initial calculations suggest that loans with tenors of 15 years and interest rates of 3-5% should be sufficient to reach approximate cost parity.

Most vehicles purchased in Grenada are second-hand. In the interest of ensuring that those without the

means to purchase new vehicles also able to obtain EVs, the full value of the calculated loans will also be available for second hand EVs.

The key activities for this component include:

1. Establish protocols for evaluating cost differentials between EVs and ICEVs
2. Determine loan terms on annual basis
3. Establish procedures for accessing concessionary finance
4. Engage with vehicle dealerships and importers
5. Provide concessionary finance to EV purchasers

**Component 2: Charging infrastructure development**

The deployment of charging infrastructure goes hand in hand with the spread of electric vehicles. A well-established charging infrastructure reduces range anxiety and inconveniences to the drivers. There is a need to undertake research to establish strategic sites for the installation of EV charging stations throughout the island.

To further increase the benefits of EVs, the development of charging infrastructure can be combined with the use of solar energy through the installations of solar car ports (ground-mounted solar panels installed above the parking lot). Two main advantages of solar car ports include the ability to minimize electricity expense and reduce GHG emissions.

Table 3 shows the characteristics and costs for various levels of chargers commonly used. Table 4 shows the total cost of 100 kW commercial solar carports. Grenada currently has a 40% import duty on the importation of chargers, making the upfront cost of commercial, residential chargers and components of solar carports high.

*Table 3: Types of EV Chargers*

Type of charger	Estimated charging time to provide 128 kilometers/80 miles of range (hours)	Typical locations	Cost per unit (USD)
Level 1 (120 V)	16	Home	0-3,000
Level 2 Residential (240 V) Commercial (208 V)	3.5	Home, workplace, public	600-12,700
Direct current fast charger (480 V)	30 minutes	public	4,000-51,000

Source: (Cattaneo, 2018)

*Table 4: 100 kW Solar Carports costs*

Companies	100 kW Solar Carport cost (USD)	Area (sq. feet)
Trina, Peimar or Axitech	131,040	7,051
REC, Silfab, Canadian Solar	131,040	6,584
LG, Hyundai, Mission Solar	147,840	6,684

Source: (Solar Electric Supply, 2021)

As Grenada predominantly has single unit homes, most EV owners will charge their cars in their houses. While this reduces the need for extensive public charging infrastructure, there should be an appropriate ratio of electric cars to the EV chargers. Based on the existing data, cities with higher EV uptake have between 5-30 EVs per public charger. In the United States, the National Renewable Energy Laboratory (NREL) recommended 3.4 direct current (DC) fast chargers and 40 Level 2 chargers per 1000 EVs (Wood, Rames, Muratori, Raghavan, & Melaina, 2017). In the context of Grenada's transition, this would be equivalent to approximately 68 DC fast chargers and 800 Level 2 chargers by 2030.

This project will:

1. Develop 4 public solar car ports with a total of 16 Fast charging stations and 48 Level 2 stations
2. Provide concessional financing to businesses to install EV charging stations (Level 2 and/or DC fast charging)
3. Incentivize apartment building owners/management to install charging infrastructure
4. Provide financial assistance to homeowners for the purchase and installation of Level 1 or Level 2 charging stations, particularly lower-income homeowners

As most charging will occur at homes, incentives for home chargers would also likely be necessary.

Key activities for this component include:

*Solar Car ports*

1. Identify sites for solar car ports
2. Conduct request for proposals for the development of solar car ports
3. Hire firm and construct solar car ports

*Concessional financing to businesses*

4. Engage with chamber of commerce and other business organizations to gauge interest and barriers
5. Establish procedures for businesses to access concessional finance for installation of EV chargers
6. Provide concessionary finance to for charging stations

*Incentivize apartment building owners/management*

7. Research and identify priority apartment complexes for engagement
8. Identify barriers to installation of EV charging
9. Provide appropriate incentives for EV charging stations (concessional finance, rebates, grants)

*Incentivize home charger installation*

10. Work with government to reduce import duties for level 2 charging stations
11. Design program to provide up to USD 300 in incentives for homeowners to install level 2 chargers

### **Component 3: Training and Capacity building**

While EVs require less maintenance throughout their lifetime, the eventual large-scale deployment of EVs will create a demand for EV-trained mechanics. As lack of trained mechanics and technician is a significant barrier, this component focuses on developing training and capacity building for the auto repair shops

Key activity of this component includes:

1. Identify and contract appropriate trainers
2. Organize a series of training sessions for auto mechanics
3. Develop education programs/curriculum to train future mechanics (hosted by local university – T.A. Marryshow Community College or New Life Organisation)

### **Component 4: Public awareness**

Public awareness is identified as one of the major barriers to electric vehicle adoption. Consumers have several misconceptions against EVs, such as range, performance on hilly terrain, maintenance costs, and other issues. There is a lack of awareness about the incentives related to EVs and the lifecycle cost

assessment of EVs and ICEVs.

The key activities for this component include:

1. Develop public outreach plans to disseminate information through radio, newspaper and educational materials
2. Create public awareness programs to publicize EV incentives

**Component 5: Technical study for Government to analyze fiscal effects of EV transition**

Currently, fuel taxes are a significant source of government revenue. As EVs start to displace ICEVs in large proportions, the government revenue will be impacted. As the island transitions away from the use of fossil-based vehicles, it will be necessary to restructure how revenue is collected to ensure that the government can continue to provide necessary services. Developing a fiscal plan early, while EV penetration is relatively low, will help Government of Grenada prepare for a future in which the transportation sector is fully electrified.

The key activities of this component include:

1. Conduct study the impacts of reduced oil consumption on government revenues
2. Propose new tax structure for the Government to mitigate the losses from losing fuel revenues

**Theory of Change**

This project aims to transform the vehicle fleet in Grenada by transitioning to plug-in electric vehicles, thereby reducing the GHG emissions from the transport sector. These five components will help Grenada overcome the barriers that currently exist in the uptake of EVs and help electrify the vehicle fleet. The theory of change is pictured in Figure 2.

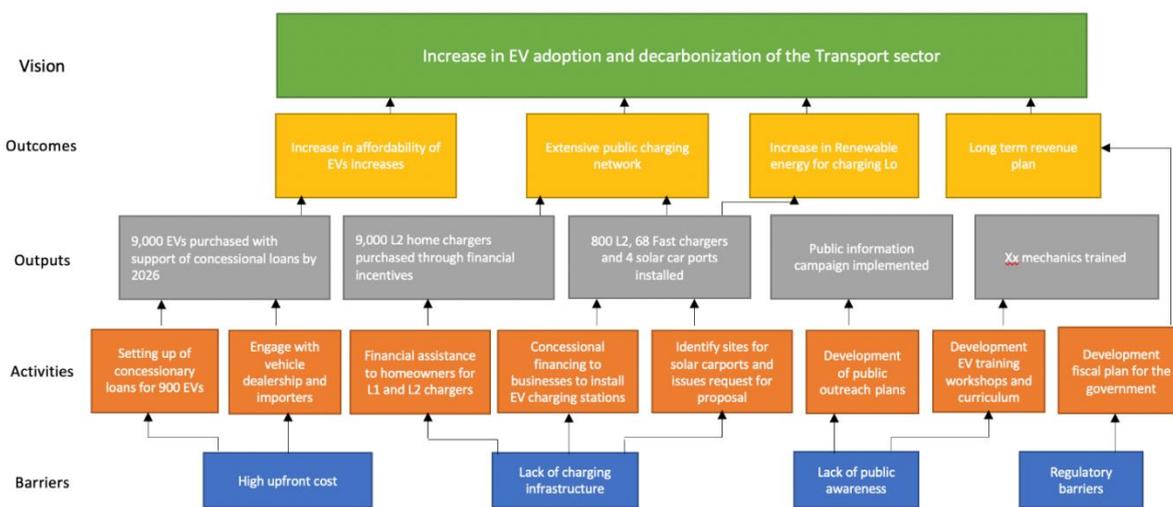


Figure 2: Theory of change

Several assumptions are made in the theory of change.

- It is assumed that EVs will be available for imports into Grenada and that the cost of importing them will be in line with the cost of importing other vehicles
- The project assumes that EV costs will come down in alignment with the predictions made by McKinsey and others
- The availability of appropriate sites for installation of solar car ports is assumed. It is also assumed that this does not create any issues with relation to GRENLEC’s generation monopoly

**Accredited entity**

An accredited entity has not yet been confirmed. The NDA is in contact with several potential accredited entities (AE), including the Caribbean Development Bank (CDB), the Grenada Development Bank (subject to accreditation), the World Bank (WB).

**Risks**

Type of risk	Risk	Measure (Low, Moderate, High)	Mitigation
Financial Risks	Funding not received in a timely manner to implement project	Low	Once funding for this project is approved by the GCF, the existing Framework Agreement between the AEs and GCF will govern the request for disbursement, and disbursement of funding in accordance with the Framework Agreement and timely manner
	Uptake of Financing and Financial Incentives provided	Medium	Aggressive promotion and public education on available facilities and benefits provided through these facilities.
Economic Risks	EV cost assumptions not borne out	Moderate	<p>If EV costs do not fall as quickly as anticipated, this project may not be able to support the purchase of the full number of electric vehicles predicted. The project aims to maximize impact and ensure that incentives provided are appropriate to real world cost conditions through a process of regular review of the economics to ensure that incentives are in line with necessity.</p> <p>If costs do not fall as quickly as expected, the project will have addressed many of the non-financial barriers and perceived risks will be lower, such that more risk-averse sources of finance can support further interventions in electric mobility in Grenada.</p>
Management Risk	Poor management of the project	Low	Implementation and reporting structure as is set out in the Framework Agreement between the AEs and GCF mitigate any risk associated with mismanagement.
Delay in the start of project activities	Timely submission of disbursement request to be processed by the GCF for the early receipt of funds.	Medium	AEs Framework Agreements are already in place. This should minimize time to disbursement.
Cost and Market Risk	Inflationary pressures could result in the reduction in the purchasing power of the	Low	To mitigate this risk, the AEs hold the funding associated with the project in US dollars. This eliminates how

	monies budgeted.		changes in the local currency could affect the funding for the project. To mitigate against inflation, the AEs will enter into negotiation with consultants to match the funding available with the required activities resulting outputs and outcomes.
Operational Risk	Bottlenecks: Procedure and Processes limits the realization of activities and outputs.	Low	AEs as accredited entity to the GCF, will be guided by AEs internal policies and procedures that are aligned with international best practice including those of the GCF.
Schedule Risk	Delays in the implementation of activities.	Moderate	To mitigate delays AEs will conduct periodic review and convene internal meetings to identify potential delays and, where necessary, make adjustment to optimal implement all activities of this readiness.
Environmental Risk	External Hazards and Climatic Natural Disasters: Grenada sits directly within the hurricane belt and experiences climatic natural disasters including hurricanes/tropical cyclones, flooding and drought. These extreme climatic events have the potential to disrupt and delay the implementation of some activities identified in this project.	High	To mitigate the potential impacts of climatic natural disasters, activities that will be implemented and will take into consideration the hurricane season and as much as possible avoid implementing activities during these periods.

**B.3. Expected project results aligned with the GCF investment criteria (max. 3 pages)**

**1: Impact/result potential**

**Mitigation**

Transportation and electricity emissions were estimated for NDC revision. In the Business-As-Usual (BAU) scenario, low penetration of EV is assumed. The analysis indicates that transport sector-related GHG emissions will be at 146,000 metric tonnes CO<sub>2</sub>e by 2026, 123,000 metric tonne CO<sub>2</sub>e by 2030 and, 99,000 metric tonne CO<sub>2</sub>e by 2050.

While EVs do not have any tailpipe emissions, the amount of GHG emissions it produces depends upon how the electricity is produced. As Grenada generates most of its electricity through diesel, EVs will produce emissions indirectly through electricity consumption. With the current grid emissions factor of 0.8 kgCO<sub>2</sub>/kWh, a standard EV with a fuel economy of 18 kWh/100 km will produce 1430 kgCO<sub>2</sub> yearly (assuming it travels 10,000 km/year). In comparison, a standard ICEV with a fuel economy of 8 liter/100 km will produce 1840 kgCO<sub>2</sub> of emissions. Therefore, even with the current fossil fuel dominated grid, one EV produces 410 kgCO<sub>2</sub> emissions less than an ICEV.

This project aims to increase the total number of EVs to ~9,000 by 2026, thereby reducing the emissions from transport sector by 3690 metric tonnes CO<sub>2</sub>.. As emissions from EVs depend upon the grid makeup, higher mitigation potential can be achieved by generating electricity through renewable energy.

Given the demonstration potential of the project and its contribution to an appropriate enabling

environment for electric mobility, it is hoped that it will contribute to 20,000 EVs on the road by 2030. This corresponds to 8200 metric tonnes CO<sub>2</sub> reductions relative to business as usual by 2030.

## **2: Paradigm shift potential**

By helping the transition to plug-in electric vehicle, this project will transform Grenada's transport sector into a low carbon resilient sector. This project will help in increasing the uptake of EVs by holistically addressing the key barriers that electric vehicles face in the Grenadian context: lowering the upfront cost of EVs; creating public charging infrastructure; training mechanics and technicians; and raising public awareness. The project will see participation from both the public and private sectors, which will accelerate the transition.

In addition, the project has replicability potential. Other Caribbean Small Island Developing Nations, especially Organisation of Eastern Caribbean States (OECS) nations, share similar national circumstance as Grenada. This project will generate knowledge and best practices for EV deployment, which will enable higher replicability.

## **3: Sustainable Development**

This project also focuses on climate change mitigation by reducing the GHG emissions from the transport sector, and it has several economic, social and environmental co-benefits.

For the economic co-benefits, with the adoption of EVs, the amount of fossil fuel used will be reduced. With an assumption that a standard ICEV with fuel economy of 8 liters/100 km and a yearly travel for 10,000 km, there is a potential to reduce 175 imperial gallons of gasoline per year per ICEV. As the project aims to increase the total number of EVs to 9000 by 2026, there will be reduction of 1,583 thousand imperial gallons of gasoline and with 20,000 EVs by 2030, there will be reduction of 3519 thousand imperial gallons of gasoline. There will be an additional reduction in fossil fuel use once the renewable energy mix is added to the energy grid. The decrease in fuel consumption will lead to foreign currency savings, freeing up fiscal space for the government to invest in other sectors.

For the social and environmental benefits, the reduction in transport emissions may reduce air pollution, which will improve public health. Grenada's air quality is considered moderately unsafe according to the World Health Organization's guidelines – the most recent data indicates the country's mean concentration of PM 2.5 is 23 µg/m<sup>3</sup>, more than the WHO recommended maximum of 10 µg/m<sup>3</sup>. This is primarily a result of energy sector and vehicle emissions (IAMAT, 2020)

The project will help Grenada achieve its mitigation ambition listed in its second NDC.

Moreover, this project has a direct connection with the following Sustainable Development Goals:

- SDG 7: Clean and affordable Energy
- SDG 8: Decent work and economic growth
- SDG 9: Industry, innovation and infrastructure
- SDG 11: Sustainable cities and communities
- SDG 13: Climate action

## **4: Needs of Recipient**

Grenada is classified as an upper-middle-income country by the World Bank. Over the past two decades, the economy changed from predominantly agriculture-based to services dominated (tourism, real estate, education, and construction). Grenada's economy is highly vulnerable to the impacts of climate change and extreme events. Grenada's economy was buffeted during the 2000s due to Hurricane Ivan in 2004 (the damages inflicted exceeded 200% of the country's GDP), Hurricane Emily in 2005, and the extreme

drought in 2010. Grenada made a notable recovery, and between 2011-2018, the real GDP growth averaged at 3.7%, and per capita income rose persistently. Even though Grenada has seen a consistent rise in real GDP and per capita growth, Covid-19 impacted most parts of the country as Grenada's economy relies heavily on the tourism and agriculture sector.

While the Government has a long-term vision for EVs, it cannot allocate sufficient funding due to fiscal constraints. Grenada's public debt/GDP ratio stood at 70.8 in 2017. The Fiscal Responsibility Act, 2015 sets a target of 55% and limits the Government's ability to finance capital investments through commercial loans. The primary expenditure and balance rules also limit the Government's ability to finance investments from its operating surplus. The Government, therefore, has to rely on grants and other financing instruments to make the necessary investments.

**5: Country Ownership**

There is high country ownership for this project. As discussed in section B1, Grenada has several National Policies, Strategies, and Technology Needs Assessment have goals that are aligned with this project. The outcome of this project aligns with Grenada's second NDC which has an ambitious economy wide target of reducing 40% GHG emissions of 2010 levels by 2030. As transport sector is the second highest emitter of GHG emissions, the interventions planned for this project will directly help Grenada reduce its transport emissions and achieve the NDC.

The inception of the project was highly consultative with a range of stakeholders such as government entities, private sector, development and civil society organizations. The direct beneficiaries of this project are the local population and private businesses.

**6: Efficiency & Effectiveness**

As the project supports Grenada's transition to EV, it has high mitigation potential. With a total number of 9,000 EVs by 2026, it is expected that there will be a reduction of 3690 metric tonnes CO<sub>2</sub> and will 20,000 EVs by 2030, there will be a reduction of 8200 metric tonnes CO<sub>2</sub>. The estimated cost per metric tonnes CO<sub>2</sub> (Total investment cost/ expected emissions reduction) for 2030 is USD 4,878/ metric tonnes CO<sub>2</sub>.

A more in-depth efficiency assessment will depend on the final structure of the financial instrument, which will be further elaborated in the full proposal.

**B.4. Engagement among the NDA, AE, and/or other relevant stakeholders in the country (max ½ page)**

The initial proposal was presented by private sector at stakeholders' workshop held during the period August 22-24, 2018. The project idea has been endorsed by the NDA and National Climate Change Commission (NCCC). The AE has not been engaged as yet.

**C. Indicative Financing/Cost Information (max. 3 pages)**

**C.1. Financing by components (max ½ page)**

Component/Output	Indicative cost (USD)	GCF financing		Co-financing		
		Amount (USD)	Financial Instrument	Amount (USD)	Financial Instrument	Name of Institutions
<b>COMPONENT 1: Revolving Loan Fund for</b>	\$40,000,000	\$40,000,000	Concessional Loan			

concessional financing to reduce upfront cost of EVs						
<b>COMPONENT 2: Charging infrastructure development</b>			Grant			
- Solar carports	\$652,880	\$652,880	TBD (equity, grant, other)			
- Home charging units	\$2,700,000	\$2,700,000	Grant			
- Public charging	\$1,607,700	\$1,607,700	Loan			
<b>COMPONENT 3: Training and Capacity Building</b>	\$200,000	\$200,000	Grant			
<b>COMPONENT 4: Public awareness</b>	\$200,000	\$200,000	Grant			
<b>COMPONENT 5: Technical study for Government to analyze fiscal effects of EV transition</b>	\$80,000	\$80,000	Grant			
<b>Project Management</b>	\$4,544,058	\$3,635,246	Grant	\$908,812	In Kind	Government of Grenada
<b>Indicative total cost (USD)</b>	<b>\$49,984,638</b>	<b>\$49,075,826</b>		<b>\$908,812</b>		

**C.2. Justification of GCF funding request (max. 1 page)**

Grenada's high debt to GDP ratio, low primary account balance and fiscal rules limits the country's ability to finance this investment. The private sector is very risk-averse and does not have experience in financing climate change investments. Interest rates are generally high access to finance is typically collateral driven. To encourage participation by the private sector financing institutions, the public sector will focus on creating an enabling regulatory environment and providing financial incentives to lower the cost of borrowing. The recently established OECS Partial Guarantee Scheme would be engaged to provide some level of risk protection. A consortium arrangement will be negotiated with the financial institutions to manage the financing of investments under the project.

All activities proposed in this project will be designed to maximize the use of GCF investment. To make EV uptake more viable and reduce the higher upfront cost, concessional loans are proposed to offset the cost difference between EVs and ICEVs till the cost parity is reached. The revolving fund will provide loans on the amount difference between EVs and ICEVs, thus making EV affordable. In addition, the investment will be used to incentivize home chargers and public charging stations and create capacity in terms of EV trained mechanics. This will boost consumer's confidence about the existing charging infrastructure and therefore increase the adoption of EV. GCF grant will be used to develop public awareness campaigns and play an essential role in the uptake of EVs on the island. Through all the activities, this project will

address all the existing barriers and create enabling environment for the uptake of EV and eventual decarbonization of the transport sector.

No alternative funding options are currently under consideration. Given the incipient nature of electric mobility in Grenada, the GCF as a support mechanism with a high risk tolerance and significant funding volumes is a good candidate for support for this programme. If additional support is needed in the future once the concept has been demonstrated, other sources, such as multilateral development banks, may be appropriate for future support.

**C.3. Sustainability and replicability of the project (exit strategy) (max. 1 page)**

The Transport sector is the second highest emitter in the country and one of the ways to reduce the GHG emissions is through adoption of plug-in electric vehicles. However, EVs are still in nascent stage of development in Grenada. As discussed in B1, several barriers exist in scaling up of EVs in the country, ranging from high upfront cost, lack of sufficient financial incentives to lack of public awareness. This project consists of activities which will address these barriers and provide an impetus for the scaling up of the EVs. It will provide incentives to consumers by reducing the high upfront cost of EVs and charging units. It will provide private sector opportunities to participate in creation of public charging infrastructure. The project will even create lasting training capacity for auto mechanics and technicians. Eventually cost parity between EV and ICEV will be reached, meanwhile this project will create awareness about the lower total cost ownership of the EVs and their environmental benefits. Increase in the number of EVs on the island will send signal to the utility to generate electricity using renewable sources, adoption of mini-grids and explore potential of vehicle-to-grid using EV batteries.

Once the initial momentum is gained through adoption of EVs, it will create lasting visibility and capacity in the country for replicability. In the long run, this will help Grenada reduce its transport and electricity generation emissions significantly and contribute to its NDCs in mitigating emissions in the long-run.

**D. Supporting documents submitted (OPTIONAL)**

- Map indicating the location of the project/programme
- Diagram of the theory of change
- Economic and financial model with key assumptions and potential stressed scenarios
- Pre-feasibility study
- Evaluation report of previous project
- Results of environmental and social risk screening

**Self-awareness check boxes**

Are you aware that the full Funding Proposal and Annexes will require these documents? Yes  No

- Feasibility Study
- Environmental and social impact assessment or environmental and social management framework
- Stakeholder consultations at national and project level implementation including with indigenous people if relevant
- Gender assessment and action plan
- Operations and maintenance plan if relevant
- Loan or grant operation manual as appropriate
- Co-financing commitment letters

Are you aware that a funding proposal from an accredited entity without a signed AMA will be reviewed but not sent to the Board for consideration? Yes  No

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