

DOMINICA'S NAMA PLANNING PROCESS

NAMA REGIONAL WORKSHOP

MEXICO CITY, MEXICO

National Circumstances

- Country Profile:

- ✓ located between $15^{\circ} 12'$ and $15^{\circ} 39'$ N Latitude and $61^{\circ} 14'$ and $61^{\circ} 29'$ W Longitude

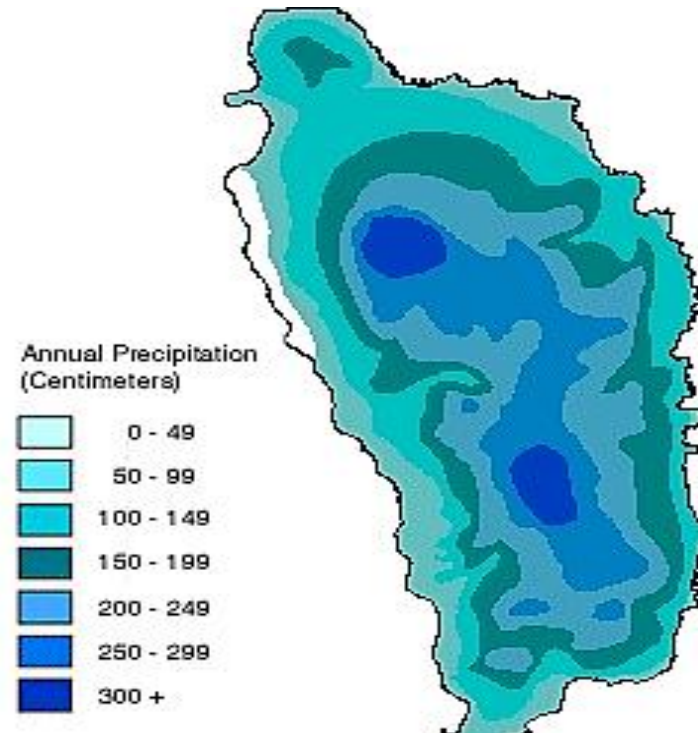
- ✓ The island is approximately 750.6 square kilometers

- ✓ Dominica's climate is characterized as tropical maritime with dominant influences being the Atlantic Ocean, the Caribbean Sea

- ✓ Rainfall is distributed between a dry season from December to May and a rainy season from June to November

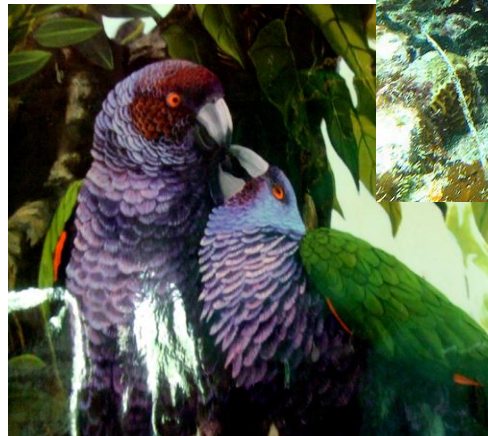
- ✓ High rainfall makes the island susceptible to landslides

- ✓ Annual rainfall totals exceeding 10,000mm (400 inches) in some of the higher elevations.



Biodiversity

- Dominica possesses an extensive range of terrestrial and marine biodiversity
- Some 155 families, 672 genera and 1226 species of vascular plants have been identified
- Seven (7) distinct vegetation communities are present ranging from montane rainforest to coastal swamp and dry scrub woodland
- Fumarole vegetation associated with volcanic activity is also present



Economy

- Dominica's economy has traditionally been dominated by agricultural production and export
- Banana production and export was the principal source of foreign exchange and employment
- Dominica possesses a relatively small but developing tourism sector based on the country's natural attractions
- Dominica's manufacturing sector consists primarily of a number of light industries producing for the domestic and regional market.

Dominica Select Economic Indicators

1995-2006

	Unit	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Value of exports (FOB)	EC\$m.	135.71	142.41	145.16	170.34	150.45	144.07	118.04	115.19	108.00	111.75	111.86	111.89
Value of imports (CIF)	EC\$m.	329.80	326.73	345.25	346.29	373.22	400.95	355.02	314.05	345.45	392.03	488.63	450.62
Visible trade balance	EC\$m.	(194.09)	(184.32)	(200.09)	(175.95)	(222.77)	(256.28)	(236.98)	(198.86)	(237.45)	280.28	336.27	338.64
Government Recurrent revenue	EC\$m.	155.03	173.83	188.61	205.00	200.75	213.73	202.32	192.90	204.30	234.60	257.28	266.86
Government Recurrent Expenditure	EC\$m.	155.06	166.50	184.74	194.77	206.47	224.84	223.80	229.21	210.19	218.40	210.87	228.26
Total stay over visitors	000s	60.47	63.26	65.45	65.50	73.51	69.60	66.39	69.19	73.19	80.09	79.26	84.04
Cruise ship visitors	000s	134.92	193.48	230.58	244.60	202.00	239.80	207.63	136.86	177.04	383.61	301.51	379.64
Electricity generated	000kwh	56,227	60,093	65,783	70,300	74,64	77,52	80.97	80.13	78.43	79.23	83.66	85.42
Bananas exported	Tonnes	33,070	43,012	37,366	28,602	29,51	28,788	19,061	18,379	11,956	14,484	11,953	12,852
Total external debt	EC\$m.	278.19	276.64	240.29	245.42	359.86	407.84	490.09	564.92	620.89	626.46	702.56	680.36

Electricity Operating Statistics

Generation Sales and Consumers

DESCRIPTION	2007	2006	2005	2004	2003	2002	2001	2000	1999
Peak Demand (kW)	14,501	14,467	14,368	13,190	12,923	13,043	13,866	12,966	13,010
Growth (%)	0.2	0.7	8.9	2.1	-0.9	-0.6	6.9	-0.3	
Generation (kWh x 1000)									
Hydro	21,885	27,797	27,876	33,736	28,523	35,929	27,036	31,590	32,410
Diesel	64,497	57,619	55,779	45,493	48,404	44,203	53,929	45,925	42,226
Energy Purchased	0	0	0	0	1,507				
Total	86,382	85,416	83,655	79,229	78,434	80,132	80,965	77,515	74,636
Growth (%)	1.1	2.1	5.6	1	-2.1	-1	4.4	3.8	6.2
Sales (kWh x 1000)									
Domestic	33,732	34,176	33,492	33,062	32,942	32,856	31,779	30,872	30,023
Commercial	28,788	26,469	24,993	24,017	21,669	22,758	17,021	16,052	15,503
Hotel	2,002	2,439	2,649	2,704	2,473	2,839	2,796	3,154	3,244
Industrial	5,600	5,357	5,504	5,508	4,354	4,607	4,009	4,420	4,553
Lighting	1	0	1	1	2	9	7,181	6,409	6,202
Street Lighting	1,298	1,130	1,150	1,127	1,295	1,125	1,128	1,098	1,069
Total	71,421	69,571	67,789	66,419	62,735	64,194	63,914	62,005	60,594
Consumers									
Domestic	28,388	27,436	24,851	25,181	24,333	23,210	23,069	22,802	22,196
Commercial	4,132	3,896	3,536	3,328	2,828	2,992	2,440	1,909	1,824
Hotel	392	307	274	142	60	18	21	23	23
Industrial	27	38	39	39	35	33	42	41	42
Lighting	2	0	5	8	4	3	1,374	1,374	1,297
Street Lighting	364	331	320	282	253	239	234	234	223

Energy Use and Renewable Energy Thrust



- Electricity constitutes the primary source of commercial energy for industrial and other uses
- The country presently has an installed capacity of 21 megawatts consisting of 6MW (28.5%) of hydropower and 15MW of diesel powered units
- The main end users of electricity are domestic, commercial and institutional customers
- The other main source of energy use in Dominica is in the road transport sector
- Government's objectives for the energy sector is minimizing of the cost, diversify energy sources, reduce reliance on fossil fuels, conserve energy, and reducing emissions of Greenhouse Gases.

Key Steps in NAMA Prioritisation Planning Process

- **Stocktaking** - by Technical Working Groups (6 Sub-sectors)
- **Assessment of Climate Change Risks** - by Technical Working Groups (6 Sub-sectors)
- **Identification of and consultation with Vulnerable Communities** (inc. household survey)
- **Mitigation Capacity Assessment** (inc. civil society and private sector)
- **Identification of Priority Interventions** to address risks and capacity gaps/needs – at National Consultative Workshop
- **Mitigation Inventory and Assessment** - by Technical Working Groups
- **Cost/Benefit Analysis and return on investments** – by regional economist

Step 1 - Stocktaking and Establishing the Context

- Consolidate all relevant documents/strategies/programs pertaining to climate change risks affecting Dominica
- Undertake a stocktaking to define the nature of the climate change risk
- Ensure that information on the following have been considered
- Development trends, investment trends, migration trends, social status/capital, loss situation and pollution situation.

Step 2 - Summarise the Risks

- With reference to each of the relevant mitigation reports, (and other relevant documents collected during the stocktaking), summarise the nature of the risks from climate change to the relevant sub-sectors
- The initial step is to identify *event risk* and *outcome risk*

Step 3 – Estimate Risks

- Estimate the *Severity of the Impact (Event and Outcome Risks)*
 - In the context of climate change mitigation, include non-financial criteria and environmental impacts.
 - Develop an impact severity rating scale appropriate to the risk scenarios (*event* and *outcome*).
- Estimate *Frequency or Probability of Event*
 - Estimate the frequency or probability of an event identified in the relevant reports based on their expert judgement

Guiding Principles of Dominica's NAMA Process



Guiding Principles of NAMA Planning Process

Participatory, country-led and owned

Build upon Dominica's NatComs, Policies, country strategies, development plans & MDGs

Integrate climate change risks and measures into core development planning

Move quickly to implementation where possible.

Guiding Principles of NAMA Planning Process

Civil society - include private sector – key stakeholder in NAMA Planning Process

Awareness-building and consultation are key element of the NAMA Planning Process

Improve coordination on climate risk management at all levels, including with international development partners

Guiding Principles of NAMA Planning Process

Analysis of climate risks

Assessment of mitigation capacity

Knowledge and awareness raising

Key capacity building actions

Consultative planning process to agree on a common vision and strategic approach for mitigation, and to define priority actions and investments needs to implement this approach

Greenhouse Gas Inventory

- The inventory of GHG emissions and sinks for the years 2000 to 2005 undertaken during the SNC
- The GHG inventories were compiled using the IPCC guidelines for the Energy, Industrial, Solvent and Other Product Use, Agriculture, Land Use & Forestry and Waste sectors
- The gases included in the current inventories are the direct GHGs namely, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and partially fluorinated hydrocarbons (HFCs) and the indirect GHGs - non-methane volatile organic compounds (NMVOC), carbon monoxide (CO), sulphur dioxide (SO₂) and nitrogen oxides (NO_x).

Greenhouse Gas Inventory Results

Comparisons of GHG Emissions (Gg) for 1994, 2000 to 2005

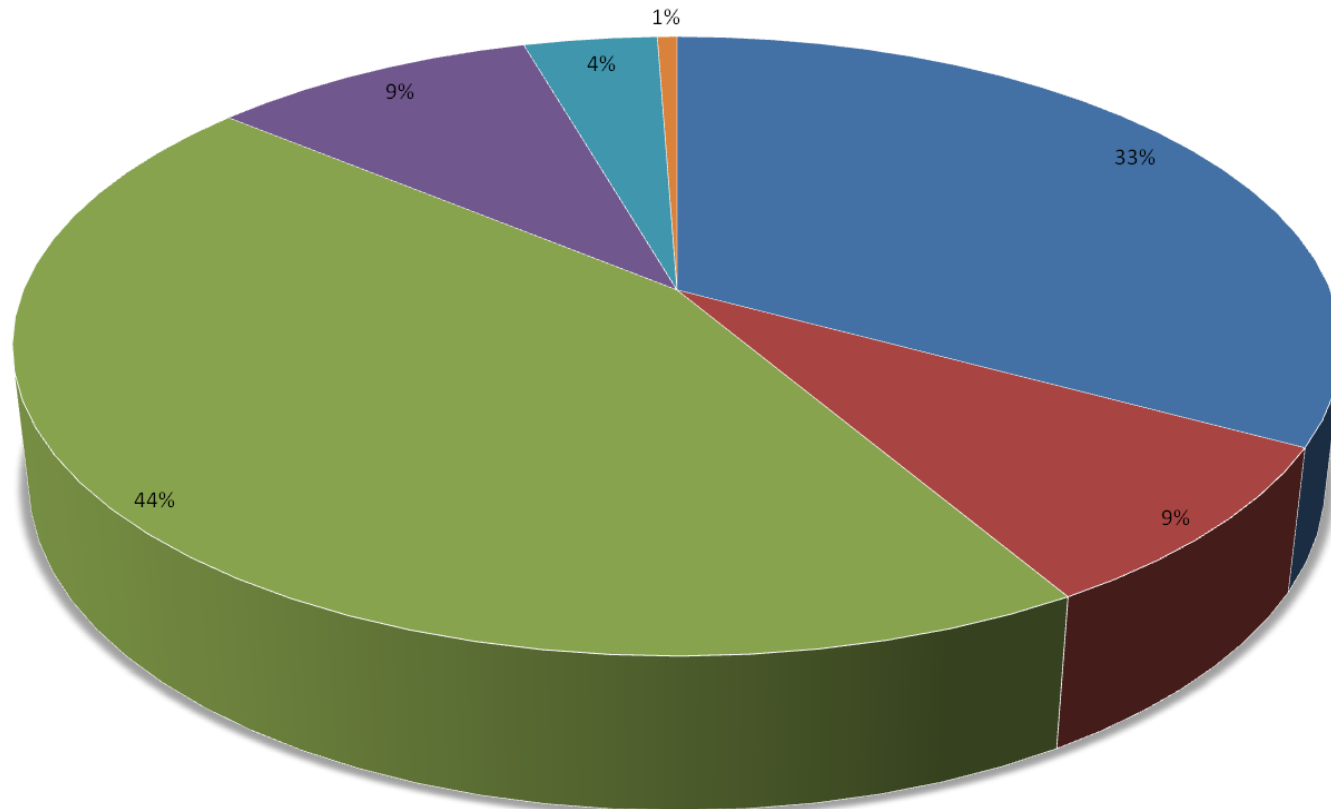
	CO ₂	CO ₂	CH ₄	N ₂ O	NOx	CO	NMVOC	SO ₂	HFCs
	Emissions	Removals							
1994#	72.8	170	0.968	0.0946	0.432	4.45	2.43	0.105	NA
2000	106	-138	1.57	0.118	0.595	6.32	1.64	0.177	0.0046
2001	118	-137	1.57	0.108	0.676	6.86	3.85	0.213	0.0050
2002	113	-133	1.56	0.101	0.673	7.06	2.77	0.190	0.0017
2003	111	-131	1.55	0.107	0.614	6.13	2.30	0.202	0.0019
2004	111	-130	1.56	0.076	0.577	5.75	3.22	0.186	0.0027
2005	119	-128	1.56	0.097	0.630	6.06	2.30	0.218	0.0030

Comparisons of CO₂ Emissions (Gg) for 1994, 2000 to 2005

	1994 [#]	2000	2001	2002	2003	2004	2005
1 Energy	72.8	106	118	113	111	111	119
A Fuel Combustion (Sectoral Approach)	0.0	106	118	113	111	111	119
1 Energy Industries	20.2	34.9	40.3	33.1	36.1	34.1	41.8
2 Manufacturing Industries & construction	4.10	9.10	10.1	10.5	13.2	11.6	11.0
3 Transport	37.7	47.1	53.7	55.4	46.8	42.9	46.8
4 Other Sectors	10.8	14.7	13.8	14.3	15.0	22.3	19.5
a Commercial/Institutional	7.33	10.0	9.43	9.91	10.7	18.4	15.4
b Residential	3.41	4.07	3.67	3.59	3.42	3.08	3.29
c Agriculture/Forestry/Fishing	0.100	0.631	0.721	0.766	0.856	0.811	0.766
5 Land-Use Change & Forestry ⁽²⁾							
A Changes in Forest & Other Woody Biomass Stocks (Removals)	-355	-198	-198	-193	-192	-190	-188
B Forest and Grassland Conversion	26.5	60.4	60.4	60.4	60.4	60.4	60.4
C Abandonment of Managed Lands ^{##}	-43.7	0	0	0	0	0	0
D CO ₂ Emissions & Removals from soil ^{##}	0.37	0	0	0	0	0	0

GHG Emissions and Opportunities

2000 Energy Sector Percentage Contributions of CO₂ Emissions



■ Energy Industries -34.9Gg ■ Manufacturing/Construction- 9.1Gg ■ Transport -47.1Gg
■ Commercial/Institutional -10Gg ■ Residential 4.1Gg ■ Agriculture/Forestry/Fisheries 0.6Gg

Mitigation Assessment

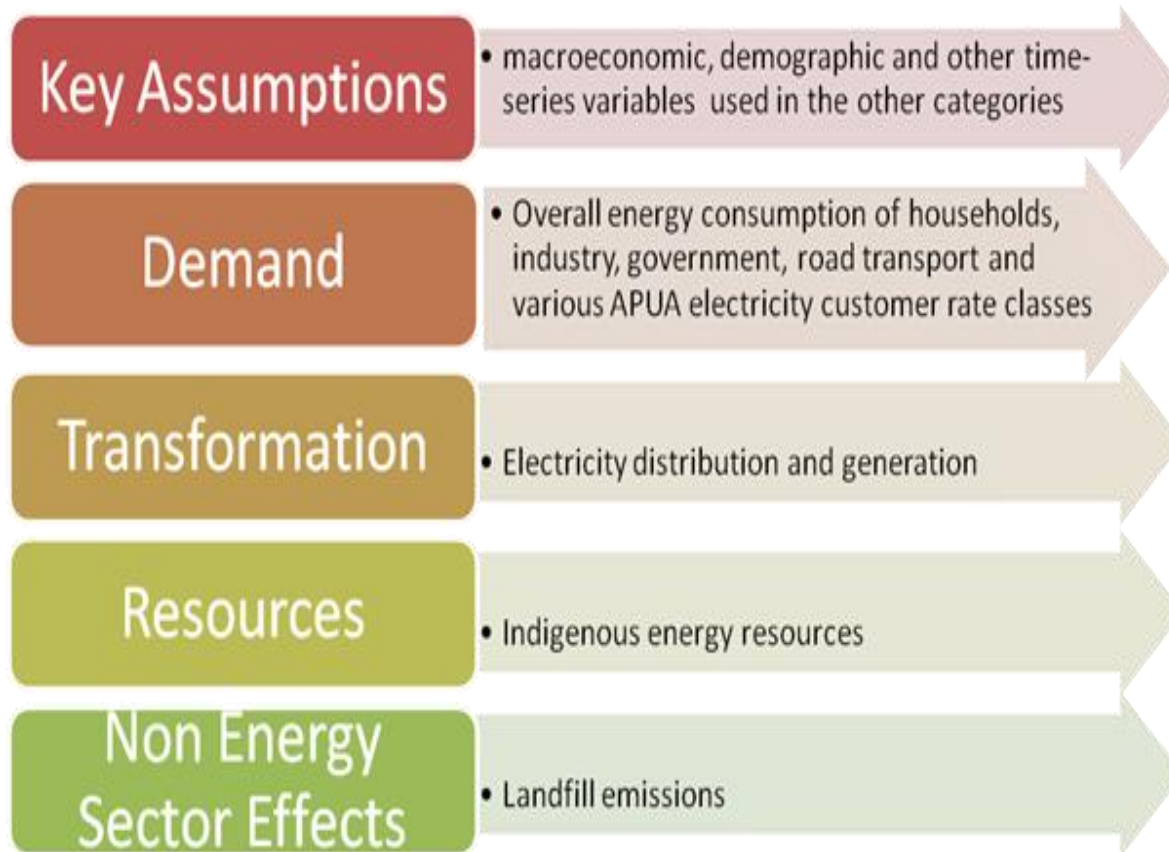
- It provides the greenhouse gas mitigation assessment for Dominica
- The assessment provides policy makers with an evaluation of those technologies and practices that can
 - a) affect GHG emissions
 - b) identify policies and programs that could enhance their adoption
 - c) contribute to national development objectives

Scope of the Mitigation Assessment

- This assessment covers projections of GHGs for the period 2009 to 2030
- It uses historical data for the period 2000 (the base year) to 2008
- Three scenarios are developed to project emissions
- Reference Scenario - only includes activities and projects that are currently under way and does not include any additional GHG mitigation.
- The other scenarios describe various possible and plausible energy use and development strategies and activities that are required to satisfy the demand for energy based on population growth and national development goals

Methodology For The Mitigation Assessment

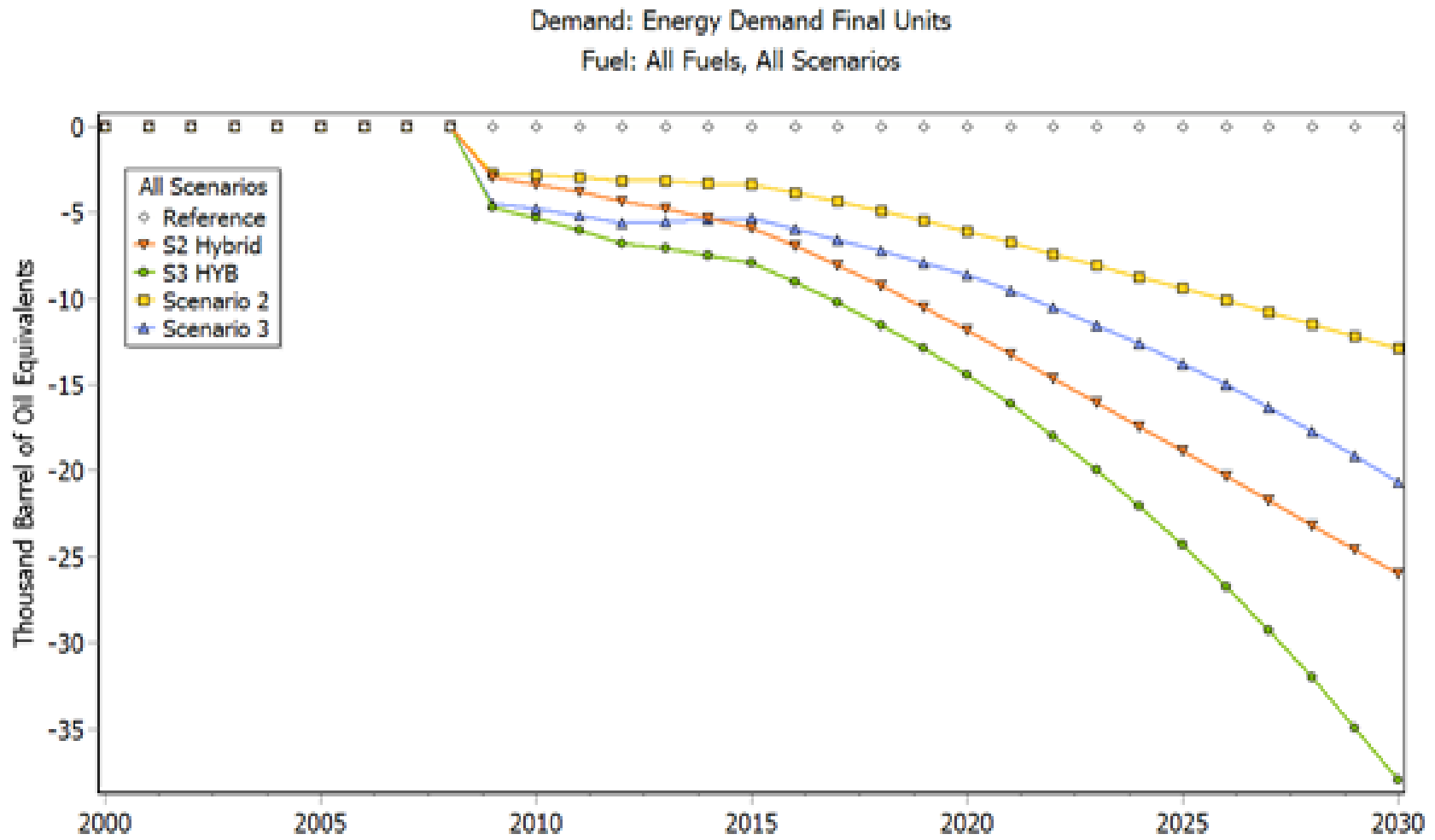
Modules in the LEAP Model



Subcategories in the Five Modules in the LEAP Model Input Data

Key Assumptions	Demand	Transformation	Resources	Non-Energy Sector Effects
<p>Population</p> <p>Household Size</p> <p>Population growth rate</p>	<ul style="list-style-type: none"> • Transportation (Seven classes of vehicles plus off road vehicles) • Commercial • Hotel • Domestic (Cooking, Lighting, Refrigeration, Television, Washing machine, All other) • Industrial • Street lighting 	<ul style="list-style-type: none"> • Transmission & Distribution • Loss reduction • Electricity Generation (Hydro, Thermal, Geothermal, Wind, Municipal solid waste, Photovoltaic (distributed)) 	<p>Primary</p> <p>Wind</p> <p>Geothermal</p> <p>Solar</p> <p>Municipal Waste</p> <p>Biomass</p>	<p>Landfill emissions</p>

Final Energy Demand for Dominica, All Scenarios



Modules used in the Analysis

- **Key Assumptions Module**
 - ✓ This module contains macroeconomic (GDP and GDP growth rate) and demographic (population, population growth rate, household size) data
- **Demand Module**
 - ✓ The demand module requires activity and energy intensity data such that the product of the two gives the energy consumption.
- **Transformation Module**
 - ✓ The transformation module includes electricity generation and production
- **Resources Module**
 - ✓ The indigenous energy resources available in Dominica
- **Non-Energy Sector Effects**
 - ✓ Simple projections of these emissions were made based on population growth.

THANK YOU!

QUESTIONS/COMMENTS

