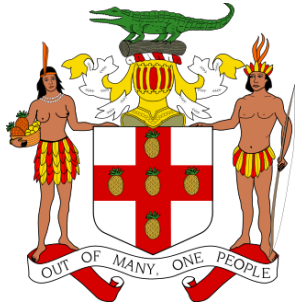
Biofuels Development in Jamaica



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NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

GAITHERSBURG, MD

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Petroleum Corporation of Jamaica's

Centre of Excellence for Sustainable Energy Developments

Ministry of Science Technology Energy and Mining

Jamaica Overview: Selected Indicators - 2011

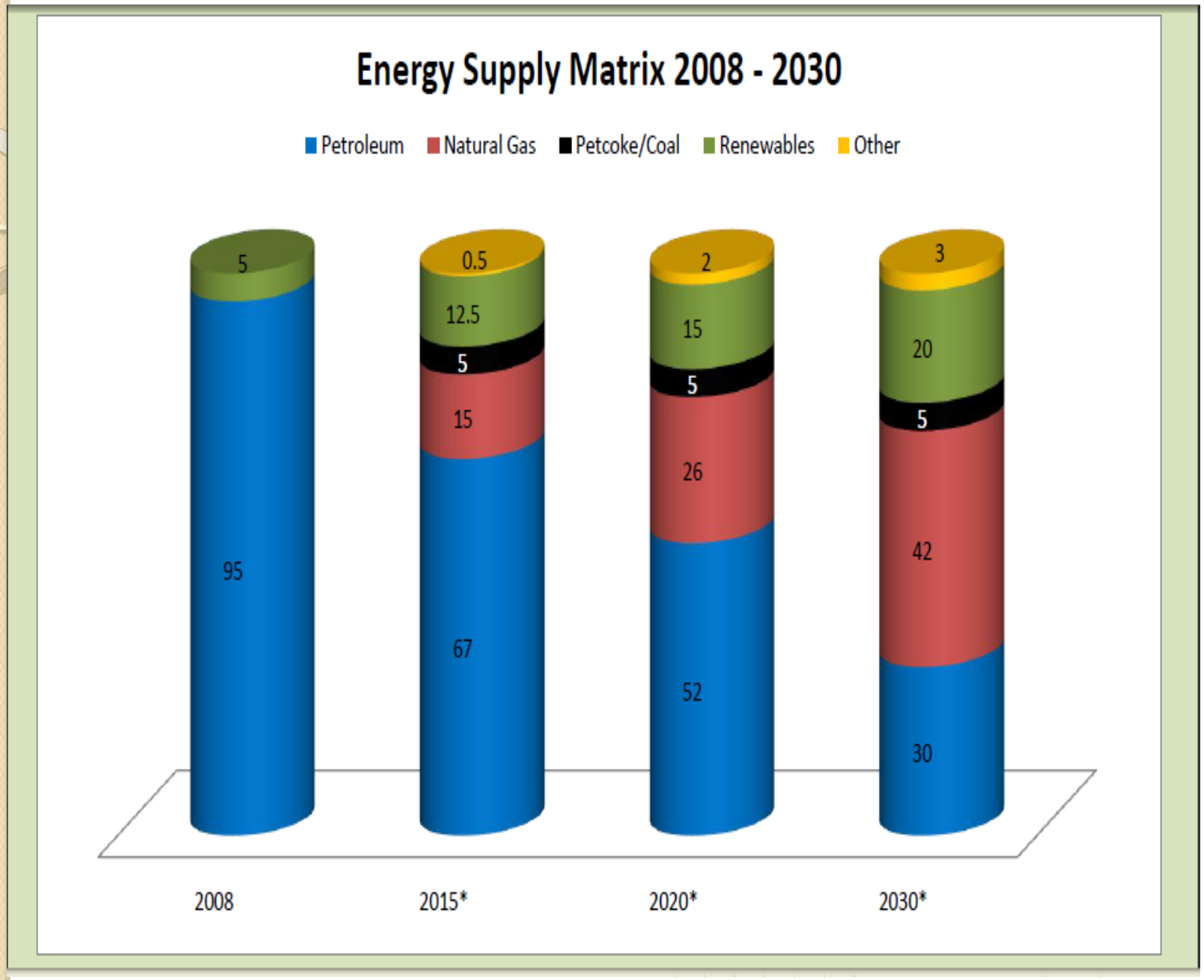
- **Population:** 2,709,300
- **GDP:** J$ 1,266.6 billion (US$14.2 billion)
- **Inflation Dec/Dec.:** 6%
- **Trade Balance:** J$-4,990.5 billion (US$-56 billion)
- **Oil Imports:** 19.5 million barrels of oil
- **Oil Import bill:** J$177.0 billion (US$1.9 billion)
- **Electricity Generation:** 4,137,000 MWh per annum
- **Renewable Energy Inputs:** 2,012,000 Barrels of Oil per annum
- **Value of Renewable Energy :** UJ$18.3 billion (US$205 million)
- **Sugar Exports:** J$5,535.8 million (US$62.2 million)
- **Unemployment Rate:** 12.6% (male 9.3%, female 16.7%)

Sources:

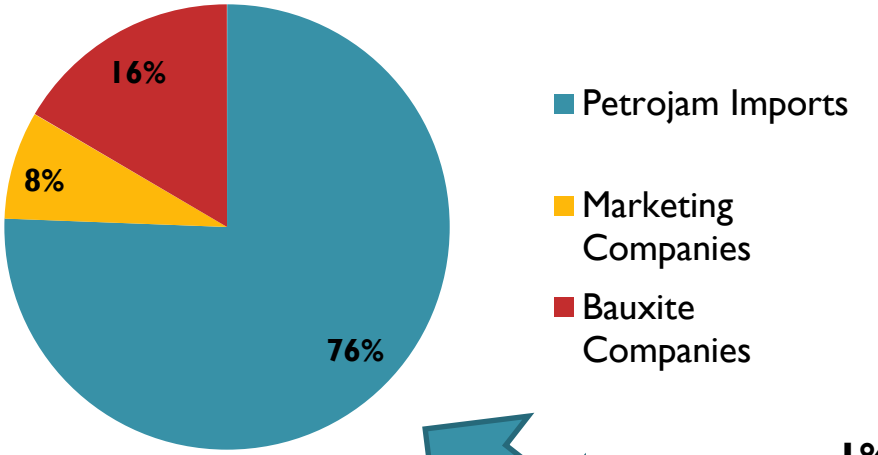
The Planning Institute of Jamaica, Economic and Social Survey of Jamaica, 2011 and PCJ's Centre of Excellence for Sustainable Energy Developments

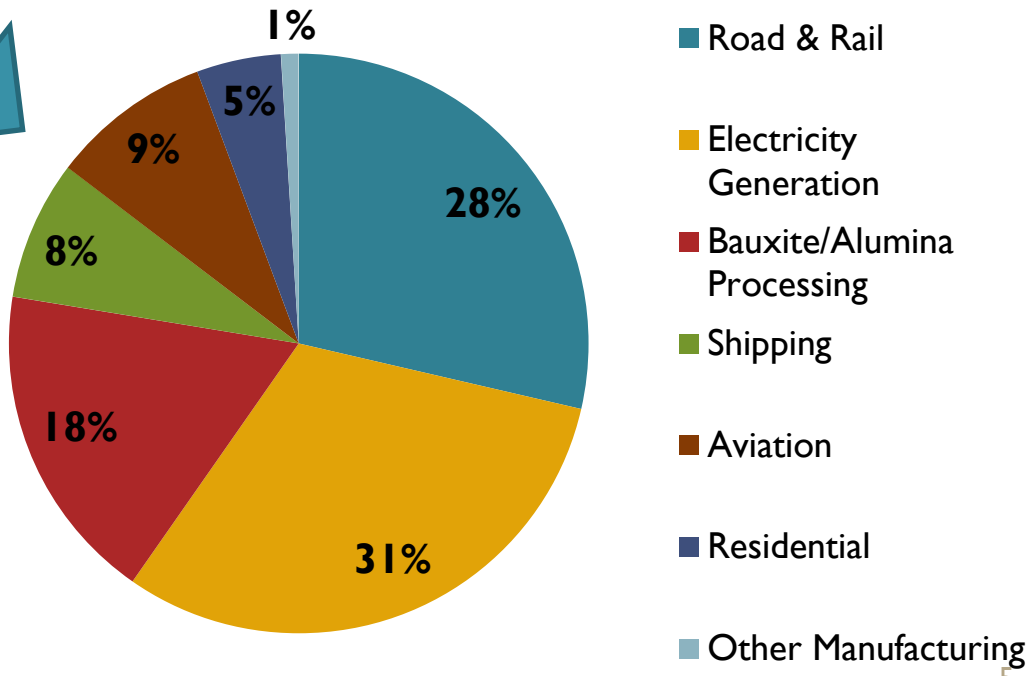
INTRODUCTION

- The National Energy Policy (2009 – 2030) was approved by Cabinet and promulgated.
- Ethanol in gasoline (E10) was established as a national fuel formulation in 2008.
- Jamaica has suitable lands for the revitalization of the sugar industry and the production of ethanol for 10% blending in gasoline.
- Some of these lands can support biomass and biodiesel crops for supplemental fuel to ensure economic cogeneration and biodiesel operations.
- Government has privatized its 71% holdings in the sugar sector.
- The fluctuation in sugar prices and the changes in quotas and marketing approach related to international trade agreements presents an opportunity for sugarcane diversification.
- Oil price volatility has served to heighten public awareness and interest in pursuing alternative energy options.


Energy Supply Matrix 2008 - 2030
Petroleum
Natural Gas
Petcoke/Coal
Renewables
Other
5
95
0.5
12.5
5
15
67
2
15
5
26
52
3
20
5
42
30
2008
2015*
2020*
2030*

Oil Imports - 2011



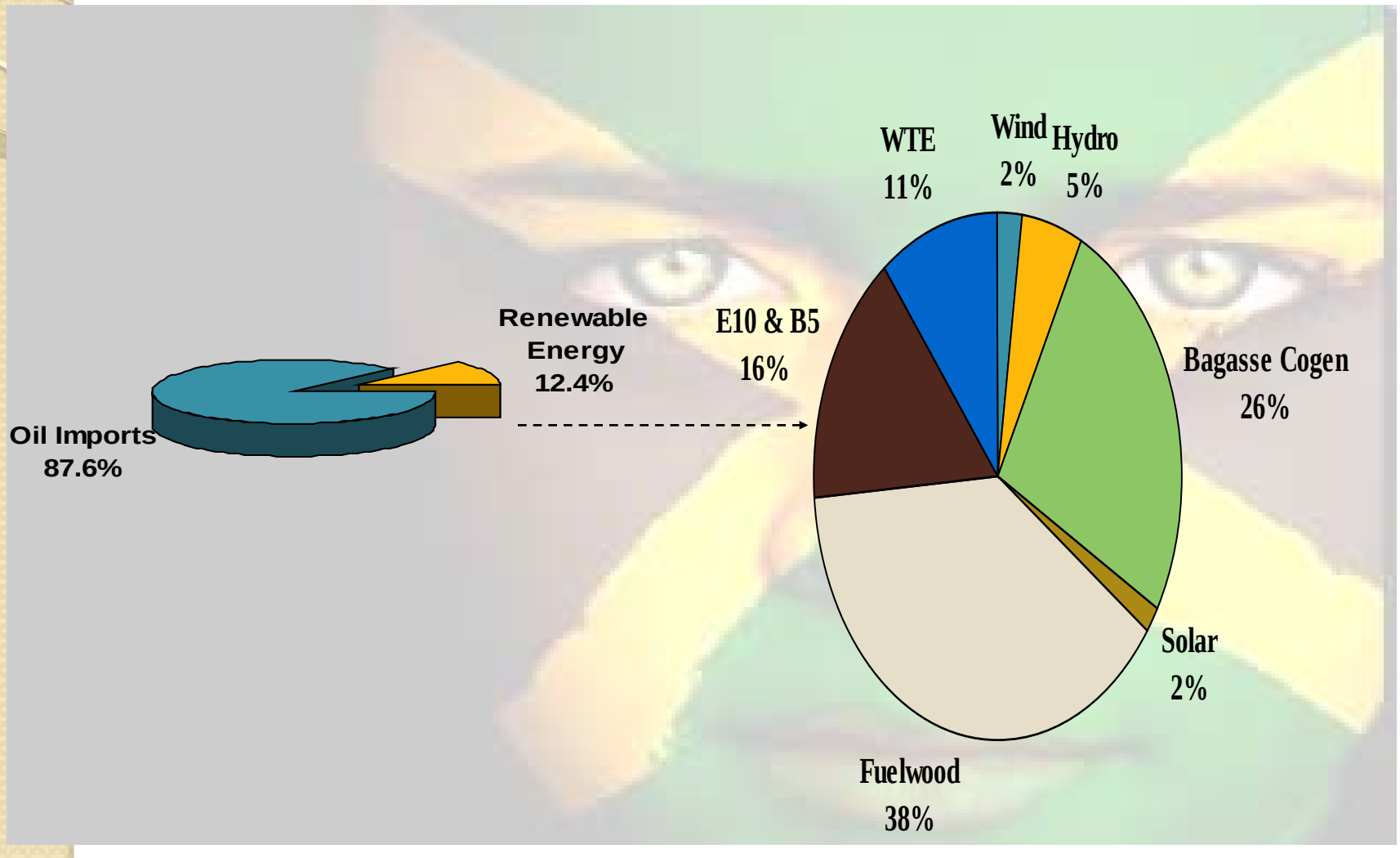


Renewable Energy Barrels of Oil Equivalents

Categories	Sources	2005 Actuals	2011p Actuals	2015 Forecast
Hydropower generation	JPS	105,104	94,228	138,996
Waste to Energy generation	NSWMA	0	0	288,114
Bagasse for factories & cogeneration	MoAF & SIRI	529,553	427,380	706,107
Solar energy generation	Vendors	9,618	30,285	44,411
Wind energy generation	WWFL & JPS	34,532	57,000	77,128
Fuelwoods – includes local coal and charcoal use - p	MSTEM & Forestry Dept.	1,001,000	1,120,370	1,120,370
Biofuels Use for Transport -Bioethanol & Biodiesel	Petrojam & PCJ	0	371,947	427,940
TOTAL (Boe)		**1,679,807**	**2,101,210**	**2,803,066**

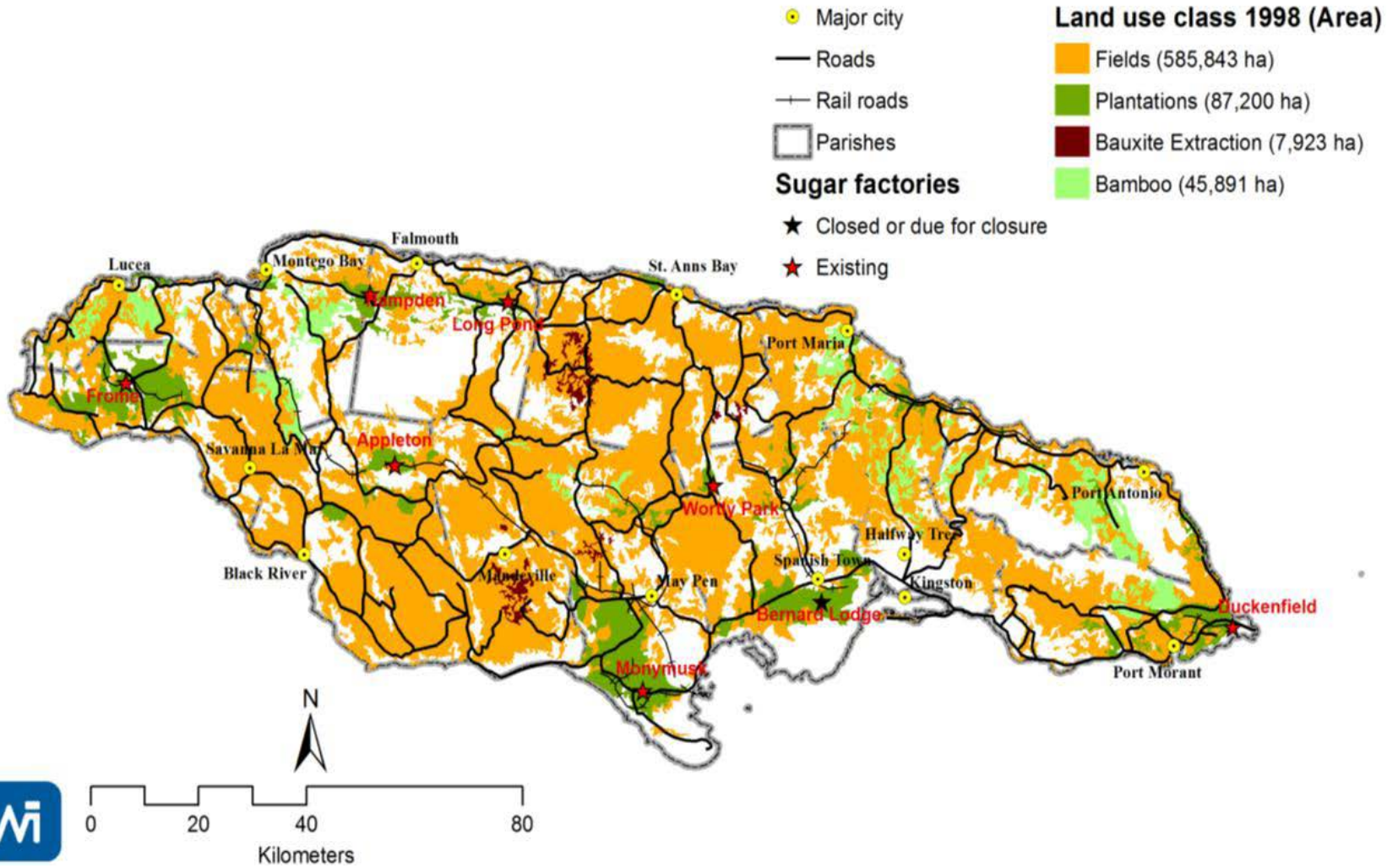
*p - Preliminary figures

2015 Barrels of Oil Equivalents by Renewable Energy Sources



FUTURE: R.E. VALUE - US$315 M/Yr.

Sugar Sector Lands



Legislative and Regulatory Framework

- National Energy Policy (2009 – 2030)
- E10 Mandate & ASTM E10 Fuel Standard
- Biofuels Policy (2010-2030) - *draft*
- B5 ASTM Biodiesel Fuel Standard – *draft*
- Vehicle Importation Tax Regime

Agreements

- Changes to the Sugar Protocol under the Cotonou Agreement of the World Trade Organization (WTO)
- Jamaica's Country Strategy I (2006 – 2013) and Accompanying Measures
- Trilateral Memorandum of Understanding, Jamaica-Brazil-USA
- Jamaica's Country Strategy II (2006 – 2020) and Accompanying Measures
- E10 exemption for fishing vessels.
- Sugar Sector Privatization Agreements
- Research Partnership Agreements with the Ministry of Agriculture and Fisheries Bodles Agricultural Research Station and the Caribbean Agricultural Research and Development Institute

Research and Development

E10

- Country Strategy for the Adaptation of the Sugar Industry
- Muhkerji Sugar Ethanol Study, 2004
- United Nations Economic Commission for Latin America and the Caribbean's Renewable Energies Potential, 2005
- E10 Rollout Strategy & Action Plan, 2008
- United States Trade Development Association's Biofuels Assessment, 2010

2011

- Technical Assistance for Biofuels Development by Winrock International
- Llandel Mills Biomass Assessment for the Sugar Sector
- Carbon Emissions Reduction Project Identification & Notifications
- FAO, Food and Agriculture Biofuels Report: prospects, risks and opportunities

2012

- Office of Utilities Regulation's Renewable Energy Bidding Guideline
- Feed-In Tariff (FIT) Assessment by Trama TechnoAmbiental

Entrepreneurial Actions

E10

- Establishment of Ethanol Distillation Plants by:
  - Petrojam Ethanol Ltd., 1985
  - ED&F Man, 1997
  - Jamaica Broilers Ethanol Ltd., 2005
- Ethanol trade with the USA and Brazil under the Caribbean Basin Initiative (CBI), 1985
- E10 distribution to local consumers through Petrojam and Marketing Companies, 2008
- Sugar Sector Transformation & Privatization, 2011

Structural Changes

2006

- Government owned 71% of the sugar estates.
- Unit cost of production was 26 cents per lb.
- Sugar price 13.09 cents per lb.
- Industry cane productivity was 67 tonnes per hectare
- Oil Imports for Transport Sector were 6.4 million barrels

2011

- Government privatized its sugar estate holdings
- Unit cost of production was ≈23 cents per lb.
- Sugar price 20.18 cents per lb.
- Industry cane productivity was 54.7 tonnes per hectare
- Oil imports for transport sector were ≈5.6 million barrels

Research and Development

B5

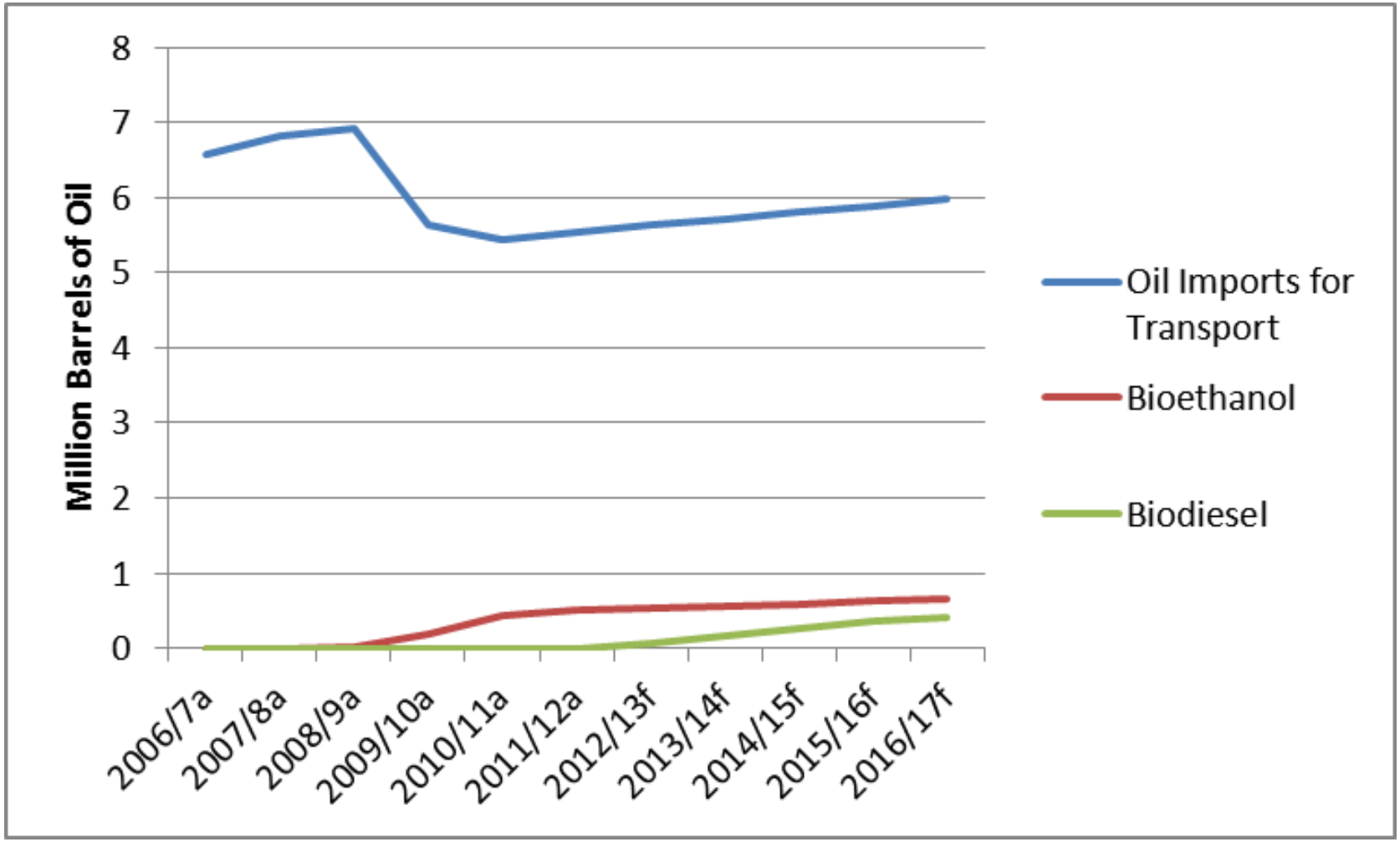
- Biodiesel Feedstock research and procurement
- Biodiesel Cultivation Land Suitability Survey
- Incentives for Biodiesel Production
- Biodiesel Value Chain Analysis

Entrepreneurial Actions

B5

- Biodiesel feedstock cultivation, harvest and processing
- Waste Vegetable Oil collection and processing plants:
  - National Bakery,
  - Happy Foods Ltd.,
  - University of the West Indies,
  - RYCO
  - others

Blending Approach



Capacity Building

- Private Sector Champions
- Public Sector Agencies:
  - Ministry of Science, Technology, Energy and Mining (MSTEM),
  - Ministry of Agriculture and Fisheries (MoAF),
  - Petroleum Corporation of Jamaica (PCJ),
  - Jamaica Cane Product Sales Ltd.
  - Sugar Industry Research Institute (SIRI),
  - Caribbean Agricultural Research and Development Institute (CARDI).

Biofuels Investment Incentives

Incentives	Area of impact	Purpose	Benefits
Duty relief on agricultural vehicles.	Distribution	Reduce vehicle costs	Twenty percent (20%) concessionary duty rates
Duty relief on agricultural equipment, machinery and products.	Production	Reduce investment capital for agro-business start-up	General Consumption Tax (GCT) exemptions on certain items
Duty relief on raw materials	Production	Reduce investment capital for agro-business start-up	Common External Tariff (CET) and stamp duty exemptions on raw material imports.
Income Tax Relief for Farmers			Exemption from: • Income tax for 10 years • GCT for 10 years on capital equipment

Biofuels Investment Incentives

Incentives	Area of impact	Purpose	Benefit
Customs User Fee	Production	Reduce the startup capital of new businesses	Waiver of 2% Customs User Fee
Modernization of Industry	Production	Reduces the cost of machinery for manufacturing	Waiver of General Consumption Tax chargeable on the acquisition of machinery
Accelerated Depreciation	Production	Reduces taxable income of the business	50% of the full cost of machinery within the 1st year, and 50% in the second year.

Next Steps:

- **Seek additional funding for Biodiesel Development Initiatives**
- Expand the varietal trials, using the best varieties
- Incorporate waste vegetable oil processing into demonstration projects
- Collect cost information to support financial analyses
- Meet with Associations of small farmers to share best practice information
- Seek support to develop Biofuels quality testing capacity

THANK YOU

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