

COUNTRY PROJECT



Presentations



Jamaica

**Integrated Assessment of Trade-Related Policies in the Agriculture
Sector and Biological Diversity**

Geneva, 18-20 March 2009

Focus of the Assessment



This was an **IA study** of the **sugar industry** in **Jamaica**.

Specific trade policy: the move from EU preferences to the Economic Partnership Agreement.

Sector: the sugar industry

Locations: The industry occupies 53,294ha (of which 46,000ha actually producing, all for quota) = 30% of agricultural land in Jamaica; 41% of permanent crop land.

There was also a case study of Frome, the largest of the 5 public (SCJ) estates (6,444 ha).

There were two elements of this study; **ex post** (analysis of the current position) and **ex ante** (correct prediction of failure of ethanol plan)

METHODOLOGY

- The research involved an extensive literature review - there have been many studies of the sugar industry, but many have been limited or partisan, so it was important to extract the relevant information.
- Key sources included economic, political, social and historical assessments, environment, trade and energy data, a case study, interviews and a workshop with stakeholder. There has never been such a broad-ranging assessment of the industry.
- Three broad scenarios were developed to describe the ways forward for the industry as from 31st January 2009.
- A set of 78 indicators (economic, social, environmental, governance) was developed to track developments throughout 2009.

Background



- Jamaica was the world's largest producer in the 17th - early 19th centuries.
- Today, Jamaica's share of world production is just 0.1%, the tonnage of sugar slumped from 514,450 tonnes in 1965 to 124,206 in 2005, the contribution to export earnings has fallen from 49% in 1952 to 1.8% in 2006, the contribution to GDP has fallen from 9% in 1953 to 0.8% in 2006.
- It had become uncompetitive, in part because it was protected from competition by **EU trade preferences**, so is now profoundly threatened by the phasing-out of trade preferences.

Crux issue: employment



- The industry employs 38,000 people, in two groups.
- The first group is 7 large estates, 5 public and 2 private, with 6,000 employees and 60% of the land under cane. The public estates are very dilapidated, with obsolete machinery dating back to the 1960s.
- The second group consists of 9,600 cane farmers, 60% of whom have less than 2 ha of cane, with 40% in larger units up to 300 ha, plus their labourers.

Environmental impacts

- Sugarcane has caused > loss of biodiversity than other crops due to loss of wetland for plantations, intensive use of water for irrigation (1,500-3,000 litres of water to produce 1 kg sugar), agrochemicals and wastewater.
- The most rapid loss is incurred when land is converted for agricultural production. The main expansion of sugar in Jamaica was in the 17th and 18th centuries.
- The impacts now are mainly due to wastewater (the industry has old plants with higher economic and environmental costs). Effluent includes fertilizers, pesticides, ripeners, heavy metals, oil, grease, cleaning agents, vinasse; surges kill fish, crustaceans, coral.

Biodiversity



- Jamaica is still rated fifth in the islands of the world in terms of endemic plants; there are at least 3,304 species of vascular plants in Jamaica, of which 923 (27.9%) are endemic.
- There is also a high level of endemism for many species of animals including snails, terrestrial grapsid crabs, amphibians, reptiles, and land birds.
- Many are now vulnerable or endangered.

Species	Total	Endemic	Vulnerable	Endangered	Critical
Fauna	1,496	730	17	8	6
Flora	4,015	1,021		462	

- Some part of this (especially loss of wetland and mangroves) is related to the sugar industry.

The loss of the reefs



- In the late 1970s Jamaica's reefs had live coral cover averaging 52% at 10m depth.
- In 2005, average live coral cover ranged from 34% to 0%. So most of Jamaica's reefs are now unhealthy or dead.
- This is multi-hit; the main factors are overfishing, loading with nutrients and silt, warmer and more acidic seas.
- Jamaica's beaches depend on the reefs, the tourism industry depends on the beaches; tourism generates >US\$1.2bn pa.
- The sugar industry contributes to nutrient & silt loading. So a low-value industry with no future is helping to kill a high-value industry with expansion potential.

Current government priorities



1. Unload a loss-making industry. The SCJ is losing J\$1 billion p.a., has accumulated J\$20 billion in financial losses. The industry has survived as a result of trade preferences that are now being withdrawn.

Jamaica has a debt to GDP ratio of 130%, the bauxite/alumina industry is being mothballed, the national airline is effectively bankrupt, the tourist industry is demanding subsidies. It is imperative to stem further financial losses.

2. Prevent civil unrest. The loss of a large number of jobs could result in a rise in the rate of crime, riots. Jamaica has one of the highest homicide rates in the world.

All other considerations are secondary - including environment.

The government's plans: A, B and C



- A: Privatize the 5 public estates, sell to Brazilian firm BioInfinity, who would use the cane for ethanol for both the domestic market and for export to the USA under the CBI.
- B: Errr....
- C: there is no plan B or C.



Now: the plan has failed; Jamaica's sugar industry is dying.

Expected annual revenue loss over €20 million between 2007 and 2009, falling from €67.6 million to €43.3 million.

Potential loss of 6-38,000 jobs (our estimate ~ 10,000).

There are 3 scenarios for the industry from 31/01/2009:

S1 (the government plan)

- Government mandates E10, creating demand for ethanol. This requires ~16,000/46,000ha of cane to be switched into ethanol production + 13,000 additional ha of cane. Output would need to double (150,000 to 300,000 tonnes), productivity increase by 35% (5.92 to 8.0 tonnes/ha), production costs fall by 30%, all over three years. In the interim, wet ethanol would be imported from Brazil. The total cost would be €555.7 million over 2006 to 2015.
- Environmental impact: depends on quality of plant.
- **The real plan:** the US has a tariff of US\$0.54/gallon on ethanol from Brazil. Ethanol from Jamaica can enter the US at a zero tariff under the CBI system, up to 7% of US demand. So Brazil will supply wet ethanol to Jamaica blend it, dewater it, then export anhydrous ethanol to the US.
- **So this plan depends on 2 US policies; an extension for the CBI, and high tariffs on Brazilian ethanol.**

S2: the plan fails



- Public estates close; private could be viable (produce rum). The 13,000 hectares of former cane land would remain 'idle'; much of the 46,000ha would no longer be planted with cane. Land would become available for other forms of land use (agriculture, development, forestry, tourism etc).
- Closure is likely to give a prompt improvement in inland streams and coastal water quality, but long term...
- Tourism developers want land by sea, rather than inland. So much of the land might be sold for housing development, or converted into small farms, or squatted. Squatter communities are associated with a range of social and environmental problems (particularly with regard to sewage and waste disposal).

S3: Integrated, high-value land use

- Intensive, high-value agriculture (yam, potatoes, cassava, dasheen, breadfruit and other complex carbohydrates, high-value plant extracts such as oleoresins and flavonoids for export and production for tourism.
- Forestry
- New housing developments, light industrial plant, green spaces.
- Conservation
- Recreational, eco-tourism, heritage, health and retirement tourism.
- 3rd generation biofuels

Nutraceuticals



- The market for nutraceuticals and functional foods valued at US\$24.2bn in 2002.
- Higher costs of production not a serious impediment, as ingredient cost in nutraceuticals can be <1% of final consumer price. India can produce ginger, at 1/7th of Jamaican cost, but little impact on final price.
- Customers require oleoresins or other processed fractions, standardized and refined before export, so production and extraction stages would be based in Jamaica, capturing value-added.
- Examples: flavonoids from ginger, turmeric.

UK announces world's largest algal biofuel project

Thursday October 23 2008

- The UK wants algal biofuels to make a significant contribution to transport by 2020, and has made an initial investment of £26m to allow scientists to develop better strains. Transport accounts for 25% of UK's carbon emissions, so carbon-neutral fuels are crucial to the government target of reducing emissions by 80% by 2050.
- At present, it is possible to make algae with a high oil content, or algae that grows quickly. The goal is to combine these qualities. Research will also develop the optimal designs for culture and production. Plants will then be scaled up. Most of the UK's investment will be located in countries with year-round sunshine to maximize production.

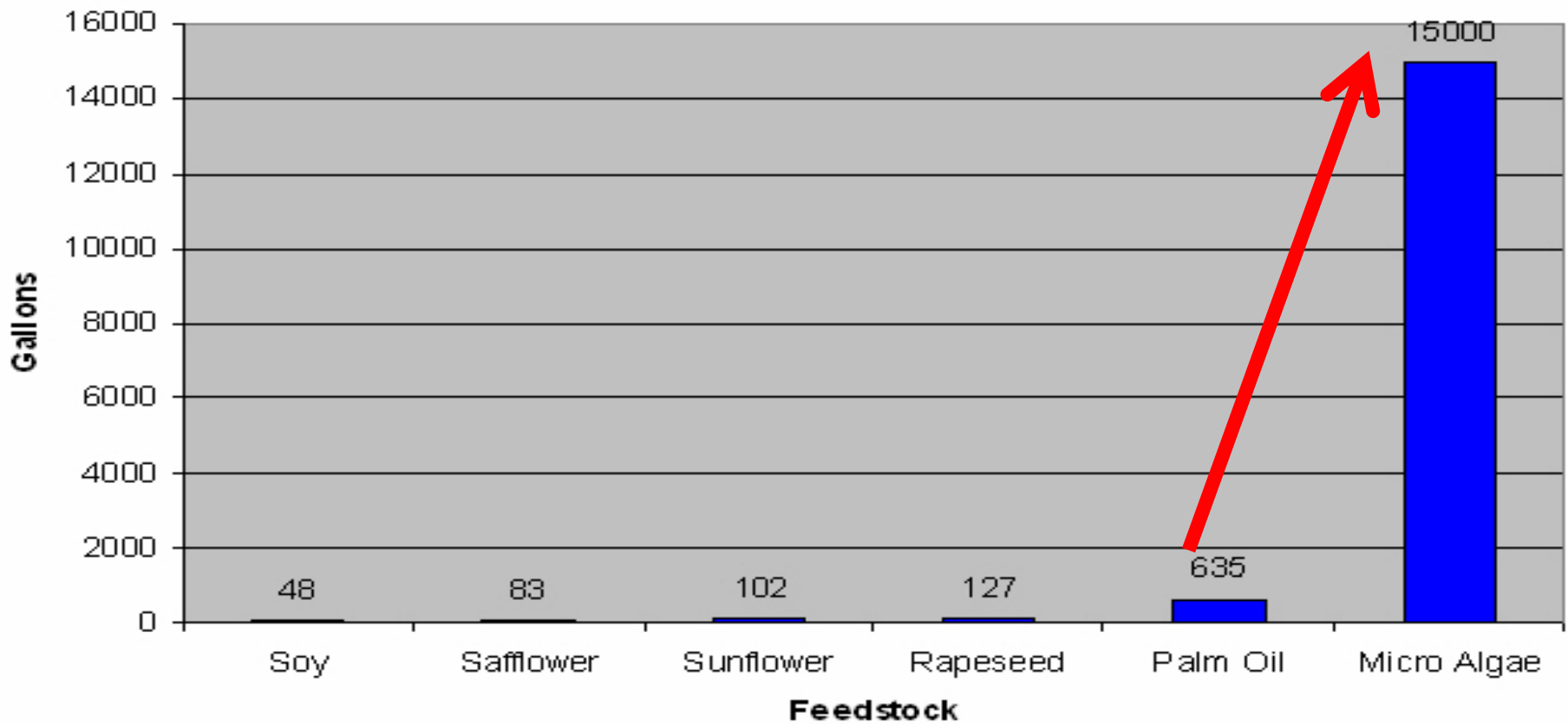
Microalgae can double their mass several times per day, produce 15-30 times more oil/acre than oil plants. Inputs: sunlight, CO² and nutrients (from e.g. sewage). Absorb atmospheric CO² while growing (although released again when fuel is burnt).



Production is continuous; mature algae skimmed every day (unlike oil plants). Oil is high in triglycerides, can be mixed with alcohol (e.g. ethanol) to produce biodiesel and glycerol (transesterification).

Algal biodiesel

Oil Yield (per acre per year)



The next stage?

Thursday July 31 2008

- Sapphire Energy uses algae to produce 'green crude', which can be refined into high-octane gasoline. This is compatible with the current infrastructure of refineries, filling stations and cars, and does not have contaminants such as sulphur, nitrogen and benzene. The process uses non-arable land and non-potable water and delivers 10-100 times more energy per acre than cropland biofuels. The company believes the cost will be price-competitive with fossil fuels in 3-5 years.
- Sapphire is believed to be using genetically-modified cyanobacteria to synthesise long-chain hydrocarbons within their cells. They can grow quickly (some can double their mass in just an hour), operate in high temperatures and some strains can even fix nitrogen from the air to make their own fertilisers. Sapphire claim they can engineer all of these desired properties into algae.
- The next stage depends on developing the engineering and cultivation systems to go to commercial scale.

Outcome of stakeholder discussions



The decisions to date have been:

- Dominated by vested interests
- Little real consultation
- Taken without consideration for cross-sectoral effects (e.g. environment)

BUT

- There is still a strong wish to achieve a viable future
- Sufficient technical capacity

So the problem has been:

- Weak governance, lack of resolve, denial

But it's worse than that.....



- The E10 plan was proposed at the beginning of 2008. It was supposed to save Jamaica US\$50m/a. Oil continued to rise in price, making that decision look even better... right up to July.
- Then oil rapidly lost nearly 80% of its value. It was trading at less than \$34/barrel in December 2008.
- In February 2009 US gasoline cost 30c/litre...and ethanol cost 44c/litre.
- Jamaica's planned market of 636m litres of ethanol will now cost J\$782m MORE in f/x than gasoline.
- The government's commitment to make E10 cheaper will now require subsidies of J\$330m.

Action plan: focus for Phase 2



The sugar industry is dying. Most of the people involved do now accept that the future is not going to be like the past. But no clear plan has yet emerged. The IA project is therefore extraordinarily timely.

In phase 2, we will try to engage the stakeholders in a search for viable solutions; Jamaica urgently needs an economically viable, politically acceptable, socially tolerable and environmentally not-too-damaging solution.

This is a change of emphasis in the use of IA:

- > From **analysis of the problem** to **development of solutions**.
- > From analysis focused solely on **technical factors** to analysis that gives equal weight to **political issues**.

ACTION PLAN



- As we move into phase 2, we need to (a) apply the IA approach to other pressing decisions and (b) train as many people as possible, especially government decision-makers.
- We will develop training programs over the next 2 months, with a view to implementation over the summer.
- We will work with Ministries in order to address these issues.
- In a parallel program, we will be working on the basis for environmental planning and regulation in Jamaica.

This is not an information problem



Proposal 1: key recommendations:

- 1) Break up the estates into smaller holdings, allocate the land to the workers.
- 2) Diversify out of cane into other tropical products.

West Indies Royal Commission, 1897

Proposal 2: key recommendations:

- 1) Break up the estates into smaller holdings, allocate the land to the workers.
- 2) Diversify out of cane into other tropical products and energy.

Jamaica Observer, March 1st 2009

This exposes a weakness in the manual; the underlying assumption that the main problem is the lack of information. There are gaps in the data, but the real problem is weak governance; policy incoherence and dominance of the decision-making process by vested interests.

Most important achievement?



- The most comprehensive analysis of the industry to date.
- The strength of the approach can be seen in the fact that the ISD team correctly anticipated that the divestment of the Sugar Corporation to BioInfinity would fail; this was not expected by the Government or by any of the industry stakeholders. The wide horizon scan undertaken as part of the IA had identified that the sale depended on two external factors, neither of which were under local control.
- We also correctly identified that opting for a 1st generation biofuel would be a mistake. This too was not expected by any of the stakeholders.
- The costly failure of the divestment plan highlights the value of IA.

Most important constraint?



- Weak governance, 110 years of political failure to arrive at a solution, policy incoherence.
- An entrenched, powerful elite that dominates the decision-making process.
- EC (was) locked in to failed models of development.
- The real challenge - can we use IA to map out a better future, and help Jamaica to overcome these obstacles....?

Thank you !

