

Weighing the Tradeoff: Food vs Fuel

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Policy Objectives of Philippine Biofuels Program (RA 9367)

- reduce dependence on imported oil
- mitigate toxic and greenhouse gas emissions
- increase rural employment and incomes

One caveat with three elements –

“without any detriment to the natural ecosystem, biodiversity and food reserves.”

Policy Debate

- **incompatibility among objectives**
 - Biomass for heat and electricity (stationary)*
less costly and larger CO₂ emissions
benefits
 - Biomass for transport fuel*
direct employment 2-10 x more vs electricity
25-50 x vs heat generation
EU Modelling Studies; Berndes and Hansson
2007
- **Biofuel and food production both land based and compete for land and investments**

Philippine Perspective on the Three “Dividends” from Biofuels

- **The most relevant and exciting is the third dividend on increasing rural employment and incomes**

“the opportunity for development to fully utilize idle and underemployed human and natural resources”

(Canuto, World Bank)

Mitigating Carbon Emissions and Climate Change

- Per capita CO₂ emissions (2004)

US	20.40 mt.
Norway	19.01 mt.
Australia	16.30 mt.
Malaysia	7.05 mt.
Thailand	4.28 mt.
China	3.84 mt.
Indonesia	1.69 mt.
Philippines	0.97 mt.

Source: Wikipedia. US DOE, CDIAC

Mitigating Carbon Emissions and Climate Change

RP Land Use and Forestry Sector	-107 million mt CO ₂
Total RP net GHG emissions all sources	+104 million

Source: PA 2020 Forestry Cluster

Mitigating CO₂ emissions and climate change is great but the Philippines can not do much about it!

Reducing Dependence on Imported Fuel

- DOE energy self sufficiency target of 60%
- Energy savings from efficiency and conservation 2.9 million tons of oil equivalent (MTOE)
- Energy savings from biofuels for transport only 0.3 MTOE
- Maximum 2% diesel blend; maximum 10% alcohol gasoline

Source: DOE Philippine Energy Plan

Little impact of biofuels for transport on energy independence

Increasing Rural Employment and Raising Incomes

- **Poverty elimination is the paramount national development goal**
- **Philippine poverty is largely a rural phenomenon**
- **Biggest dividends most likely in modernizing agriculture sector with largest GVAs and employment (e.g. rice, sugarcane and coconut)**

Policy Debate to be More Focused and Meaningful Should be Rephrased:

How can biofuels create livelihoods, raise incomes with which poor rural people can buy food, clothing, shelter, medicines, and other life necessities?

To be more precise: which raw materials, where, by whom, why and how?

Bioethanol and Sugarcane

- **P58 billion GVA; 391,700 hectares; 500,000 workers; sugar consumption of 1.9 million tons**
- **Sugar industry faces severe competition to survive after 2010; 14 US cents per pound sugar vs 11 cents world market price**
- **Bioethanol can provide lift**
 - **Profitably convert excess sugar to ethanol**
 - **Increase capacity utilization of sugar mills with sweet sorghum**
 - **Increase world sugar prices as sugar from Brazil and Europe are diverted to ethanol**

Bioethanol from Sweet Sorghum, Sweet Potato and Cassava

- **Philippine bred varieties and production technologies available for respectable yields**
- **These crops will tend to compete with corn and other arable row crops**
- **But we still have sufficient underutilized arable lands; cropping index of 1.4 only**
- **The land competition can be managed/rationalized**
- **The real challenge is organizing the supply chains, linking farmers to processing plants, and offering attractive farm gate prices to encourage farmers to plant**

Biodiesel from Coconut and Oil Palm

- **3.12 million hectares; 3.4 million coconut farmers; US\$630 million exports; 6% of GVA in agriculture**
- **Coconut oil more expensive than palm oil**
- **We export coconut oil and replace with cheap imported palm oil from Malaysia and Indonesia for cooking**
- **Need to plant 104,000 ha. oil palm in Mindanao to replace imports by 2020**
- **Clearly, vegetable oil for food takes precedence over vegetable oil as biodiesel**

Biodiesel from Jatropha

- **A new, non-edible oil tree crop**
- **Not competitive with food crops on arable lands**
- **But ecologically suitable on slope lands, of which we potentially have 8 million ha classified as production forests**
- **Need 1.2 million ha. of planted forest and industrial crops plantations by 2020**
- **Must compete for profitability versus fast growing trees, bamboo, rattan, coffee, oil palm, rubber and other tree crops**
- **More R&D needed to establish jatropha's competitiveness**