
**“VISIONS OF THE RURAL MILIEU IN THE CARIBBEAN SIDS
FROM THE PERSPECTIVE OF DIFFERENT FORMS OF
AGRICULTURE IN THE NEW CONTEXT”**

**INTERNATIONAL WORKSHOP OF EXPERTS:
CONTRIBUTION MADE BY AGRICULTURE AND THE RURAL
MILIEU TO SUSTAINABLE DEVELOPMENT AND FOOD
SECURITY IN THE NEW INTERNATIONAL CONTEXT**

**SAN JOSE, COSTA RICA
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Prepared by

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STARTING POINT

- WHERE ARE THE MARKETS FOR THE AGRICULTURAL PRODUCTS
 - WHAT ARE THE PRODUCTS DEMANDS IN THAT MARKET
 - WHAT COMBINATION OF CROPS and TECHNOLOGY CAN MEET THAT MARKET
 - WHICH CROPS CAN BE PRODUCED IN A SUSTAINABLE MANNER – GIVEN AVAILABLE LAND AND WATER RESOURCES
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Environmental Characteristics of the Agricultural Sector in the Caribbean

- Limited or No Soil or Water Conservation Practices
 - Adverse Effects on Biodiversity
 - Degradation of Coastal Environmental Quality
 - Very Vulnerable to Hydro-metrological events
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Economic Impact of the 2004 Hurricane season in the Small Island States of the Caribbean

Country	Natural Event	Economic Impact (US \$ Million)
The Bahamas	Hurricanes Frances and Jeanne	551
The Cayman Islands	Hurricane Ivan	1,620
The Dominican Republic	Tropical Storm Jeanne	296
Grenada	Hurricane Ivan	889
Haiti	Hurricane Jeanne	296
Jamaica	Hurricane Ivan,	595
Total		4,247

Socio-economic Characteristics of the Agricultural Sector

- Commodity Production
 - Low income for agricultural workers and high rates of poverty among Agricultural Households
 - Experiencing negative fallout from EU policies and WTO ruling – specifically related to the export of sugar and bananas.
 - Changing climatic conditions are an additional source of negative impacts on the sector.
 - Limited Investment by National Government
 - Theft of Agricultural Crops ..fruits and vegetables
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Country	Total Population (millions) ^[1]	Agricultural Population Relative to Total (%)^[2]	Rural Populatio n Relative to Total (%)^[3]
Antigua and Barbuda	0.1	24	62
Barbados	0.3	4	48
Belize	0.3	30.3	52
Cuba	11.2	13.5	25
Dominican Republic	8.6	15.4	34
Guyana	0.7	16.9	62
Haiti	2.9	dna	63
Jamaica	2.6	20	43
Saint Kitts & Nevis		21.1	66
St. Lucia	0.2	22.4	70
St. Vincent and The Grenadines	0.1	23.1	42
Suriname	0.4	19	24
Trinidad & Tobago	1.3	8.3	24

^[1] Human Development Report 2005 (data for 2003)

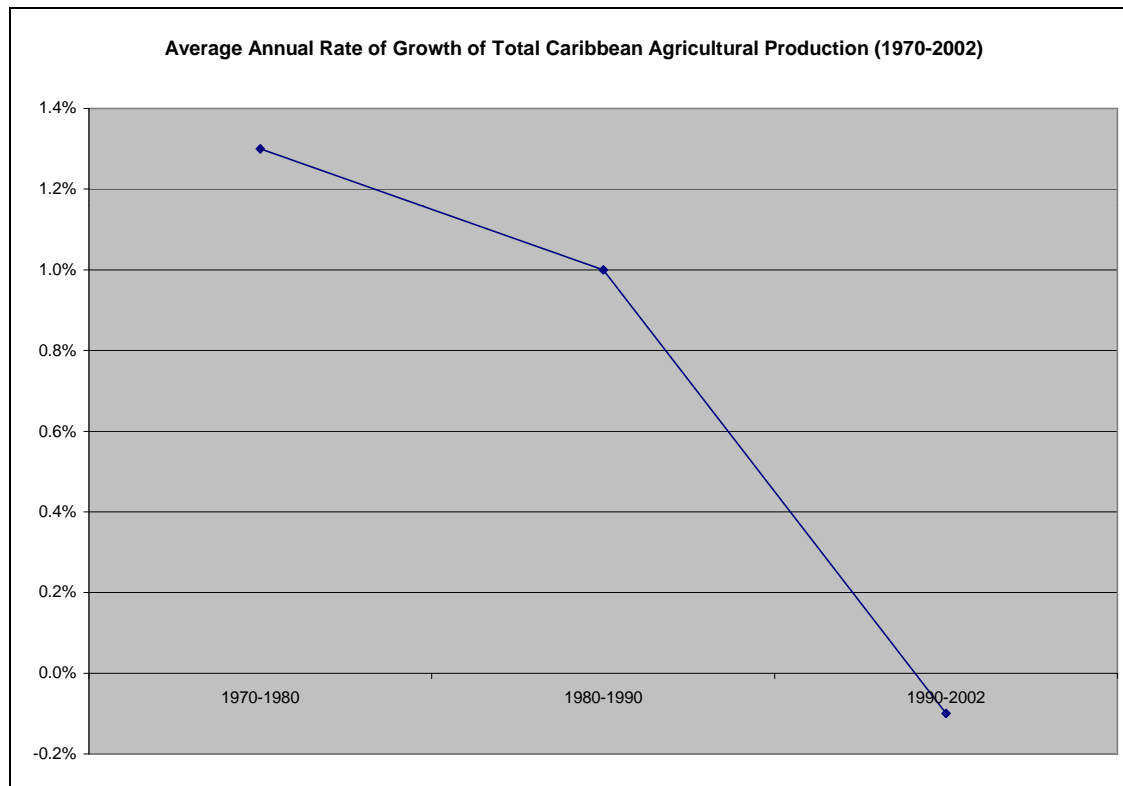
^[2] FAOSTAT

^[3] Food and Agriculture Indicators 2003 – Prepared by Socio-Economic Statistics and Analysis Service (ESSA), Food and Agriculture Organization (FAO), October 2005. <http://www.fao.org/es/ESS/>

Crop Production

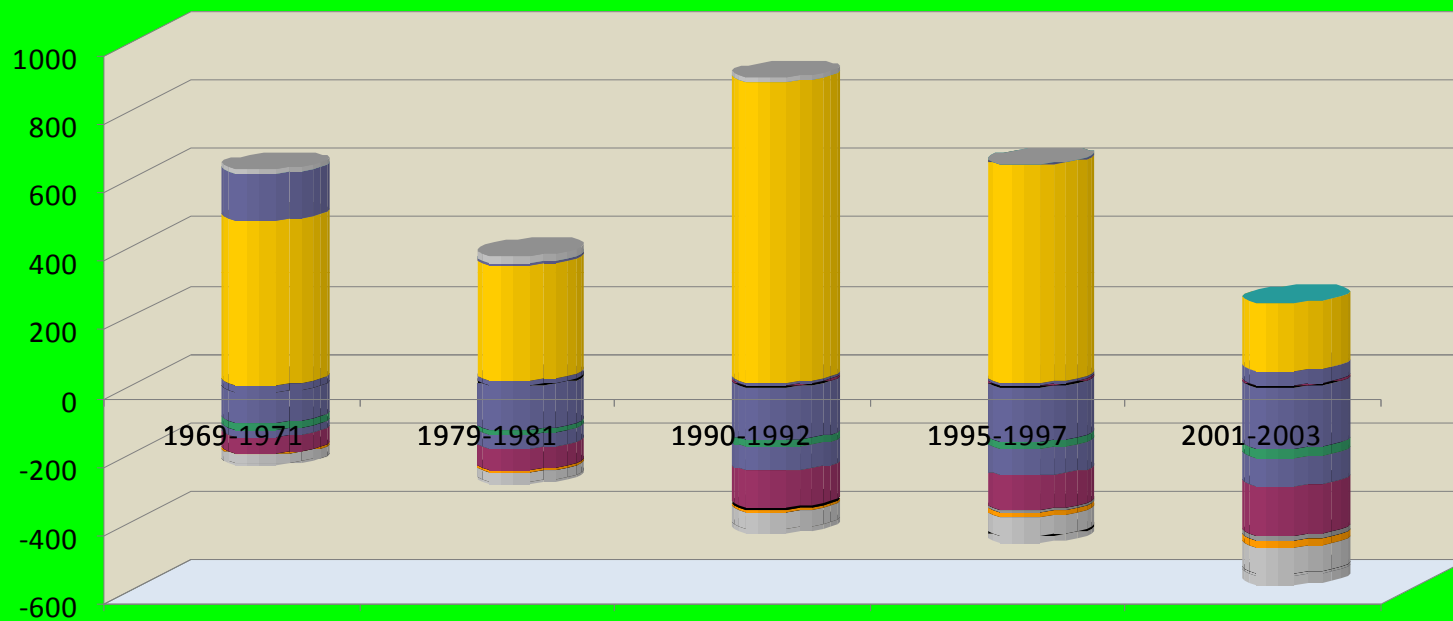
ISLAND STATE	Sugarcane	Coconuts	Cereals	Roots & Tubers	Groundnuts	Pulses	Vegetables & melons	Fruits excl. melons
	(Mt / yr)	(Mt / yr)	(Mt/yr)	(Mt / yr)	(Mt / yr)	(Mt / yr)	(Mt/yr)	(Mt/yr)
Antigua & Barbuda	-		58	372			3,082	9,975
Bahamas	55,500		350	1,018		123	25,026	28,667
Barbados	385,264	1,800	258	3,780	47	1,106	13,875	3,388
Belize	1,124,066	989	51,558	3,619	79	7,191	9,446	388,262
Cuba	19,800,533	115,955	1,004,647	1,790,392	10,000	131,633	4,099,834	2,823,911
Dominica	4,400	11,500	180	26,720		80	6,630	63,490
Dominican Republic	5,177,807	179,729	627,840	259,099	2,937	50,144	380,637	1,248,368
Grenada	7,200	6,500	300	4,065		595	2,649	16,830
Guyana	3,000,000	45,000	505,500	40,300	1,900	1,300	41,800	68,371
Haiti	1,070,000	24,500	377,333	753,500	21,333	64,967	201,150	994,050
Jamaica	2,133,333	170,000	995	214,215	3,402	5,040	196,531	468,237
Saint Kitts & Nevis	162,000	1,000	-	1,013	31	210	684	1,300
Saint Lucia	-	14,000	631	11,189		40	1,000	157,924
St. Vincent & The Grenadines	13,318	2,556	2,667	13,810	312	347	4,301	57,382
Suriname	120,000	9,000	194,630	5,350	260	160	22,048	72,482
Trinidad & Tobago	706,002	17,500	5,980	8,861	80	3,560	23,596	66,692
TOTAL	33,759,424	600,028	2,772,928	3,137,304	40,381	266,496	5,032,288	6,469,328

Rate of Growth in Agriculture



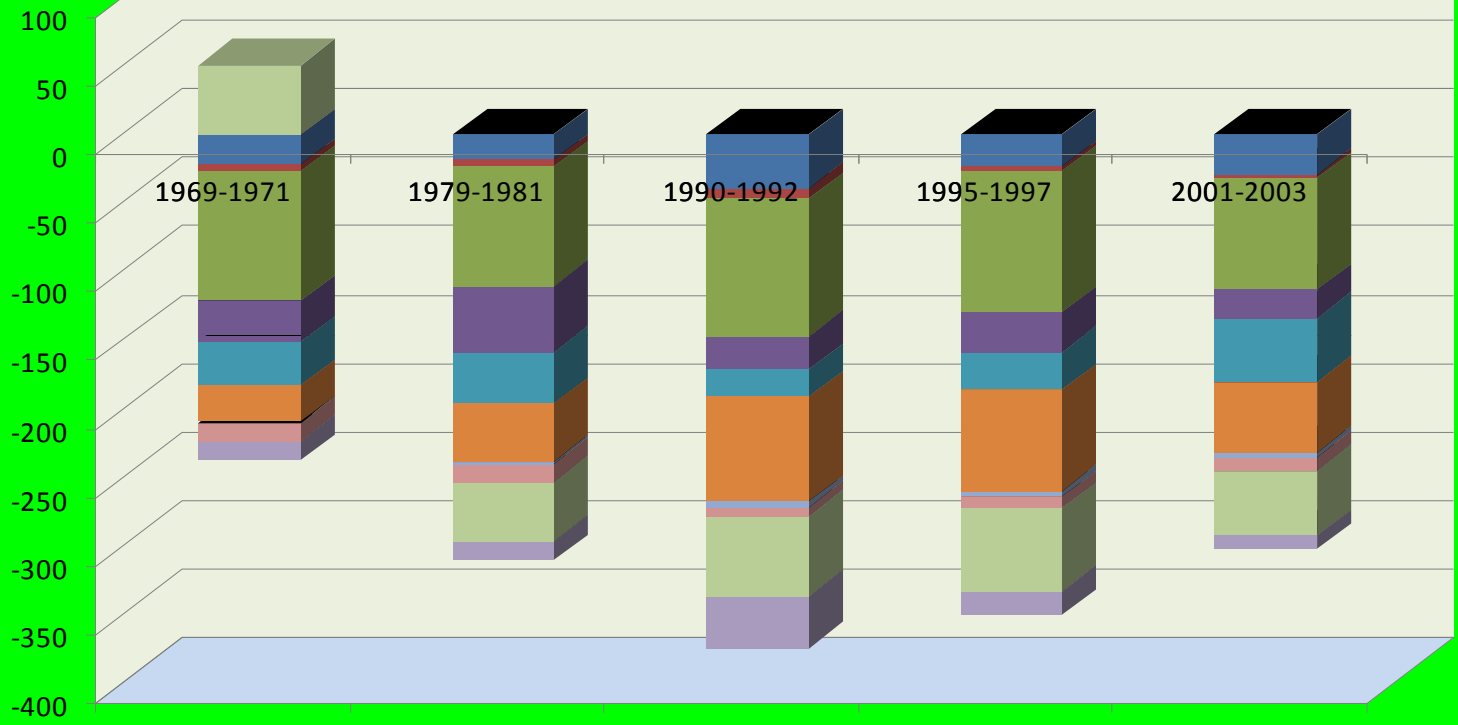
“Summary of World Food and Agriculture Statistics 2004,” Food and Agriculture Organization (FAO) of the UN, Rome 2004

Food Balance - St. Lucia



- Alcohol (incl beer&wine)
- Cereals &prod. excl beer
- Meat (slaughtered) & prod.
- Oilcrops (excl. prod.)
- Sugar & Sweeteners
- Vegetables & products
- Animal fats & products
- Fish, seafood & prod.
- Milk & products
- Spices
- Treenuts & products
- Beverage crops
- Fruits &prod. (excl. wine)
- Offals edible
- Starchy roots & products
- Vegetable oils & prod.

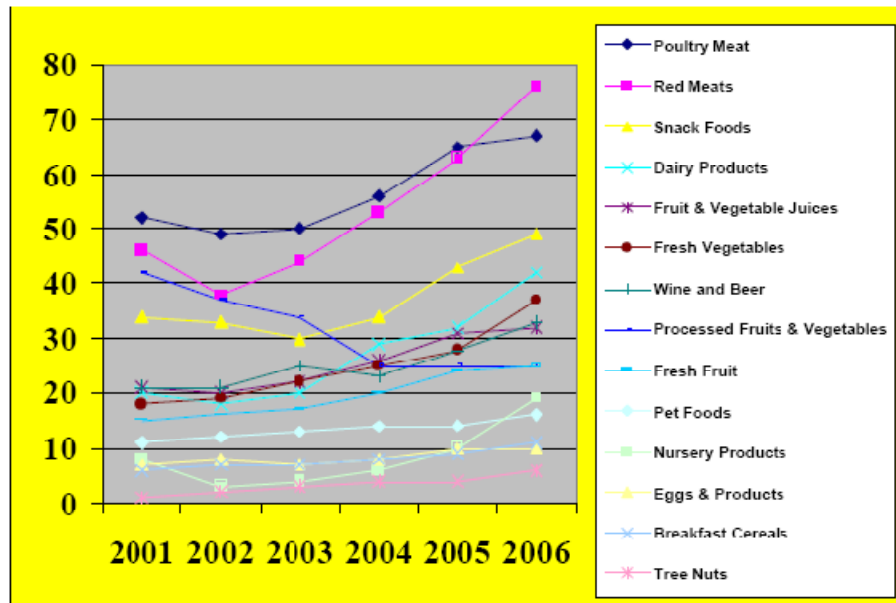
Food Balance - Antigua



- Alcohol (incl beer&wine)
- Animal fats & products
- Cereals &prod. excl beer
- Fish, seafood & prod.
- Fruits &prod. (excl. wine)
- Meat (slaughtered) & prod.
- Pulses & products
- Starchy roots & products
- Sugar & Sweeteners
- Vegetables & products

US Food Exports to the Region

CHART C. U.S. EXPORT OF CONSUMER-ORIENTED PRODUCTS TO THE CARIBBEAN BASIN, BY PRODUCT TYPE 2001-2006 (IN MILLIONS OF U.S. DOLLARS)



Source: Department of Commerce, U.S. Census Bureau, Foreign Trade Statistics

Canada's Top 5 Agri-food Imports from CARICOM, 2004

Rum	\$16.8 million
Rock lobster and other sea crawfish	\$12.0 million
Papayas, fresh	\$6.2 million
Liqueurs and cordials	\$3.1 million
Fish	\$1.8 million

LEVEL OF INVESTMENT, INSTITUTIONAL CAPACITY & REGIONAL LEADERSHIP

- Level of Investment – Government expenditure on agriculture range from 10% (Guyana) to 2% (Jamaica). Financing was one of the critical factors that were identified in the *Jagdeao Initiative* as a constraint to transformation of the region's agriculture sector.
 - Institutional Capacity – very limited ...in some ways it is a causality of the structural adjustments programme of the World Bank.. Triggered in part by the energy problems of the 1980.. Significantly strengthening of capacity will need to help transform the sector particularly in the areas of research and development and training and technical assistance.
 - Much more leadership from the government is need to transform the sector in a pillar of sustainable development.
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AGRICULTURE IN THE CARIBBEAN

- Although tourism has displaced agriculture as the dominant sector and major foreign exchange earner in the Caribbean economy, agriculture is still a significant export earner and means of livelihood in several countries, with sugar and bananas being the most important agricultural products.
 - US is CARICOM's most important trade partner importing approximately half of the region's exports and supplying nearly one third of CARICOM's imports. Caribbean is seventh largest export market for U.S. agricultural products . Leading exports were corn, wheat, rice, soybean meal, and tobacco. The Dominican Republic was the largest market — with \$462 million in sales that accounted for 27 percent of all agricultural exports to the Caribbean region (2006)
 - **EU is the region's largest agriculture trade partner** - value of Caribbean agricultural exports to the EU fallen by 18.1 percent since 2000; value of total exports risen by 19.6 percent. This has reduced importance of agricultural exports from 34.9 percent of total Caribbean exports to the EU in 2000, to 23.9 percent in 2007 (having fallen as low as 20.3 percent in 2006)
 - **Sixty percent of all services exports to the EU are in tourism and travel-related services and this could be the reason why the EPA's vision of diversification of CARICOM economies is dependent on tourism and information technology (IT) – this vision is very vulnerable to high energy cost**
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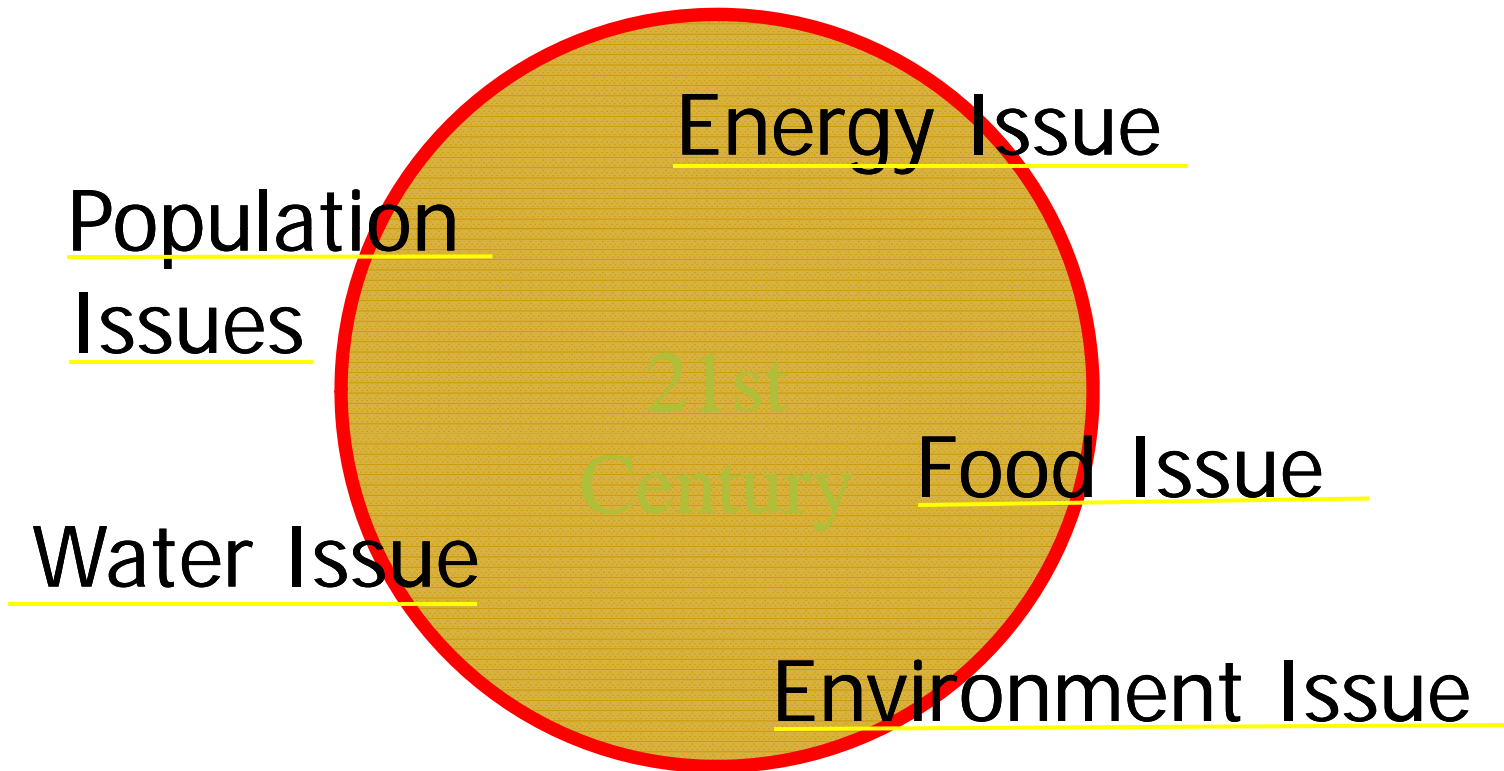
AGRICULTURE IN THE CARIBBEAN

- Agriculture is the mainstay of the economy in four countries: Dominica, Dominican Republic, Haiti and Jamaica, and the main agricultural products are bananas, sugar, rice and tropical fruits
 - Land resource base in Caribbean is limited with total land area of approximately 23 million hectares (ha) and only a small portion, 4.9 million ha, can be considered arable land – with half the arable land under permanent crops. **The majority of the land resources is steep slopes thin top soils and very prone to erosion**
 - Many countries lack sound land use policies, which has contributed to loss of prime agricultural lands and improper agricultural practices on steep, marginal hillside lands. Currently, several islands are experiencing significant environmental degradation as a result of unsustainable land use associated with crop production in certain areas.
 - Environmental protection of water resources and coastal ecosystems is key to the tourism industry, and if the region wants to maintain the tourism sector in the long-term, then it is imperative that land use is not negatively impacting coastal systems.
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IS THERE A FUTURE AGRICULTURE IN THE CARIBBEAN?

- All Caribbean countries have to import food. Current estimates is that the regions imports more than 90 percent of its food needs. The current strategy for improving this situation is articulated in the *Jagdeo Initiative*. In terms the initiative is based on the development of mega farms in three Caricom countries.
 - The defining characteristics of Caribbean countries (excluding Suriname, Guyana and Belize) are limited amount of agriculture lands, limited amount of fresh water, high labor cost, and limited economies of scale, limited arable lands, vulnerability to natural disasters. With all of these unique characteristics what can agriculture look like for the region in the role as key pillar of Sustainable Development ? And how does that compare to the current strategies? and how would agriculture be positioned to take advantage of the EU market that the region has fought so hard to get?
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Sustainable Development Issues of Caribbean SIDS



VISION FOR SUSTAINABLE AGRICULTURE IN THE CARIBBEAN .. THE CHALLENGES

- threat of climate change - projected to bring more variations in weather, enhanced coastal erosion, loss of land and property, dislocation of people, increased risk from storm surges, reduced resilience of coastal ecosystems, saltwater intrusion into freshwater resources and high resource costs to respond to and adapt to these changes
 - high price energy - Most economists expect prices to stay high into the future as demand CONTINUES TO BE GREATER THAN SUPPLY.
 - high food prices - High food prices are being linked to increased demand for food from emerging countries, rising investment in grain-consuming biofuels, weather (e.g., drought in Australia, the world's second largest wheat exporter).
 - population issues - 70 percent of the population in the region lives in coastal areas; growing urban population could lead to ecological crisis across the region; increasing proportion of older people will bring host of socioeconomic issues including increased demand for health care, housing, recreation, transportation and other geriatric services and programs, with inherent implications for funding.
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REQUIREMENTS FOR SUSTAINABLE AGRICULTURE IN THE CARIBBEAN SIDS

- The vulnerability of these islands to natural disasters and the likely impacts of future increases in these disasters as a result of climate change requires that the agriculture be based primarily on crops that are resilient to changing climatic conditions. The most resilient crops now produced in these islands are sugarcane, coconuts, and other tree crops. The least resilient of the crops now cultivated are bananas.
 - Small islands need their agriculture to be sustainable in order to promote sustainable development because the agriculture sector and the associated land use practices will dictate the availability of water, and the environmental quality of the coastal zone, which is critical to tourism as well as providing food to a huge section of the population. Agriculture in the islands has to be much more environmentally sensitive than in Suriname, Guyana and Belize, because there is so little ecological buffer ..very fragile ecosystems.
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VISION OF THE NEW CARIBBEAN AGRICULTURE

- The vision for sustainable development driven by the agricultural sector therefore has three main prongs
 - The First prong is based on the use of technologies which can convert sustainable produced biomass feedstock into products for exports as well as to replace imports. The products of this new agriculture would be
 - Fuels for domestic use as well as exports – ethanol, bio-diesel, bio-oil and pellets
 - Animal feed material to reduce imports of meats and feeds
 - Essential oils
 - The Second prong is the linking the region most important economic activity Tourism with agriculture through the production of agricultural products for the Tourism Industry . The products would include
 - Spices and herbs
 - Vegetables
 - Juices
 - Flowers
 - The Third prong is the provision of environmental services. These would include
 - Carbon Sequestration
 - Biodiversity for the Tourism industry
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PUTTING THE NEW AGRICULTURE IN REGIONAL CONTEXT

- In 2004 region imported more than 160 million barrels of petroleum to meet energy needs.. At current prices that amount will cost more than US\$22 billion representing more than 25 percent of GDP in 2006. Major petroleum products imported diesel and gasoline
 - In 2006, Caribbean food import bill in excess of \$ 3 billion;
 - Rapid rise in food prices - a tonne of powdered milk cost \$1,500, eight years ago when a barrel of crude oil was around \$30; today, with oil over \$140 a barrel, a tonne of powdered milk cost \$4,500.
 - The FAO reports that food prices between March 2007 and March 2008 jumped 130 percent for wheat, 74 percent for rice, 87 percent for soy beans, and 53 percent for corn.
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GDP Caribbean Countries 2006

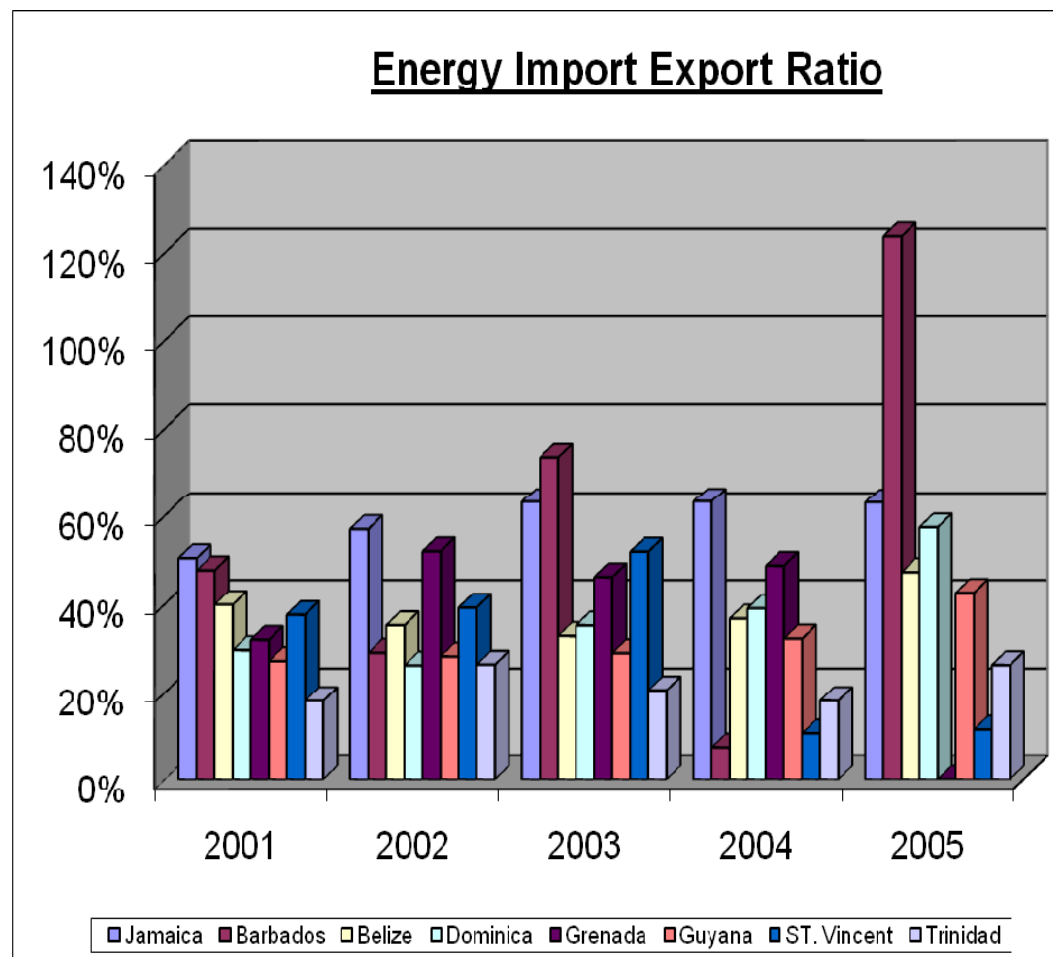
Country	GDP (current US\$)	GDP Growth (%)
Antigua & Barbuda	961.9 million	8.0
Barbados	5.53 billion	4.0
Belize	1.2 billion	4.0
Dominica	299.8 million	4.1
Dominican Republic	30.6 billion	10.7
Grenada	519.3 million	6.5
Guyana	896.2 million	4.8
Haiti	5.0 billion	2.3
Jamaica	10.5 billion	2.7
St. Kitts & Nevis	486.7 million	4.6
St. Lucia	906.0 million	4.9
St. Vincent & The Grenadines	465.9 million	4.1
Suriname	1.6 billion	5.8
Trinidad & Tobago	19.9 billion	12.5
Total	78.87 billion	

The World Bank (2006). *Key Development Data & Statistics – Country Profiles*.

<http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20535285~menuPK:1192694~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html>

The World Factbook, CIA: <https://www.cia.gov/library/publications/the-world-factbook/print/bb.html>

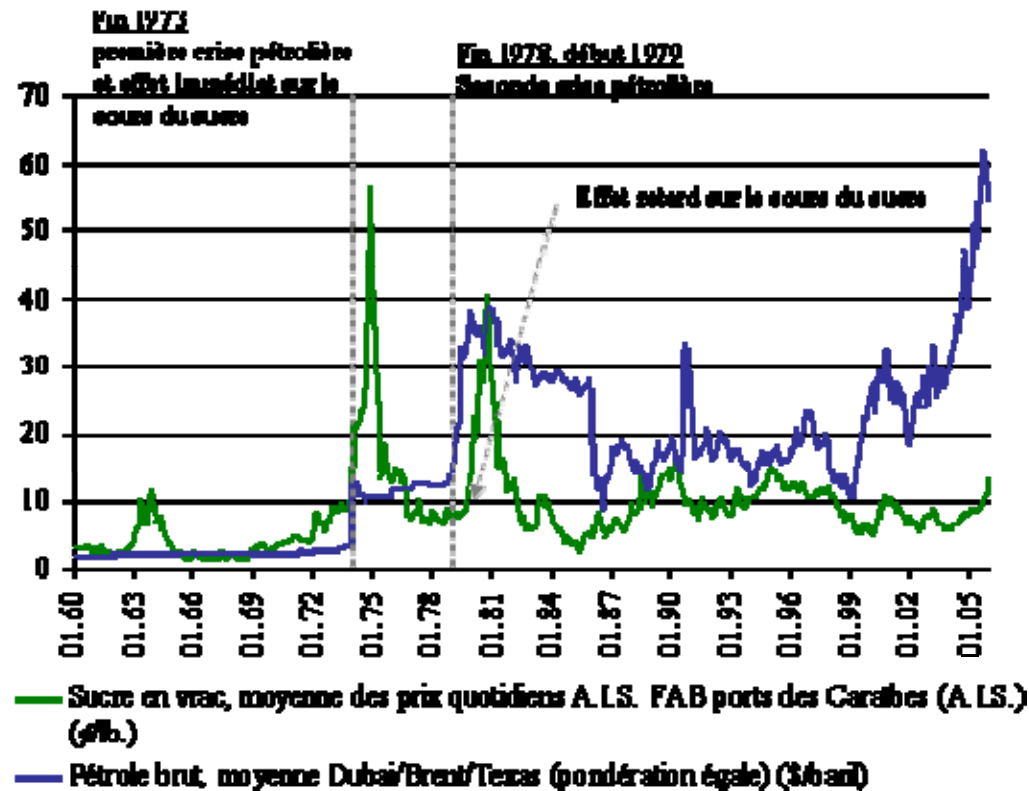
Energy Imports/Exports Earnings



THE Caribbean's NEW AGRICULTURE

- Positioned to take advantage of the EU market **that the region has fought so hard to get**. The traditional exports to the EU are sugar and bananas. Both of which are problematic
 - There is a large biofuels market developing in the EU due to the EU energy policy to reduce GHG emissions, and the EU is now trying to do this with their agriculture, producing annual crops like soy bean, and rape. But the island states that are growing sugar cane, for example, are in a much better position to produce biofuels than the Europeans, because they are in climatic conditions that make a wider variety of crops available for year-round continuous production of biomass.
 - Biofuels seems to be the better strategic choice because the feedstock are more resilient, for example, sugarcane, which recovers within weeks after being subjected to a hurricane, fires or floods. Bananas on the other hand, takes closer to a year, as they have to be replanted.
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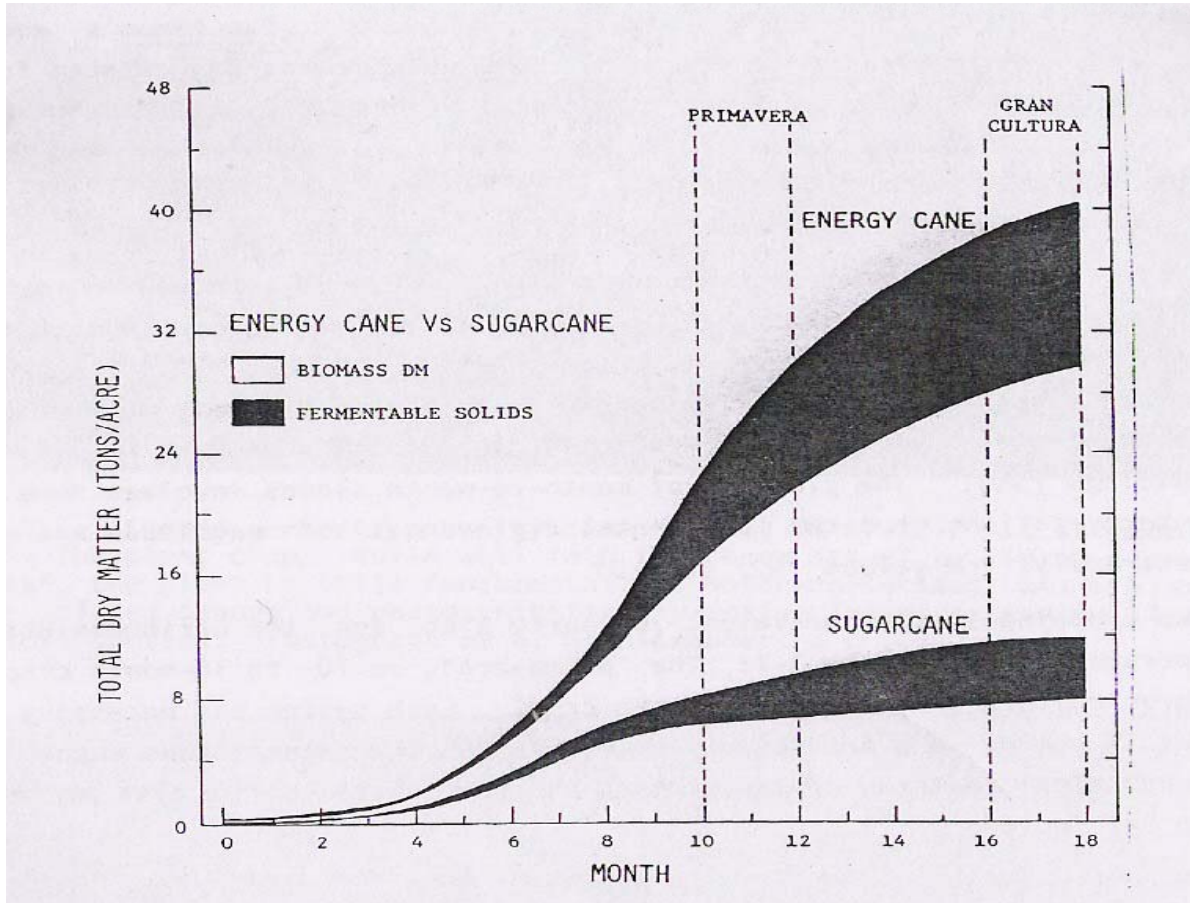
Sugar prices versus Oil prices 1960 – 2005



Source : Secrétariat de la CNUCED

Value of 2005 sugarcane crop as a mix of sugar, ethanol and electricity .

SUGAR & ELECTRICITY (US\$ million)			SUGAR, ETHANOL & ELEC (US\$ million)		
		Crude oil @ 70 US\$/barrel		Crude oil @ 70 US\$/barrel	Crude oil @ 100 US\$/barrel
electricity	Electricity	1,526	Electricity	1,526	2,180
Sugar	Sugar	824	Sugar	412	412
Molasses	Molasses	69	Molasses	34	34
TOTAL	TOTAL	2,418	Ethanol	770	1,100
US\$/tc	US\$/tc	63	TOTAL	2742	3726
			US\$/tc	72	98
ETHANOL & ELECTRICITY (US\$ million)					
		Crude oil @ 70 US\$/barrel		Crude oil @ 100 US\$/barrel	
electricity		1,526		2,180	
Ethanol		1,540		2,200	
TOTAL		3,066		4,380	
US\$/tc	80			115	



Wild cane- *Arundo Donex*



The Way Forward

- Preparation of pre-feasibility studies to identify potential industries and constraints and cost benefits.
 - Establishment of Innovative information support facilities – this could include virtual demonstration center of various biofuels industries.
 - Development of financial agreements and power purchase agreements.
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THE WAY FORWARD

- **Formulation and implementation new policies**
 - **Provision of systematic long-term technical assistance to governments**
 - **Development of the policies to catalyze and drive development of biofuels production**
 - **Establishment of research and development of biofuels systems, including the development and/or use of high biomass producing crops such as Arundo Donex, energy cane, oil seeds, and fast growing tree species.**
 - **Identification of available lands and appropriate crops that would provide the maximum sustainable supply of biomass feedstock.**
 - **Development of regional biofuels industry**
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CRITICAL REQUIREMENTS -- CAPACITY STRENGTHENING

- Need capacity strengthening to implement, which means regional, national and local capacities to support the farmers.
 - Much better and more data needed.
 - Need to conduct agro-climatic forecasting.
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CRITICAL INPUTS – FINANCIAL RESOURCES

- How is the region going to get the necessary funding? Where is it, and what is rationale, and how does the region go about it?
 - Development of biofuels industries will allow sugar-producing Caribbean countries to capitalize on opportunities for financial assistance from the European Commission (EC). The EC has established a program to make funding available to countries to help modernize, adjust or diversify their sugar sectors.
 - Multilateral Financial Institution and Donor agencies
 - Private Sector
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POTENTIAL BENEFITS

- Increase in employment and wages in the rural population minimizing dependence on government support . This increases the disposable income of households and more spending results in a number of positive impacts on the rural and national economy.
 - Reduce the quantum of Foreign Exchange that would be needed for providing energy. services...country therefore has more resources to invest in development and environmental protection
 - Reduced dependence on remittances and borrowing to finance development.
 - Development of a new generation of farmers using new systems and technologies.
 - Reducing the environmental degradation and economic vulnerability of the population.
 - Helping with GHG emission reduction under the UNFCCC
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YES WE CAN

THANK YOU
