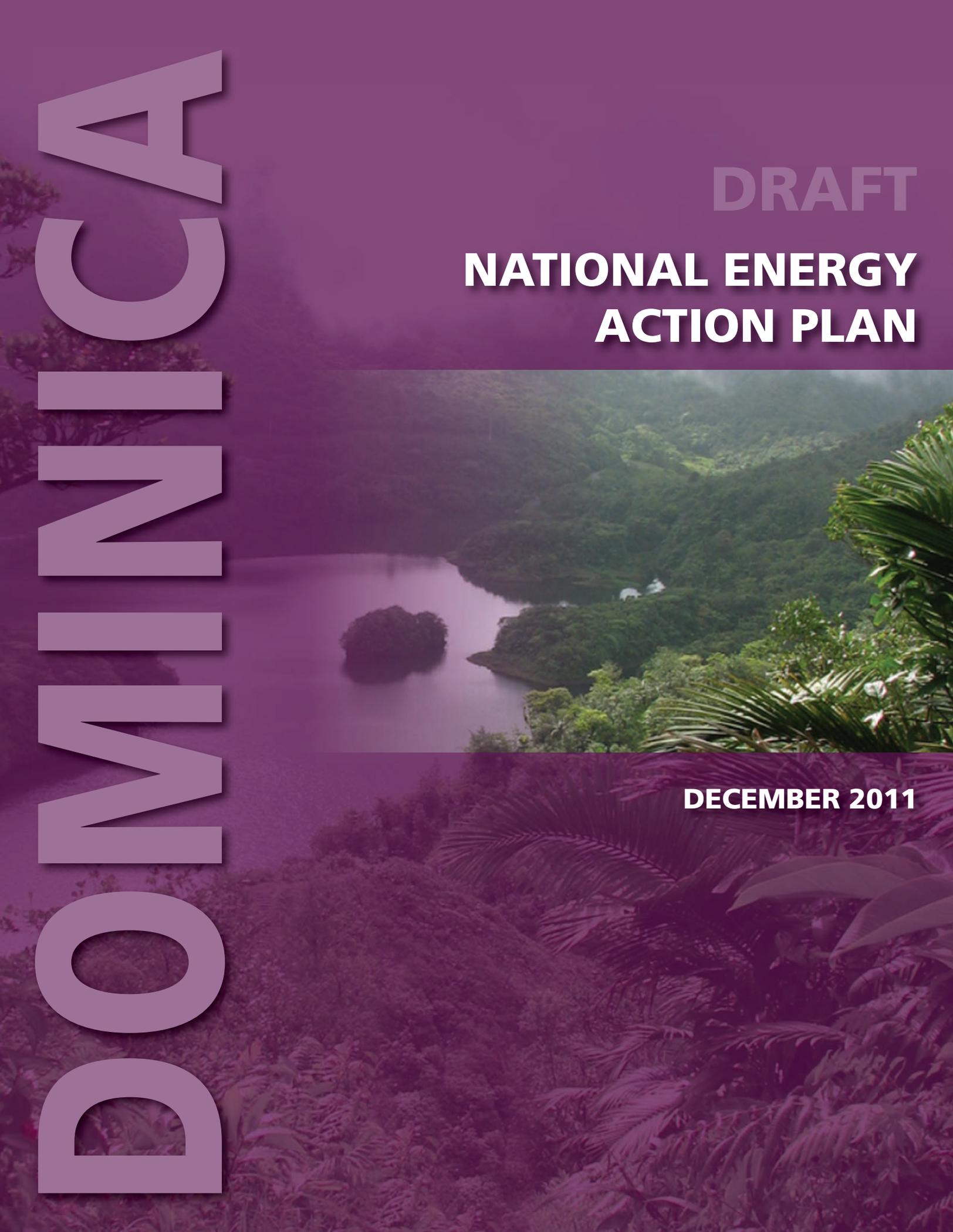


# DOMINICA

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## NATIONAL ENERGY ACTION PLAN

DECEMBER 2011





Prepared by the Department of Sustainable Development of the General Secretariat of the Organization of American States through the Global Sustainable Energy Islands Initiative Consortium, and the expert advice of the Independent Consultant Mr. Basil Sutherland, and Castalia LLC under the European Union funded initiative “Caribbean Sustainable Energy Program (CSEP)”. The views expressed herein are presented for informational purposes only and do not represent the opinions or official positions of the Global Sustainable Energy Islands Initiative Consortium, the European Union, the Organization of American States, its General Secretariat, or any of its member States.

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## ACRONYMS

DOMLEC	.....	Dominica Electric Company
EPTD	.....	Establishment, Personnel and Training Department
IRC	.....	Independent Regulatory Commission
MAF	.....	Ministry of Agriculture and Forestry
MEHRD	.....	Ministry of Education and Human Resources Development
MENRPPF	.....	Ministry of Environment, Natural Resources, Physical Planning and Fisheries
METIDA	.....	Ministry of Employment, Trade, Industry, and Diaspora Affairs
MF	.....	Ministry of Finance
MFA	.....	Ministry of Foreign Affairs
MITCE	.....	Ministry of Information, Telecoms, and Constituency Empowerment
MSSCDGA	.....	Ministry of Social Services, Community Development and Gender Affairs
MTLA	.....	Ministry of Tourism and Legal Affairs

# 1 INTRODUCTION **THIS DOCUMENT ESTABLISHES THE NATIONAL ENERGY ACTION PLAN**

(the Plan) of Dominica. The Plan addresses the growing concerns about the predominance of imported fossil fuels in the country's energy sector. The goal of the Plan is to increase the efficiency and sustainability of energy supply and demand, wherever it is economically feasible.

Dominica's primary energy requirements are met almost entirely through the use of fossil fuels, all of which are imported. Oil-derived products make up 90 percent of the total energy supply. Liquid Petroleum Gas (LPG) contributes a further six percent to the total primary energy requirement. Hydropower facilities—which are ageing and need revitalization—make up the remaining four percent.

The cost of fuel imports is a concern at the macroeconomic level, and for individuals. Lack of diversity in energy sources, exposes the country to the volatility of fossil fuel prices, and instability in supply if fuel shipments are delayed.

The Government of Dominica is concerned about the effects of using fossil fuels on local and global environmental sustainability. In addition to global concern about carbon dioxide emissions, using fossil fuels leads to direct pollution effects on Dominica's natural environment, which is a vital economic resource for the country, particularly for the tourism industry.

The Plan sets out how the Government intends to implement the National Energy Policy (the Policy). The Plan follows the layout of the Policy, providing detail for the specific policies that are in the Policy. The main components of the Plan are:



- ◆ **Summary of the National Energy Action Plan** – Summary of the actions and sub-actions of the Plan, and the time scale and implementing body for the actions;
- ◆ **Plan for Fossil Fuels Management** – This component covers the Government's plan to use the most economically efficient fuels and to use them as efficiently as possible;
- ◆ **Plan for Electricity Supply** – This component covers the Government's plan to provide efficient electricity supply, integrating renewable energy where economically feasible;
- ◆ **Plan for Energy Efficiency and Conservation** – This component covers the Government's plan to encourage energy efficiency and conservation as it applies to Dominican society as a whole;
- ◆ **Plan for End-Use Sectors** – This component covers policies for sustainable energy that are specific to individual economic sectors, and are not covered in previous sections;
- ◆ **Plan for Institutional Strengthening and Funding** – This component covers the administrative and institutional requirements to implement the Plan. It also provides guidance on potential funding sources.

# 2 SUMMARY OF NATIONAL ENERGY ACTION PLAN

THE TABLE BELOW SUMMARIZES HOW THE GOVERNMENT PROPOSES TO implement each component of the Policy, showing the:

- ◆ Actions and sub-actions that correspond to specific policies from the Policy,
- ◆ The body that will be responsible for the actions and sub-actions. This means conducting the actions, gathering together additional actors that will participate in carrying out the action, and/or contracting outside consultants to carry out parts of the Plan, and
- ◆ The time-scale for carrying out the actions.<sup>1</sup>

**Table 2.1: Summary of National Energy Action Plan**

Policy	#	Action	#	Sub-Action	Body Responsible	Timescale	
<b>Policy for Fossil Fuel Management</b> POLICY: It is the Government's policy to provide safe, reliable, competitive, and affordable fossil fuel supply, and promote its clean handling and use. This will result in cost reduction and greater efficiency	1	Rationalising bulk storage facilities and providing adequate incentives and develop the necessary framework and reforms for fossil fuel storage capacity to allow for emergencies and late shipments	1.1	Work with the private sector to develop better forecasting systems based on the collection of detailed end-use information for petroleum demand.	MPWEP, METIDA	Immediate-Term	
			1.2	Study best approach to achieve efficient storage capacity, including a cost/benefit analysis and considering whether to build new facilities or better regulate existing facilities.	MPWEP	Immediate-Term	
			1.3	Revise existing regulations, or submit for consideration new legislation to Parliament, that will ensure adequate inventory levels and cushion effects of supply disruptions.	METIDA, MPWEP	Short-Term	
	2	Setting national standards for fuel quality and seeking regional harmonization throughout the Organization of Eastern Caribbean States	2.1	Conduct a study of best practices for fuel efficiency standards in the Caribbean context, including a cost/benefit analysis of requiring that higher quality fuel be imported.	MPWEP	Immediate-Term	
			2.2	Work with the importers and other OECS standards institutions to revise existing regulations, or submit for consideration new legislation to Parliament, in order to ensure that minimum quality standards are developed for fuels imported into Dominica.	MPWEP, METIDA	Short-Term	
	3	Ensuring that competition to supply fossil fuels guarantees the lowest price possible for petroleum products	3.1	Seek donor assistance to undertake a study of supply logistics for petroleum products within the sub-region.	METIDA	Immediate-Term	
			3.2	Prepare regulations to ensure that as far as possible, fossil fuels are procured competitively to ensure that, as far as the supply logistics will allow, supplies of petroleum products are the lowest price possible. This can include national combined purchasing.	METIDA	Short-Term	
	<b>Policy for Electricity Supply</b> POLICY: It is the Government's policy to foster a safe, efficient, affordable, and low-carbon national electricity supply that meets international quality standards by promoting efficient use of imported fossil fuels, and Dominica's domestic renewable energy resources.	4	Providing incentives to electricity generators, transmitters, and distributors to improve efficiency	4.1	Through negotiations with DOMLEC, design a system based on regional benchmarking that will ensure that line losses in excess of reasonable levels that result in more fuel than necessary being used are not passed on to the consumer in the fuel surcharge, but remain as a cost to DOMLEC.	IRC	Immediate-Term
				4.2	Conduct a tariff optimization study that will provide a blue print for rearranging the tariff structure so that it will incentivize off-peak energy use, account for power factor, and encourage all customers, particularly large customers, to remain on the grid.		
4.3				Establish an overall heat rate target for diesel engine generation efficiency and ensure that generating plants are dispatched in the most economical way to meet the system loads. This means using the available mix of hydropower, conventional generation, and new renewable energy sources to provide reliable power at least cost.			
4.4				Require DOMLEC to demonstrate that its expansion planning is least cost and based on best practices in expansion planning.			
4.5				The IRC will develop a Standard Offer Contract for Independent Power Producers.			

(continued)

<sup>1</sup> In this column Immediate-term means less than one year, Short-term means less than five years, and Medium-term means less than 10 years and long term means more than 10 years.

Policy	#	Action	#	Sub-Action	Body Responsible	Timescale
			4.6	Adequately train IRC's staff in the use of the appropriate system planning software and ensure that its planning software is kept up to date with program enhancements and updates.		
			4.7	Require DOMLEC to install fuel meters and also implement a protocol for the periodic recalibration of these meters.	METIDA , MPWEP	Immediate-Term
	5	Extending electricity supplies to unserved communities and remote, off-grid communities through grid access or microgeneration	5.1	Continue to ensure that electricity consumption under 100 kWh in the residential consumer tariff category receives a subsidy which is paid for by the consumption of larger amounts of electricity by other customers.	IRC	Immediate-Term
	5.2		Conduct studies to identify communities without access to grid power and then conduct a cost/benefit analysis to determine what the most economic technology is to deliver power to them. This should include consideration of grid connection, cooperative generation, or individual generation.	MSSCDGA	Immediate-Term	
	5.3		Provide financial assistance to fund training the staff of cooperative organizations to manage, operate and maintain the facilities, and the setting up of the accounting functions that will be required.	MSSCDGA	Short-Term	
	6	Providing the appropriate standards, guidelines and regulatory system for the integration of renewable energy to the national electricity system	6	Continue to develop appropriate standards to facilitate the interconnection of renewable energy systems to the DOMLEC grid.	IRC, DOMLEC	Immediate-Term
	7	Ensuring the development of local expertise to install, operate, manage, and maintain renewable distributed generation systems	7	Cooperate with local technical institutes and international training institutes to design and implement a curriculum for training Dominicans to install, operate, manage, and maintain renewable distributed generation systems.	MEHRD	Immediate-Term
	8	Promoting the development of economically viable small renewable distributed generation capacity	8.1	Continue to promote the development of economically viable, renewable distributed generation capacity and co-generation by conducting cost/benefit analyses of incentives to inform the design of a program that will offer: fiscal incentives, procedures and standards for system interconnection, stable and fair feed-in tariffs, and streamlined approval processes. To do this, Dominica will draw off the experience of Barbados and other similar countries.	MPWEP, METIDA, MF, MSS- CDGA, IRC	Immediate-Term
			8.2	Design and pass necessary regulations and allocate necessary resources to implement the program of incentives, procedures, and standards.	MF, MPWEP	Short-Term
	9	Designing and implementing a national programme of education and awareness in renewable energy	9.1	Develop curriculums in schools to increase the awareness of students about renewable energy and the need for the country to reduce its energy costs through energy efficiency and renewable energy.	MPWEP, MEHRD	Immediate-Term
			9.2	Develop renewable energy awareness programmes for the employees of Government by way of short in-house programmes and seminars.	MPWEP	
			9.3	Develop and implement short programmes of radio and television advertising informing Dominicans about energy efficiency and renewable energy.	MPWEP, MITCE	
	10	Promoting Hydropower	10.1	Review and check existing data on hydropower capacity and pilot the implementation of resource assessments for hydroelectric potential by establishing a stream gauging programme throughout Dominica.	MPWEP, DOMLEC, DOWASCO	Short-Term
			10.2	Undertake preliminary estimates of the costs of implementing micro hydro schemes at suitable locations and undertake preliminary analyses to rank the cost/benefit of these potential developments to determine their economic potential to supply energy for various uses.	MPWEP	
			10.3	Maintain a database of hydro resources which, along with preliminary estimates of costs, will be updated on a regular basis. This data should be included in the renewable energy database.		

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# SUMMARY OF NATIONAL ENERGY ACTION PLAN

Policy	#	Action	#	Sub-Action	Body Responsible	Timescale			
11	Promoting Geothermal Power		11.1	Drill test wells and continue the exploration of geothermal potential, including addressing concerns about reliability of geothermal and impacts on hot springs by "proving" the viability of the heat source under load.	MPWEP	See GAANT Chart (Table 4.1)			
			11.2	Drill and cap a commercial production well.					
			11.3	Commission and implement the required environmental impact assessment studies to ensure that the geothermal developments are implemented in an environmentally friendly manner, and that whatever mitigation measures are needed, are carried out with dispatch.					
							11.4	Develop and draft appropriate agreements with developers, financiers, electricity purchasers, and other relevant stakeholder for developing the plant, and selling and transporting the electricity produced at the plant.	MPWEP
							11.5	Carry out an interconnection economic feasibility study to determine the parameters required for the commercial exploitation of the geothermal resource.	
							11.6	Develop and implement training programmes for geothermal technicians.	
							11.7	Carry out a technical feasibility study to determine the technical boundaries for interconnecting with the electricity systems on Dominica, as well as with the systems on Martinique and Guadeloupe.	
							11.8	Negotiate commercial agreements with DOMLEC.	
							11.9	Facilitate the construction and operation of a 5-10 MW plant to connect with the DOMLEC system.	
							11.10	Prepare bidding documents and conduct an international, competitive auction to select the company to develop and build a large-scale geothermal plant.	
							11.11	Negotiate a power off-take agreement with Martinique and Guadeloupe.	
							11.12	Facilitate the construction, financing and operation of a large-scale geothermal plant by a competitively-selected, qualified private company.	
12	Promoting Solar Power		12.1	Develop a list of government-owned facilities and institutions which have critical loads such as in hospitals and schools which could be powered by photovoltaic sources and carry out an initial pilot project to test these installations.	MPWEP	Immediate-Term			
			12.2	Carry out an initial pilot project to test installation of solar water heaters in public buildings.)		Short-Term			
13	Promoting Wind Power		13.1	Pilot the implementation of resource assessments for wind energy at sites which are thought to have good wind regimes and seek funding from appropriate agencies to undertake these resource assessments.	MPWEP	Immediate-Term			
			13.2	Maintain a database of wind data and wind maps, along with preliminary estimates of costs for establishing wind turbines, which will be updated on a regular basis.					
Energy Efficiency and Conservation POLICY: It is the Government's policy to rationalize the country's overall rate of energy consumption while increasing its economic growth by adopting best practices in energy efficiency and conservation.	14	Developing public education programmes on improved consumption patterns and consumer behaviour in the end-use sectors	14.1	Commission a study of energy consumption patterns in all the major sectors of the Dominican economy and identify areas for improvement.	MPWEP and DOMLEC	Immediate-Term			
			14.2	Design and implement a public information campaign that will promote energy conserving and energy efficient practices.	MITCE	Immediate-Term			
			14.3	Conduct a study of best practices, drawing on the experience of Barbados, for how to incentivize customers to purchase commercially and economically viable energy efficient appliances.	MPWEP	Immediate-Term			
		Encouraging the use of energy-efficient appliances and technology by consumers	14.4	Convene stakeholders from the Government, the banking sector, and the retail sector to discuss the findings of the study and decide what kinds of incentives to offer.	MPWEP	Immediate-Term			
			14.5	Provide fiscal incentives to businesses and individuals that will encourage them to purchase commercially and economically viable energy efficiency technology.	METIDA	Short-Term			

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## SUMMARY OF NATIONAL ENERGY ACTION PLAN

Policy	#	Action	#	Sub-Action	Body Responsible	Timescale
	15	Encouraging appliance suppliers to import reliable, energy efficient appliances	15.1	Conduct quality standards testing to determine which appliances are most appropriate for the Dominican context, taking into account efficiency, durability, performance, and added cost as well as other applicable environmental and safety standards.	Bureau of Standards	Immediate-Term
			15.2	Conduct cost/benefit analysis of offering tariff incentives for economically viable energy efficient appliances that meet established standards or import restrictions on appliances that fail to meet efficiency standards.	METIDA	Immediate-Term
	16	Requiring retailers to label energy efficient appliances, and to inform customers about the energy efficiency and the energy consumption of appliances	16.1	Design an appropriate labeling scheme that will alert Dominicans to the potential benefits of energy efficient appliances and require that retailers display them on products.	MPWEP	Immediate-Term
			16.2	Conduct a public education campaign to make people aware of the labels and their significance and how they relate to fiscal incentives that promote purchasing energy efficient equipment.	MITCE	Short-Term
	17	Establishing standards for energy efficiency in buildings	17.1	Conduct research on best practices for energy efficient buildings in the Caribbean environment and maintain awareness on any regional or sub-regional studies that could benefit Dominica.	MENRPPF	Immediate-Term
			17.2	Convene stakeholders, including government officials, representatives of the construction industry, and property owners to weigh benefits and costs and determine appropriate building standards for Dominica based on the best practices study.		Immediate-Term
			17.3	Implement building standards and lead by example by ensuring that government buildings meet or are striving towards meeting standards.		Short-Term
	18	Encouraging energy audits, especially hotels and households	18.1	Study best practices in encouraging energy audits in all sectors of the economy and recommend incentives.	MPWEP	Immediate-Term
			18.2	Provide appropriate fiscal and financial incentives to encourage individuals and businesses to conduct audits.	MF	
	19	Encouraging retrofitting homes and buildings in the private sector with energy efficient equipment	19.1	Conduct a cost/benefit analysis of best practices for how to incentivize individuals and companies to retrofit their building with commercially and economically viable energy efficiency technologies.	MENRPPF	Immediate-Term
			19.2	Convene stakeholders in the Government, private sector, and NGO representatives to present the findings of the study and decide which incentives are appropriate to encourage energy efficiency retrofits.	MENRPPF	
			19.3	Offer fiscal and financial incentives through the commercial banking sector as well as through tax incentives for retrofits in the domestic and commercial sector.	MF	Medium-Term
	20	Developing a plan to retrofit public buildings with energy efficient equipment	20.1	Conduct energy audits to determine which public buildings have the highest potential for energy savings from an energy efficiency retrofit.	MENRPPF	Short-Term
			20.2	Carry out the energy efficiency retrofits in the buildings identified in the energy audits.	MPWEP	Medium-Term
	21	Reporting progress on energy efficiency in national economic reports	21.1	Convene stakeholders from within the Government to determine what efficiency indicators are most appropriate to report.	MITCE	Immediate-Term
21.2			Gather information on efficiency gains from DOMLEC, the MAF, and the MITCE to calculate the indicators and publish them in national reports.	Short-Term		

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## SUMMARY OF NATIONAL ENERGY ACTION PLAN

Policy	#	Action	#	Sub-Action	Body Responsible	Timescale	
<b>Transport Sector</b> POLICY: It is the Government's policy to promote efficient vehicles, crafts, and a strong integrated public transport sector strategy.	22	and statistics Conducting research into producing alternative fuels to ensure that vehicles and crafts in Dominica are powered by the most efficient energy mix possible	22	The MPWEP will conduct cost/benefit analyses to estimate the overall impact on the economy of using the various types of vehicles, crafts and fuels for different transport duties and make recommendations as to the types of vehicles and crafts that should be encouraged in the transport fleet. This will include analysis of diesel, biodiesel, and electric power (including potential partnerships with electric vehicle makers). Analysis of different types of vehicles and crafts should include the analysis of the required infrastructure to support them. Analysis will also include studying the potential of producing biofuels and E10.	MPWEP	Immediate-Term	
	23	Optimizing efficiency of transport fleet and fuel mix	23.1	Consult on possible changes in fuel and fleet mix based on the study. If warranted by the results of the study, the METIDA and MF will collaborate to design and implement a tariff regime that offers reduced importation tariffs based on the fuel efficiency of the vehicle or craft. The tariff regime should be progressive and give the largest tariff reductions to the most efficient vehicles and crafts. Additionally, if appropriate, they will provide economically efficient incentives for domestic production of biofuels or E10.	METIDA, MF	Short-Term	
			23.2	Organize courses on defensive driving that will be offered in secondary schools, to the Taxi Drivers Association, and to the general public through public information campaigns.	MEHRD, MITCE	Immediate-Term	
	24	Organizing a regulated and rational public sector transit system	24.1	Conduct study of best practices in organizing public transport, this should include a cost/benefit analysis of investing in public transport for Dominica.	MPWEP	Immediate-Term	
			24.2	Convene stakeholders including government officials, Taxi Drivers Association members, and NGO representatives, discuss potential trade-offs, and decide on a course of action.		Immediate-Term	
			24.3	Implement the Plan to create a regulated and rational public transport sector.		Short-Term	
	<b>Agricultural Sector</b>	25	Encouraging the use of sustainable practices in agriculture, which will provide economic benefits and environmental benefits.	25.1	Conduct studies on best practices for energy efficient agricultural practices, including building standards, in the Caribbean.	MAF	Immediate-Term
				25.2	Design and implement a targeted educational campaign coordinated with agricultural cooperatives to promote best practices in energy efficient agriculture and inform farmers of the benefits available to them under the Electricity Supply and Energy Efficiency and Conservation plans.		Short-Term
	<b>Industrial and Commercial Sector</b> POLICY: encourage sustainable methods of production which will include reducing waste, recycling and reuse of materials.	26	Offering tax breaks for companies meeting the energy efficiency standards set by Government, including for using "green buildings" and green production methods for their operations	26.1	Design and implement a targeted educational campaign coordinated with industry and commercial representatives to promote best practices in energy efficiency and inform factory owners and shop owners of the benefits available to them under the Electricity Supply and Energy Efficiency and Conservation plans.	METIDA	Immediate-Term
26.2				Conduct industry specific studies of energy efficiency in industrial and commercial buildings. This will be done in collaboration with local business organization and representatives.	MPWEP	Immediate-Term	
26.3				Provide tax incentives for companies that meet industrial and commercial energy efficient building standards scaled to the projected benefits measured in the cost/benefit analysis.	MF	Immediate-Term	
26.4				Provide tax incentives to use economical, energy efficient manufacturing technology scaled to the projected benefits measured in the cost/benefit analysis.	MF	Immediate-Term	
		Encouraging businesses to implement sustainable energy practices specific to their sectors	26.5	Design and implement a targeted educational campaign coordinated with industry representatives to promote best practices in energy efficiency and inform factory owners of the benefits available to them under the Electricity Supply and Energy Efficiency and Conservation plans.	METIDA, MITCE	Immediate-Term	

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## SUMMARY OF NATIONAL ENERGY ACTION PLAN

Policy	#	Action	#	Sub-Action	Body Responsible	Timescale
<b>Domestic Sector</b> POLICY: It is the Government's policy that the domestic sector will have a diversified supply of energy services, energy efficient appliances, and the option to produce electricity.	27	Developing and implementing educational and action-oriented programmes to promote household energy efficiency and conservation	27.1	Conduct research on best practices for energy efficiency in households including research on usage patterns and energy efficient behavior.	MSSCDGA	Immediate-Term
			27.2	Conduct a public information campaign aimed at persuading households to adopt energy efficient behaviors that will reduce usage as well as inform them of the way that the Energy Efficiency and Conservation and Electricity Supply Policies apply to them.	MITCE	Immediate-Term
		Providing fiscal incentives to promote the use of solar water heating in new and existing homes	27.3	Conduct research on best practices for providing incentives for households to overcome barriers to adopting solar water heaters drawing on the experience of Barbados.	MSSCDGA	Immediate-Term
			27.4	Provide a program of incentives and information that will help overcome barriers to adopting solar water heaters.	MSSCDGA MITCE	Short-Term
		Develop and implement a programme to ensure that LPG could be accessed by all persons in society, especially the most needy;	27.5	Conduct a cost/benefit analysis to examine the cost implications of subsidizing access to LPG for the neediest members of society in Dominica.	MSSCDGA	Immediate-Term
			27.6	Prepare a programme of assistance to aid its neediest citizens in the procurement of their LPG supplies for cooking.	MSSCDGA	Short-Term
<b>Tourism and Hospitality Sector</b> POLICY: It is the Government's policy that the sector will become part the national green approach to business.	28	Reducing tax rates on energy saving hospitality devices and appliances Incentivizing energy efficiency retrofits	28.1	Conduct cost/benefit analysis of hospitality and tourism machines, devices, and appliances in consultation with representatives from the hospitality industry.	MTLA	Immediate-Term
			28.2	Allow cost-recovery of retrofitting hotels through a tax rebate over a five year period.	MF	Immediate-Term
		Incentivizing hotels to become Earth Check certified	28.3	Develop a special regime of recognition and promotion of the greening efforts of hotels.	MTLA	Short-Term
<b>Policy Implementation Approach</b> POLICY: It is the Government's policy to integrate the capacity to ensure that government actions are in line with sustainable development objectives into an Energy Unit within the Ministry of Public Works, Energy and Ports.	29	Creating and Energy Unit within the Ministry of Public Work, Energy and Ports	29.1	Create a transparent legal framework that will provide the institutional, legislative, and financial support required for the effective implementation of the Policy.	MPWEP, EPTD	Immediate-Term
			29.2	Undertake the necessary administrative actions to give effect to its policy priorities and needs, including hiring required staff with suitable skills sets.		Immediate-Term
			29.3	Provide the public sector institutional capacity to monitor and analyze cross-sectorial energy efficiency and conservation issues and performance.		Immediate-Term
	30	Conducting careful economic assessments of the fiscal and economic measures required for the successful implementation of the Policy.	30	Ensure that government's tax revenues streams are not unreasonably compromised when developing and offering new tax incentives, rebates, and relief through cost/benefit analysis.	MF	Ongoing

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## SUMMARY OF NATIONAL ENERGY ACTION PLAN

Policy	#	Action	#	Sub-Action	Body Responsible	Timescale
	31	Requiring project developers to conduct Environmental Impact Assessments, Social Impact Assessments, and Strategic Environmental Assessments that are in line with Environmental and Planning Regulations, as part of the planning and assessment process preceding the approval and implementation of major national projects in the energy sector	31.1	Conduct study of best practices in Environmental Impact Assessments, Social Impact Assessments, and Strategic Environmental Assessments.	EPTD	Immediate-Term
			31.2	Conduct training of employees in the Bureau of Standards to guarantee that they will be able to develop standards, regulations and, policies in coordination with other government agencies. Ensure that they will also be able to gather data necessary for monitoring and evaluation, enforce compliance.	EPTD	Immediate-Term
			31.3	Develop and maintain an up-to-date national energy database containing all energy sector data required for energy planning purposes.	MPWEP	Short-Term
			31.4	Conduct Environmental Impact Assessments, Social Impact Assessments, and Strategic Environmental Assessments on all energy projects.	MPWEP	Ongoing
	32	Seeking appropriate funding to implement the Policy domestically and internationally	32.1	Conduct review of which involved agencies have resources available to support policy actions for sustainable energy.	MF	Immediate-Term
			32.2	Conduct research into available international funding sources for sustainable energy. This review should include, but not be limited to, the World Bank (including through support provided to the Eastern Caribbean Energy Regulatory Authority), the Inter-American Development Bank, Organization of American States, the Global Environmental Facility. It should also, include developing a Nationally Appropriate Mitigation Actions (NAMA) strategy, with the goal of using the "Funded NAMA" mechanism.	MPWEP, MFA	Immediate-Term
			32.3	Design applications and terms of reference for projects that require support from international funding sources.	MPWEP	Short-Term

### 3 FOSSIL FUELS MANAGEMENT

**IT IS THE GOVERNMENT'S POLICY TO PROVIDE SAFE, RELIABLE, competitive, and affordable fossil fuel supply, and promote its clean handling and use.** This will result in cost reduction and greater efficiency. Being able to properly manage the uncertainty in fuel availability and pricing is critical to optimize energy usage and minimizing delivered energy costs.

The Plan will take into account information on:

- ◆ Supply and demand factors;
- ◆ The supply chain and stockholdings of various fuels;
- ◆ Industry actions to maintain supply reliability;
- ◆ Supply disruptions and industry management;
- ◆ Government responses to a liquid fuel emergency.

Government will cooperate with the wholesalers and retailers of petroleum products to continuously review their demand forecasts and impress on them and their customers the importance of collecting accurate and detailed information to facilitate this. It will also ensure that petroleum product wholesalers and retailers take account of the logistics of moving vessels bringing petroleum supplies to Dominica in making their plans for importing supplies.

## FOSSIL FUELS MANAGEMENT



### 3.1 Bulk Storage

Under the Plan, Government will consider the rationalization of bulk storage facilities for all types of fossil fuels used in the island. This may lead to consolidation into one modern terminal, subject to consultation with suppliers and current storage facility owners.

Petroleum reserve storage—unexpected oil supply disruptions due to national or international events, such as natural disasters, geopolitical instability, or acts of terrorism, must be mitigated. This is because a gap in petroleum supply deliveries which resulted from the diversion of one or two supply tankers because of any of the above incidents could well deprive the island of its regular petroleum supplies for a protracted period.

Under the Plan, Government in consultation with DOMLEC, will carry out a cost/benefit analysis to determine the level of fuel supplies that should be maintained by DOMLEC's fuel supplier. This study will take account of the costs of:

- ◆ Carrying the inventory of fuel;
- ◆ Loss of electricity supplies to the economy in terms of lost production;
- ◆ The economic loss from a shortage of transportation fuel;
- ◆ The loss of welfare benefits to the citizens.

The study will make recommendations for the minimum storage of diesel fuel that should be maintained in Dominica.

The Plan will also implement measures to ensure that adequate stocks of LPG are kept in storage at locations which are sufficiently dispersed geographically to ensure that a natural disaster would not result in the entire storage being lost.

#### ACTIONS:

- 1 The METIDA together with MPWEP will work with the private sector to study better forecasting systems based on the collection of detailed end-use information for petroleum demand.
- 2 The MPWEP will study best approach to achieve efficient storage capacity in consultation with the private sector, including a cost/benefit analysis and considering whether to build new facilities or better regulate existing facilities.
- 3 The METIDA with MPWEP will revise existing regulations, or submit for consideration new legislation to Parliament, in order to ensure adequate inventory levels and measures that will cushion effects of supply disruptions on fossil fuels as described above.

*Time-scale: 1-2 Immediate-Term, 3 Short-Term*

### 3.2 Fuel Quality Standards

Government will require that fuels imported into Dominica achieve certain minimum technical quality standards. This will ensure that customers receive the calorific value that fuels of the specified description should yield, and also that impurities will not cause undue maintenance problems for the users. However, Government also recognizes that regional supply logistics may require that these standards are tailored to what is generally available in the regional market place, because insisting on tighter standards may result in unwarranted additional costs.

Government will therefore require its institutions involved in setting national standards to develop national standards for fuel quality to be imported into Dominica, and being mindful of the regional logistics of tanker borne fuel supplies, will seek to harmonize these

standards with similar standards throughout the Organization of Eastern Caribbean States. The minimum quality standards for liquid fuels will specify the allowable limits for:

1. Density
2. Kinematic Viscosity
3. Flash Point
4. Gross Calorific Value
5. Water content
6. Sediment
7. Ash content
8. Sulphur content
9. Vanadium Content
10. Sodium content
11. Asphaltene content
12. Hydrogen Sulphide

**ACTIONS:**

- 1 The MPWEP will conduct a study of best practices for fuel standards in the Caribbean context, including a cost/benefit analysis of requiring that higher quality fuel be imported.
- 2 The METIDA and the MPWEP will work with the importers and other OECS standards institutions to revise existing regulations, or submit for consideration new legislation to Parliament, in order to ensure that minimum quality standards, for at least the parameters described above, are developed for fuels imported into Dominica.

*Time-scale: 1 Immediate-Term, 2 Short-Term*

### 3.3 Least Cost Fossil Fuel Supply

It is Government policy to ensure that competition to supply fossil fuels guarantees the lowest price possible for petroleum products.

Cost reduction may be aided by improved bulk storage as mentioned above, and in addition the Government will consider seeking reduced costs through the following measures:

- ◆ Changing regulation to promote competition;
- ◆ Purchasing fuel through national combined purchasing ;
- ◆ Cooperation with other OECS member states to investigate the potential for any supply synergies among the states, such as pooling of volumes so that reduced prices can be obtained through larger volume purchases.

These measures are aimed at leveraging private sector competition and economies of scale to reduce the costs of fuel in Dominica.

**ACTIONS:**

- 1 Government will direct the METIDA to seek donor assistance to undertake a study of supply logistics for petroleum products within the sub-region.
- 2 If appropriate, the METIDA will prepare regulations to ensure that as far as possible, fossil fuels are procured competitively to ensure that, as far as the supply logistics will allow, supplies of petroleum products are the lowest price possible. This can include national combined purchasing.

*Time-scale: Immediate-Term*

# 4 ELECTRICITY SUPPLY



**IT IS THE GOVERNMENT'S POLICY TO FOSTER A SAFE, EFFICIENT, affordable, and low-carbon national electricity supply that meets international quality standards by promoting efficient use of imported fossil fuels, and the development of Dominica's domestic renewable energy resources. To achieve these policy goals it will be necessary for Government to:**

- ◆ Ensure that the energy resources available to the island are fully assessed in terms of their potential to economically contribute to the island's electricity supplies;
- ◆ Evaluate the effect of their exploitation for electricity production on the local environment and on the island's carbon footprint ;
- ◆ Maintain an inventory of the available resources which show potential to contribute to the country's electricity demand and update this inventory at regular intervals in line with changing economic conditions;
- ◆ Ensure the implementation of demand-side-management (DSM) programmes to reduce the long-term demand for increased generating capacity;
- ◆ Ensure that electricity supplies are generated and used as efficiently as possible and that losses are reduced to an economic minimum.

## 4.1 Electricity Distribution and Transmission Efficiency Targets

Government will ensure that the regulatory framework provides incentives that will improve the efficiency of electricity transmission, and distribution and will lower costs for all customers.

The IRC will establish initial overall line loss targets through negotiations with DOMLEC. The loss targets should be based on benchmarking against other similar utilities in the region and elsewhere as well as the achievements of DOMLEC over the last several years. The IRC will seek donor funding for a tariff optimization study that will provide advice to discourage electricity usage during peak hours and incentivize large customers to return to the grid. Currently, the tariff structure in Dominica, does not provide incentives for customers to reduce consumption during peak hours. This means that peak demand will climb more quickly than it might otherwise, requiring further investment in peak capacity. The cost of that investment will ultimately be paid by all customers through higher tariffs. Additionally, high tariffs in Dominica have led several large consumers to leave the grid and self-produce electricity. This means that DOMLEC has lost some of its best customers. This ultimately results in higher tariffs for customers who remain on the grid, because they must cover the costs of all investments by the utility without the contribution of larger customers.

### ACTIONS:

- 1 Through negotiations with DOMLEC, the IRC will design a system based on regional benchmarking that will ensure that line losses in excess of reasonable levels that result in more fuel than necessary being used are not passed on to the consumer in the fuel surcharge, but remain as a cost to DOMLEC.
- 2 The IRC will conduct a tariff optimization study that will provide a blue print for rearranging the tariff structure so that it will incentivize off-peak energy use, account for power factor, and encourage all customers, particularly large customers, to remain on the grid.

*Time-scale: Immediate-Term*

#### 4.2 Electricity Generation Efficiency

Government through the IRC will establish an overall heat rate target for diesel engine generation efficiency. This target will set overall efficiency targets for the portion of electricity that is generated by diesel fuel.

It will also ensure that generating plants are dispatched in the most economical way to meet the system loads. This means using the available mix of hydropower, conventional generation, and new renewable energy sources to provide reliable power at least cost. Government will ensure that generation planning is such that it will use the principles of integrated resource planning to deliver the required generating capacity at least cost. The planning will take account of all the available energy resources—including geothermal, hydro, diesel and other utility-scale renewable resources such as wind—as well as the most cost effective way to exploit those resources.

If system generation expansion is not properly planned, fuel costs will not be optimized and feasible fuel saving options, such as use of renewables, cogeneration and efficiency improvement measures, may be overlooked. Effective capacity planning requires a good load forecast combined with appropriate use of computer-based capacity planning model programme such as the Wein Automated System Planning (WASP) computer model or the Super OLADE Power System Generation and Inter-Connection Planning Model which are used for multi-year electricity system planning studies, making it possible to simulate, and optimize hydro and thermal power system expansion plans. These models are used by several developing country utilities, including some in the Caribbean region, to determine the least costly expansion path that will adequately meet the demand for electric power, subject to user-defined constraints.

The IRC will develop a pre-approved standard offer contract to streamline the process of adding inexpensive capacity from IPPs. This will ensure that Independent Power Producers that can produce power below DOMLEC's proposed least cost are easily able to integrate into the grid.

Next, minimizing the total system costs of electricity also requires timely and efficient implementation of the selected capacity expansion path. Undue delays in planned implementation may result in the need to implement emergency additions which are more costly over the long-term and the excessive use of peaking units which are less efficient.

In addition to improvements in capacity planning and dispatch, fuel is such a large proportion of electricity costs that it would improve transparency to directly measure the fuel used at each power station, and by each diesel engine. Therefore the Government will require DOMLEC to also measure the fuel used by the individual engines. This will require DOMLEC to:

- ◆ Install fuel meters on all receiving connections for fuel into each tank in each power station;
- ◆ Install individual fuel meters on each unit. The fuel metering should be such that fuel efficiency can be continuously monitored on-line or verified on a daily basis and a regular programme for calibrating and the certification of calibration of such meters should be developed.

Government will develop formal protocols for the inspection and testing of fuel meters as this is required to develop and maintain consumer confidence in the readings recorded by these meters. Government will also require that there is periodic re-calibration and certification of the meters which will be carried out by an independent authority.

Government will require that the accuracy of meters should be at least to the PMP7 guide, published by the Institute of Petroleum (IP) which recommends a system accuracy of 0.1 percent in normal operation.

### ACTIONS:

- 1 The IRC will establish (and review on a regular basis) an overall heat rate target for the diesel engines used to generate electricity. This will ensure that electricity that is generated from diesel fuel is generated as efficiently as possible. The system will be designed to ensure that any fuel usage which results from poor efficiency cannot be passed on to consumers in the fuel surcharge. However, it will remain a cost to DOMLEC.
- 2 The IRC will adequately train its staff in the use of the appropriate system planning software and ensure that its planning software is kept up to date with program enhancements and updates.
- 3 The IRC will require DOMLEC to demonstrate that its expansion planning is least cost and based on best practices in expansion planning.
- 4 The IRC will develop a Standard Offer Contract for Independent Power Producers.
- 5 The METIDA and the MPWEP and the IRC will also require DOMLEC to install fuel meters as described above and also implement a protocol for the periodic recalibration of these meters.

*Time-scale: Immediate-Term*

### 4.3 Electricity for Very Poor or Remote Communities

In order to ensure that communities which are very poor or very remote also have access to electricity supplies, Government will provide subsidies for those that can be reached economically from the grid, and consider encourage remote communities to consider off-grid small and medium scale micro-generation. This can include micro hydro and or wind systems using diesel backup.

In instances where these off-grid connected supplies are indicated, Government can promote the establishment of cooperative organizations by assisting with the training for operating and maintenance and in the setting up small and medium scale generation.

### ACTIONS:

- 1 The IRC will continue to ensure that electricity consumption under 100 kWh in the residential consumer tariff category receives a subsidy which is paid for by the consumption of larger amounts of electricity by other customers.
- 2 The MSSCDGA will conduct studies to identify communities without access to grid power and then carry out cost/benefit analyses to determine the most economic technology to be used to deliver power to them. These analyses will include considerations of grid connection, cooperative generation, or individual generation. If a study shows that in any given situation, the most economical mode of supply is an alternative that is not grid-connected, it will go on to recommend ways in which Government should promote the establishment of local cooperatives that have the ability to organize remote villages to invest in and maintain micro-generation units.
- 3 The MSSCDGA will provide financial assistance to fund training staff of cooperative organizations to manage, operate and maintain the facilities, and the setting up of the accounting functions that will be required.

*Time-Scale: 1-2 Immediate-Term, 3 Short-Term*

#### 4.4 Renewable Distributed Generation

Dominica has significant renewable energy resources, some of which can be exploited at the distributed scale. Distributed generation is defined as electricity generation that is connected to the distribution network. This definition implies that DG is: (i) grid-connected, and not off-grid generation; (ii) located at customer premises, or close to the load being served; and (iii) implemented on a smaller scale than that of utility scale plants connected to a transmission grid.

The island appears to have the potential for the replacement of a significant proportion of the country's fossil fuel imports, particularly for electricity generation. Surveys and analysis suggest that geothermal, hydro, solar/photovoltaic, wind, biofuels and biomass are all possible sources of renewable energy in Dominica. Among those, hydro, solar, and wind are potential sources of distributed scale renewable generation.

Recognizing this potential, the Government and DOMLEC have worked together to take significant steps in encouraging distributed generation. These steps have included creating an interconnection agreement. The interconnection agreement provides the technical details of how distributed generators can connect to the distribution grid.

##### **ACTIONS:**

To ensure that the issues identified are resolved satisfactorily and ensure that reasonable electricity transmission and distribution efficiency targets are established and maintained, and that electricity generation efficiency targets are established and maintained the Plan calls for:

- 1 The IRC and DOMLEC will continue to develop appropriate standards to facilitate the interconnection of renewable energy systems to the DOMLEC grid.
- 2 The MEHRD will cooperate with local technical institutes and international training institutes to design and implement a curriculum for training Dominicans to install, operate, manage, and maintain renewable distributed generation systems.
- 3 The MPWEP, the MF, the MSSCDGA, and the IRC will continue to promote the development of economically viable, renewable distributed generation capacity and co-generation by conducting cost/benefit analyses of incentives to inform the design of a program that will offer: fiscal incentives, procedures and standards for system interconnection, stable and fair feed-in tariffs, and streamlined approval processes. To do this, Dominica will draw off the experience of Barbados and other similar countries.
- 4 The MF and the MWPEP will design and pass necessary regulations and allocate necessary resources to implement the program of incentives, procedures, and standards.

*Time-scale: 1-3 Immediate-Term, 4 Short-Term*

#### 4.5 Public Awareness and Education Campaign

To complement its efforts to develop the RE potential of Dominica, Government will need to sensitize the public as to the potential and need to develop renewable energy. This will be done by designing and implementing a national programme of education and awareness in renewable energy. This programme will be targeted at both the “internal” public—government staff in the ministries—as well as the general public.

##### ACTIONS:

- 1 The MEHRD in collaboration with the MPWEP will develop programmes in schools to increase the awareness of students about renewable energy and the need for the country to reduce its carbon footprint.
- 2 The MPWEP will develop renewable energy awareness programmes among the employees of Government by way of short in-house programmes and seminars.
- 3 The MPWEP in collaboration with the MITCE will develop and implement short programmes of radio and television advertising informing Dominicans about energy efficiency and renewable energy.

*Time-scale: Immediate-Term*

#### 4.6 Specific Renewable Resource Development

It is the Government’s policy to promote the use of Dominica’s domestic renewable energy resources for the production of electricity wherever economically viable. To achieve this Policy objective, the Plan sets out proposals for the development of renewable energy in Dominica as follows:

**Hydro** – Government will continue the assessment of hydropower resources throughout Dominica. These efforts will be coordinated with those of the MAF, DOMLEC, and DOWASCO. Government will encourage and facilitate new hydropower projects wherever economically feasible.

##### ACTIONS:

- 1 The MPWEP will collaborate with DOWASCO and DOMLEC to review and check existing data on hydropower capacity and pilot the implementation of resource assessments for hydroelectric potential by establishing a stream gauging programme throughout Dominica.
- 2 The MPWEP, in coordination with DOMLEC, will undertake preliminary estimates of the costs of implementing micro hydro schemes at suitable locations and undertake preliminary analyses to rank the cost/benefit of these potential developments to determine their economic potential to supply energy for various uses.
- 3 The MPWEP will maintain a database of hydro resources which, along with preliminary estimates of costs, will be updated on a regular basis. This data should be included in the renewable energy database.

*Time-scale: Short-Term*

**Geothermal** – Government will continue the ongoing explorations of the island’s geothermal potential and the implementation of appropriate agreements with developers, financiers and other stakeholders. A Geothermal Resources Development Bill has been prepared for submission to Parliament. This Bill, when enacted into law, will provide for the regulation of geothermal resources with the objective of ensuring the sustainable development of the resource, and ensuring its allocation to the uses that are most economically beneficial to Dominica. It creates a complete, integrated regulatory framework and establishes institutions and rules specific to geothermal resource development, designed to complement the existing regulatory framework, contained in the Physical Planning Act, 2002 and the Electricity Supply Act, 2006. When the Bill is enacted, the legal framework for the orderly development of the island’s geothermal resources will be complete and facilitate the investments required to develop the projects.

It is expected that the projects will comprise the development in phases of a geothermal generating capacity of approximately 120 MW. The first phase of the development is expected to supply DOMLEC with between 5 MW and 10 MW, and ultimately it is expected that it will supply the neighboring islands of Guadeloupe and Martinique with 40-50 MW of electricity each by way of undersea transmission and interconnection facilities.

**ACTIONS:**

To achieve the foregoing, the Ministry of Public Works, Energy and Ports will undertake the following specific actions:

- 1 Drill test wells and continue the exploration of geothermal potential, including addressing concerns about reliability of geothermal and impacts on hot springs by “proving” the viability of the heat source under load.
- 2 Drill and cap a commercial production well.
- 3 Commission and implement the required environmental impact assessment studies to ensure that the geothermal developments are implemented in an environmentally friendly manner, and that
- 4 Whatever mitigation measures are needed, are carried out with dispatch.
- 5 Develop and draft appropriate agreements with developers, financiers, electricity purchasers, and other relevant stakeholder for developing the plant, and selling and transporting the electricity produced at the plant.
- 6 Carry out an interconnection economic feasibility study to determine the parameters required for the commercial exploitation of the geothermal resource.
- 7 Develop and implement training programmes for geothermal technicians.
- 8 Carry out a technical feasibility study to determine the technical boundaries for interconnecting with the electricity systems on Dominica, as well as with the systems on Martinique and Guadeloupe.
- 9 Negotiate commercial agreements with DOMLEC.

- 10** Facilitate the construction and operation of a 5-10 MW plant to connect with the DOMLEC system.
- 11** Prepare bidding documents and conduct an international, competitive auction to select the company to develop and build a large-scale geothermal plant.
- 12** Negotiate a power off-take agreement with Martinique and Guadeloupe.
- 13** Facilitate the construction, financing and operation of a large-scale geothermal plant by a competitively-selected, suitably qualified private company.

*Time-scale: In accordance with the Gant Chart below*

**Table 4.1: Timeline for Implementation of Geothermal Plan**

	Dec-11	Jun-12	Dec-12	Jun-13	Dec-13	Jun-14	Dec-14	Jun-15	Dec-15	Jun-16	Dec-16/Dec-19
Drill Test Wells and Drilling and Drill and Cap Commercial Well	█										
Commision and Implement Environmental Impact Studies		█									
Determine Financial and Legal Arrangements for Large Geothermal Plant		█									
Conduct Interconnection Economic Feasibility Study		█									
Develop and Implement Geothermal Technician Training Programs			█								
Negotiate Off Take Agreement with DOMLEC			█								
Construct and Commission 10-15 MW Plant			█								
Conduct auction to select company to build Large Geothermal plant				█							
Negotiate Off take Agreement Martinique and Guadeloupe						█					
Construct and Commission Large Geothermal Plant								█			

**Solar** – Government will encourage the installation of solar water heaters on all new public sector buildings, commercial buildings, and residences. Offering fiscal incentives has been shown in several Caribbean countries to be critical for the large scale adoption of solar water heating at the residential level and this initiative will be explored by Government.

The Government will also facilitate the development of programmes to use photovoltaic systems where feasible to power security lights or critical loads following natural disasters.

**ACTIONS:**

- 1** The MPWEP will develop a list of government-owned facilities and institutions which have critical loads such as in hospitals and schools which could be powered by photovoltaic sources and carry out an initial pilot project to test these installations.
- 2** The MPWEP will carry out an initial pilot project to test installation of solar water heaters in public buildings.

*Time-scale: 1 Immediate-Term, 2 Short-Term*

**Wind** – Because of the mountainous nature of the island, it is not expected that there is large wind potential in Dominica. However, it is thought that good wind resources can exist at some sites which benefit from wind enhancing ground effects. These effects will occur at several points on the island, particularly along the east coast.

Government will continue efforts to assess the wind resources at these sites to produce information and data which could be used to justify the development of wind power turbines at these sites.

**ACTIONS:**

- 1 The MPWEP will pilot the implementation of resource assessments for wind energy at sites which are thought to have good wind regimes and will seek funding from appropriate agencies to undertake these resource assessments.
- 2 The MPWEP will maintain a database of wind data and wind maps, along with preliminary estimates of costs for establishing wind turbines, which will be updated on a regular basis.

*Time-scale: Immediate-Term*



*Crompton Point from CREDPI/GIZ wind energy assessment report.*

## 5 ENERGY EFFICIENCY AND CONSERVATION

### IT IS THE GOVERNMENT'S POLICY TO RATIONALIZE DOMINICA'S

overall rate of energy consumption while increasing its economic growth by adopting best practices in energy efficiency and conservation. To do this, the Government will:

- ◆ Incentivize Dominicans to adopt energy saving behaviors and consumption habits;
- ◆ Ensure that energy efficient appliances are available in local markets;
- ◆ Improve the energy efficiency of buildings in Dominica;
- ◆ Report the progress that Dominica makes on energy efficiency.

Technical analysis of potential energy efficiency gains in markets similar to Dominica, for example Barbados, has demonstrated that there is a great potential to reduce energy costs and greenhouse gas emissions through improving the way that energy is used. Energy efficiency and conservation, is often referred to as the “low hanging fruit,” because it is possible to reduce costs and emissions through efficiency and conservation gains for a much lower cost than by producing energy with renewable energy.

There are many opportunities to save electricity through behavioral change that leads to conservation. Using highly efficient technologies such as energy efficient refrigerators and lighting will reduce energy usage, because these appliances perform the same action more efficiently; additionally, building codes that lower costs of cooling and lighting through better design, conserve energy.

#### 5.1 Energy Conservation

There are many practices that can be improved to reduce energy usage. The most obvious ones are things like turning out the light when you leave the room. However, there are many others that may not be so obvious. For example, using 120v appliances can be inefficient because it requires a converter which uses wastes electricity and leaving appliances plugged in when they are not in use leads to “ghost consumption.” Examples such as this will be studied and presented to the public in an educational campaign aimed at improving energy efficiency and conservation practices.

#### ACTIONS:

- 1 The MPWEP will collaborate with DOMLEC to commission a study of energy consumption patterns in all the major sectors of the Dominican economy and identify areas for improvement in conservation and efficiency.
- 2 The MITCE will design and implement a public information campaign that will promote energy conservation and energy efficient practices.

*Time Scale: Immediate-Term*

## 5.2 Encourage Uptake of Energy Efficient Appliances

It is the Government's policy to provide fiscal incentives (designed to include the banking sector) to encourage the use of energy-efficient appliances and technology by consumers. Additionally, the Government plans to provide incentives, guidelines, and quality standards appropriate for Dominica that will encourage appliance suppliers to import reliable, energy efficient appliances. Finally, Government policy will require retailers to label energy efficient appliances and to inform customers about the energy efficiency and the energy consumption of appliances.

Economically viable energy efficient appliances can save money and lower emissions; however, uptake of energy efficient appliances is not as high as it could be. This is because in a small economy like Dominica there are barriers to uptake:

- ◆ **Limited access to capital** –Many consumers would need to borrow to install the efficient technologies, and cannot find financiers willing to lend to them— or are charged prohibitive interest rates;
- ◆ **Limited and uncompetitive equipment supply** –There is a chicken and egg problem; given limited uptake of many technologies in Dominica, they can be hard to purchase on the island, or are sold only at uncompetitive prices. Limited availability and high costs in turn retard uptake;
- ◆ **Incomplete information** –Where a technology is not widely used, people may be unaware of its benefits, again creating a chicken and egg problem;
- ◆ **Agency problems** –These take place when the person who should invest in the equipment is not the same person who uses it—this happens in the public sector, in the development of new construction, and in leased buildings.

These barriers to have limited uptake of energy efficient technology in Dominica. However, the actions of the National Energy Action Plan will overcome these barriers.

### ACTIONS:

- 1 The MPWEP will conduct a study of best practices, drawing on the experience of Barbados, for how to incentivize customers to purchase commercially and economically viable energy efficient appliances.
- 2 The Bureau of Standards within the METIDA will conduct quality standards testing to determine which appliances are most appropriate for the Dominican context, taking into account efficiency, durability, performance, and added cost as well as other applicable environmental and safety standards.
- 3 The MPWEP will conduct cost/benefit analysis of offering tariff incentives for economically viable energy efficient appliances that meet established standards or import restrictions on appliances that fail to meet efficiency standards.
- 4 The MPWEP will convene stakeholders from the Government, the banking sector, and the retail sector to discuss the findings of the study and decide what kinds of incentives to offer.
- 5 The MPWEP will design an appropriate labeling scheme that will alert Dominicans to the potential benefits of energy efficient appliances and require that retailers display them on products.

## ENERGY EFFICIENCY AND CONSER- VATION

- 6 The METIDA will provide fiscal incentives to businesses and individuals that will encourage them to purchase commercially and economically viable energy efficiency technology.
- 7 The MITCE will conduct a public education campaign to make people aware of the labels and their significance and how they relate to fiscal incentives that promote purchasing energy efficient equipment.

*Time Scale: 1-5 Immediate-Term, 6-7 Short-Term*

### 5.3 Improve Energy Efficiency in New Buildings

The same barriers that have prevented uptake of energy efficient appliances affect buildings. Therefore, Government has a three-pronged policy approach to improve the energy efficiency of new and existing buildings in Dominica. First, for new buildings, Government policy is to establish standards for energy efficiency in buildings, where they don't currently exist, that will govern the design and construction of buildings in Dominica. Second, for existing buildings, Government policy is to provide fiscal and other incentives to encourage energy audits for businesses, especially hotels, and households. Third, Government will incentivize energy efficiency retrofits for existing buildings. Government intends to be a leader in energy efficiency retrofits by conducting energy audits and then developing a plan to retrofit public buildings with energy efficient equipment. For the domestic and commercial sector, Government policy calls for providing incentives for preferential financing by the commercial banking sector for retrofitting homes and buildings in the private sector with energy efficient equipment.

Together these policies provide a holistic approach to improving the energy efficiency of buildings in Dominica. New buildings will be constructed with energy efficiency standards that are recognized as best practice and existing building will be audited to determine potential energy efficiency gains and then financial incentives will encourage energy efficiency retrofits. The following actions provide the details of how these policies will be put into action.

#### ACTIONS:

- 1 The MENRPPF will conduct research on best practices for energy efficient buildings in the Caribbean environment and maintain awareness on any regional or sub-regional studies that could benefit Dominica.
- 2 The MENRPPF will convene stakeholders, including government officials, representatives of the construction industry, and property owners to weigh benefits and costs, and determine appropriate building standards for Dominica based on the best practices study.
- 3 The MENRPPF will implement building standards and lead by example by ensuring that government buildings meet or are striving towards meeting standards.
- 4 The MPWEP will study best practices in encouraging energy audits in all sectors of the economy and recommend proposed incentives.
- 5 The MF will provide appropriate fiscal and financial incentives to encourage individuals and businesses to conduct audits.
- 6 The MENRPPF will conduct energy audits to determine which public buildings have the highest potential for energy savings from an energy efficiency retrofit.

- 7 The MENRPPF will conduct a cost/benefit analysis of best practices for how to incentivize individuals and companies to retrofit their buildings with commercially and economically viable energy efficiency technologies.
- 8 The MENRPPF will convene stakeholders in the Government, private sector, and NGO representatives to present the findings of the study and decide which incentives are appropriate to encourage energy efficiency retrofits.
- 9 The MPWEP will carry out the energy efficiency retrofits in public buildings identified in the energy audits.
- 10 The Ministry of Finance will offer fiscal and financial incentives through the commercial banking sector as well as through tax incentives for retrofits in the domestic and commercial sector.

*Time Frame: 1-4 Immediate-Term, 5-8 Short-Term, 9-10 Medium-Term*

#### **5.4 Report Energy Efficiency and Conservation Progress**

It is Government policy to report progress on energy efficiency in macroeconomic reports. The purpose of this is to provide a public benchmark on efficiency gains that have been made or not made.

Reporting will provide an important check to ensure that efforts to reduce energy consumption are having their proposed benefits. For example, indicators should be able to demonstrate that the same or more economic activity is taking place per unit of energy expenditure. If this is not happening, it is important to be aware of it and discover why proposed benefits are not being realized and if necessary, to eliminate programs that are not providing benefits.

#### **ACTIONS:**

- 1 The MITCE will convene stakeholders from within the Government to determine what efficiency indicators are most appropriate to report.
- 2 The MITCE will gather information on efficiency gains from DOMLEC, the MAF, and the MF to calculate the indicators and publish them in national reports.

*Time-Scale: 1 Immediate-Term, 2 Short-Term*

# 6 END-USE SECTORS

## THE POLICY CONTAINS TAILORED POLICIES FOR END-USE SECTORS

that are large energy consumers, and this section sets out the Plan to achieve sector specific goals. The sectors included are:

- ◆ Transport Sector
- ◆ Agricultural Sector
- ◆ Industrial Sector
- ◆ Domestic Sector
- ◆ Tourism and Hospitality Sector

Of course, all of these end-use sectors will benefit from incentives and regulations that affect Dominica as a whole, such as interconnection agreements for distributed scale renewable energy generation and incentive for using energy efficient buildings.

### 6.1 Transport Sector

It is the Government's policy to promote efficient vehicles and a strong integrated public transport sector strategy. The transportation sector is the largest user of fossil fuels, representing 47 percent of total fuel consumption. The Government intends to improve the efficiency of fossil fuel use in transportation (thereby reducing fossil fuel consumption for transportation), including:



- ◆ **Organizing Public Transportation** – This means providing public transport that uses efficient vehicles and uses efficient routes;
- ◆ **Improving efficiency of motorized transportation of private citizens and businesses** – This means encouraging private citizens to use efficient vehicles;
- ◆ **Optimizing the fuel mix** – This means ensuring that the transport fleet in Dominica utilizes the most economically efficient mixture of available fuel types.

Government support for efficient use of fossil fuels in transportation will be based on the economic viability of individual interventions.

#### 6.1.1 Public Transport

It is Government policy to organize a regulated and rational public transport system. The public transport system in Dominica is inefficiently organized; this leads to inefficient use of energy as well as a higher cost of transport. Further, the unorganized nature of transport subjects the population to unreliable transport services and leads to increased traffic congestion. Therefore the Government will take action to remedy the situation.

#### ACTIONS:

- 1 The MPWEP will conduct a study of best practices in organizing public transport and a cost/benefit analysis of investing in public transport for Dominica.
- 2 The MPWEP will convene stakeholders including government officials, Taxi Drivers Association members, and NGO representatives, discuss potential trade-offs, and decide on a course of action.
- 3 The MPWEP will implement the resulting plan to create an orderly and rational public transport sector.

*Time-Scale: 1-2 Immediate-Term, 3 Short-Term*

### 6.1.2 Optimize Fuel Efficiency and of Vehicle Fleet and Fuel Mix

Government wishes to encourage the use alternative fuels for transportation, such as diesel, biodiesel, E10<sup>2</sup>, or the use of electric vehicles, wherever their use is economically feasible and more environmentally friendly than the current fuel mix.

#### ACTIONS:

- 1 The MPWEP will conduct cost/benefit analyses to estimate the overall impact on the economy of using the various types of vehicles, crafts, and fuels for different transport duties and make recommendations as to the types of vehicles and crafts that should be encouraged in the transport fleet. This will include analysis of diesel, biodiesel, and electric power (including potential partnerships with electric vehicle makers). Analysis of different types of vehicles and crafts should include the analysis of the required infrastructure to support them. Analysis will also include studying the potential of producing biofuels and E10.
- 2 The METIDA and MF will consult on possible changes in fuel and fleet mix based on the study. If warranted by the results of the study, the METIDA and MF will collaborate to design and implement a tariff regime that offers reduced importation tariffs based on the fuel efficiency of the vehicle or craft. The tariff regime should be progressive and give the largest tariff reductions to the most efficient vehicles and crafts. Additionally, if appropriate, they will provide economically efficient incentives for domestic production of biofuels or E10.
- 3 The MEHRD and MITCE will organize courses on defensive driving that will be offered in secondary schools, to the Taxi Drivers Association, and to the general public through public information campaigns.

*Time Scale: 1,3 Immediate-Term, 2 Short-Term*

### 6.2 Agricultural Sector

In the agricultural sector<sup>3</sup> it is the Government's policy to encourage the use of sustainable practices in agriculture, which will provide economic benefits and environmental benefits. To best understand how the agricultural sector can reduce its energy usage, the Plan first calls for studying what is already known about energy saving practices in the Caribbean context. After that, educational campaigns will encourage farms to achieve the greatest economically efficient reduction of energy usage possible.

The agricultural sector is a significant consumer of energy; therefore gains in energy efficiency will make a large contribution to promoting sustainability in Dominica.

#### ACTIONS:

- 1 The MAF will conduct studies on best practices for energy efficient agricultural practices, including building standards, in the Caribbean.
- 2 The MAF will design and implement a targeted educational campaign coordinated with agricultural cooperatives to promote best practices in energy efficient agriculture and inform farmers of the benefits available to them under the Electricity Supply and Energy Efficiency and Conservation plans.

*Time-Scale: Immediate-Term*

<sup>2</sup> A mixture of 10 percent ethanol and 90 percent gasoline

<sup>3</sup> By Agricultural Sector we do not mean Agribusiness which involves industrial processing plants. These are dealt with on the section on the Industrial Sector.



### 6.3 Industrial and Commercial Sector

In the industrial sector, Government policy is to encourage sustainable methods of industry and commerce which will include reducing waste, recycling and reuse of materials, electricity production from renewable energy sources, and the incorporation of sustainable energy practices into business practices.

The commercial sector consumes a large percentage of energy in Dominica. Additionally, industrial processes consume large amounts of energy. Therefore, best practices in energy efficiency can reduce costs significantly. In Dominica, the industrial sector consumes little energy, because the industrial sector is small. However, this is partially because energy is expensive. Therefore, more efficient energy practices and lower energy costs could promote industry, helping the Dominican economy and the environment simultaneously.

#### ACTIONS:

- 1 The METIDA in collaboration with the MITCE will design and implement a targeted educational campaign coordinated with industry and commercial representatives to promote best practices in energy efficiency and inform factory owners and shop owners of the benefits available to them under the Electricity Supply and Energy Efficiency and Conservation plans.
- 2 The METIDA will conduct cost/benefit analysis of available energy efficient manufacturing technology and building standards that are applicable to the Dominican context. This will be done in collaboration with local business organizations and representatives.
- 3 The METIDA will conduct industry specific studies of energy efficiency in industrial and commercial buildings. This will be done in collaboration with local business organization and representatives.
- 4 The MF will provide tax incentives for companies that meet industrial and commercial energy efficient building standards scaled to the projected benefits measured in the cost/benefit analysis.
- 5 The MF will provide tax incentives to use economical, energy efficient manufacturing technology scaled to the projected benefits measured in the cost/benefit analysis.

*Time-Scale: Immediate-Term*

### 6.4 Domestic Sector

It is the Government's policy that the domestic sector will have a diversified supply of energy services, energy efficient appliances, and the option to produce electricity. It will ensure its policy is met through a public awareness campaign targeted at households and through providing subsidized cooking gas for the poorest.

#### 6.4.1 *Public Information Campaign to Inform Households about Sustainable Energy*

An information and education campaign that is targeted at households and delivers information specific to households is required.

In addition to the public information campaign, it is the Government's policy to provide fiscal incentives to promote the use of solar water heating in new and existing homes. This is a highly efficient way to reduce energy costs.

##### **ACTIONS:**

- 1 The MSSCDGA will conduct research on best practices for energy efficiency in households including research on usage patterns and energy efficient behavior.
- 2 The MITCE will conduct a public information campaign aimed at persuading households to adopt energy efficient behaviors that will reduce usage as well as inform them of the way that the Energy Efficiency and Conservation and Electricity Supply Policies apply to them.
- 3 The MSSCDGA will conduct research on best practices for providing incentives for households to overcome barriers to adopting solar water heaters drawing on the experience of Barbados.
- 4 The MSSCDGA and the MITCE will provide a program of incentives and information that will help overcome barriers to adopting solar water heaters.

*Time-Scale: 1-3 Immediate-Term, 4 Short-Term*

#### 6.4.2 *Access to Cooking Gas for the Neediest in Dominica*

In 2006 Government prepared Dominica's Growth and Social Protection Strategy (GSPS) which articulated a short-term strategy for growth and poverty reduction over a five-year period. Arising from this strategy, Dominica's plan for developing the energy sector places universal access to energy supplies as an important priority.

Although LPG for cooking is generally available throughout the island, some people are unable to afford their supplies and sometimes resort to charcoal and fuel wood for cooking. The use of fuel wood should not be encouraged because excessive use could ultimately result in deforestation and the undesirable consequences which result from that as well as cause health problems. Government is therefore anxious to ensure that the population is able to afford its energy supplies to be used for cooking so that it does not have to resort to charcoal or fuel wood.

##### **ACTIONS:**

- 1 The MSSCDGA conduct a cost/benefit analysis to examine the cost implications of subsidizing access to LPG for the neediest members of society in Dominica.
- 2 Based on the outcome of these surveys and studies, the MSSCDGA will prepare a programme of assistance to aid its neediest citizens in the procurement of their LPG supplies for cooking.

*Time-Scale: 1 Immediate-Term, 2 Short-Term*

## END-USE SECTORS

### 6.5 Tourism and Hospitality Sector

It is the Government's policy that the tourism and hospitality sector will become part the national green approach to business and become a significant contributor to the reduction of Dominica's carbon footprint over time.

The Plan will enable the hotel and tourism industry to benefit from the Plan by including energy efficient technology relevant to the industry in incentive schemes. Additionally, the Plan will offer incentives and promotion for hotels to become energy efficient and, achieve appropriate certification.

#### ACTIONS:

- 1 The MTLA will conduct cost/benefit analysis of energy efficiency options in hospitality and tourism, in consultation with representatives from the industry.
- 2 The MF will allow cost-recovery of retrofitting hotels through a tax rebate over a five-year period.
- 3 The MTLA will develop a special regime of recognition and promotion of the greening efforts of hotels.

*Time-Scale: 1-2 Immediate-Term, 3 Short-Term.*

## 7 INSTITUTIONAL STRENGTH- ENING AND FUNDING

### THE PLAN LAYS OUT AN AMBITIOUS STRATEGY TO IMPROVE

sustainability in Dominica. To implement the Plan, the Government will have to set aside resources from its own capacity and funding as well as seek out assistance from international funding sources.

#### 7.1 Incorporate Sustainable Energy in Energy Unit

It is the Government's policy to integrate the capacity to ensure that government regulation is in line with sustainable development objectives into an energy unit within the MPWEP. This means undertaking the necessary administrative actions to give effect to its policy priorities and needs. This will include working with the Establishment, Personnel and Training Department (EPTD) to hire required staff with suitable skills sets and provide the public sector institutional capacity to monitor and analyze cross-sectorial energy efficiency and conservation issues and performance.

#### ACTIONS:

- 1 The MPWEP will create a transparent legal framework that will provide the institutional, legislative, and financial support required for the effective implementation of the Policy and Plan
- 2 The MPWEP in collaboration with the EPTD will undertake the necessary administrative actions to give effect to its policy priorities and needs, including hiring required staff with suitable skills sets.
- 3 The MPWEP in collaboration with the EPTD will provide the public sector institutional capacity to monitor and analyze cross-sectorial energy efficiency and conservation issues and performance.

*Time-Scale: Immediate-Term*

## 7.2 Institutional Responsibilities of the Energy Unit

Aside from contributing to the actions identified in the previous section, the Energy Unit will be responsible for measuring the impact of the National Energy Action Plan. It is Government policy that:

- ◆ The Energy Unit will conduct careful economic assessments of the fiscal and economic measures required for the successful implementation of the Policy. The Energy Unit will ensure that government's tax revenues streams are not unreasonably compromised when developing and offering new tax incentives, rebates, and relief;
- ◆ The Energy Unit will develop regulations and policies in coordination with other government agencies;
- ◆ The Energy Unit will retain outside experts to conduct Environmental Impact Assessments, Social Impact Assessments, and Strategic Environmental Assessments, as part of the planning and assessment process preceding the approval and implementation of major national projects in the energy sector;
- ◆ Maintain database of relevant energy indicators to facilitate monitoring and evaluation of policies and projects.

### ACTIONS:

- 1 The EPTD will conduct study of best practices in Environmental Impact Assessments, Social Impact Assessments, and Strategic Environmental Assessments.
- 2 The EPTD will conduct training of employees in the Bureau of Standards to guarantee that they will be able to develop standards, regulations and, policies in coordination with other government agencies. Ensure that they will also be able to gather data necessary for monitoring and evaluation, enforce compliance.
- 3 The MPWEP will develop and maintain an up-to-date national energy database containing all energy sector data required for energy planning purposes, this will include a map of the country's renewable energy resources.
- 4 The MF will ensure that government's tax revenues streams are not unreasonably compromised when developing and offering new tax incentives, rebates, and relief through cost/benefit analysis.
- 5 The MPWEP will require project developers to conduct Environmental Impact Assessments, Social Impact Assessments, and Strategic Environmental Assessments that are in line with Environmental and Planning Regulations, as part of the planning and assessment process preceding the approval and implementation of major national projects in the energy sector.

*Time-Scale: 1-2 Immediate-Term, 3 Short-Term, 4-5 Ongoing*

### **7.3 Funding the National Energy Action Plan**

It is the Government's policy to seek appropriate funding to implement the Policy domestically and internationally. Many of the actions specified in this Policy will require realigning existing personnel and resource allocations within the Government. Likewise, some actions will require outside consultants and funding from outside sources. This means that the Government will also look for funding sources outside of Dominica.

#### **ACTIONS:**

- 1** The MF will conduct review of which involved agencies have resources available to support policy actions for sustainable energy.
- 2** The MPWEP and MFA will conduct research into available international funding sources for sustainable energy. This review should include, but not be limited to, the World Bank (including through support provided to the Eastern Caribbean Energy Regulatory Authority), the Inter-American Development Bank, Organization of American States, and the Global Environmental Facility. It should also, include developing a Nationally Appropriate Mitigation Actions (NAMA) strategy, with the goal of using the "Funded NAMA" mechanism.
- 3** Design applications and terms of reference for projects that require support from international funding sources.

*Time-Scale: 1-2 Immediate-Term, 3 Continuous*







