

Panel Presentation

**Session V: IGES-IGIDR Session on Biofuels
Panel Discussion on Biofuel Policy in India**

**International Symposium on a Sustainable Future 2010
Mumbai, India, 11-13 January 2010**

**Mark Elder, Principal Researcher
Institute for Global Environmental Strategies (IGES)**

12 January 2010

Expected benefits of biofuels:

Energy

- Energy security
- Replace fossil fuels
- Basic energy services

Economy

- Jobs
- Rural development
- Poverty reduction

Environment

- Greenhouse gas reduction
- Air pollution

But can these benefits be achieved?

Many uncertainties and concerns about whether expected benefits of biofuels can be realized:



Energy

- Energy balance uncertain. Depends on specific conditions.
- Resource availability constrains potential



Economy

- Potential food-fuel conflict: food shortages & high prices
- Biofuels still need government subsidies & support



Environment

- Greenhouse gas reduction potential depends on specific local conditions



Resource Availability

- Water: severe shortage
- Land: severe shortage
- Labor: may not be available at the right place, time, wage or skill

India's National Policy on Biofuels explicitly addresses some of these uncertainties.

Especially focuses on minimising the potential for food-fuel conflict

1. Use of non-food crops (e.g. jatropha, etc.)
2. Use wastelands (e.g. with jatropha, etc.)
3. Use “2nd generation” or advanced feedstocks

However, there are several difficulties with these assumptions

Use “nonfood” crops like jatropha

- Jatropha grows on wasteland with little water
 - But: low yield & high cost.
- Using irrigation water & fertilizer
 - Reduces the energy balance
 - Reduces greenhouse gas benefits
 - Competes with food and other crops
- Energy & food crops will compete for scarce resources, water, fertiliser
- Farmers have more economic security with multiuse crops
- Promotion policies could create unintended incentives to plant energy crops on higher quality land.



Jatropha replantation (1 yr),
in Uttaranchal, India, Dec.
2008

Use “unused wastelands,” “unproductive forest land”

- Lands may be actually used, especially by poor people, e.g. for livestock
- Land may be providing ecosystem services, not, “wasted”
- Unclear legal definition of ‘wasteland’ or land tenure systems; poor people may lose their ability to use the land.
- If it could be productive, why not produce a food crop?

Use “Second generation” (algae, cellulosic, etc.)

- Subject to same issues as other agricultural crops:
 - Land use change
 - Water use
 - Concerns about ecosystem services (e.g some “agricultural waste” is needed to replace soil nutrients), water availability
- Unknown environmental impacts
- High costs
- Still waiting for new technology

Ethanol

❖ [The new biofuel policy document focuses on biodiesel, but currently most biofuel in India is ethanol from sugarcane – 5% blend]

❖ (Is sugar a “food” crop?)



- Issues

- Sugarcane already has other profitable uses (e.g. alcohol)
- Very water intensive; India has a severe water shortage
- Where will the land come from? (Not wastelands?)
 - May compete with food production or other land uses
- Where will the water come from? Irrigation?
- Water also needed for ethanol refining (and treating waste water)
- Using domestic sugar for biofuel may lead to expensive sugar imports for other uses

Biodiesel

- The main idea is to plant non-food feedstocks, like jatropha & others which need little water, on wastelands
- Problems
 - Needs water & fertilizer to get better yields (reduces energy balance & greenhouse gas reduction potential)
 - Key point: “Wastelands” are typically in remote areas
 - Hard to find labor; fields far from villages => high transport costs
 - Long gestation period – minimum 3 years, low yields
 - Toxicity issues
 - => Overall high costs
 - => Energy balance?



Some specific policy issues

<p>What should be the target? (demand stimulus)</p>	<ul style="list-style-type: none"> • Too high target could cause resource shortages in other sectors, environmental damage, or require imports • Target may not be met if resources not available, or incentives insufficient • Is a biofuel target really necessary?
<p>Which feedstock should be promoted?</p>	<ul style="list-style-type: none"> • New policy encourages exploring various feedstocks. • This is better than previous discussions which focused on which is the best one for the government to promote.
<p>What should be the minimum selling price of oilseeds or minimum purchase price of biofuels?</p>	<ul style="list-style-type: none"> • Policy envisions multistakeholder consultation to decide • May be better than price fixing • But may be difficult to adjust with changes in market conditions; create shortages & surpluses • Why not reduce support for fossil fuels instead?
<p>Should biofuels or their inputs get trade protection (infant industry promotion)</p>	<ul style="list-style-type: none"> • High targets will attract imports (which may not be sustainably produced) • Trade protection => inefficiency & high costs

Could sustainability standards be helpful?

- Initiatives to establish sustainability standards could help resolve questions about biofuels' environmental and social sustainability.
- **Examples** based on multistakeholder initiatives
 - Roundtable on Sustainable Biofuels (**RSB**)
 - Roundtable on Sustainable Palm Oil (**RSPO**)

Limitations:

Difficult for stakeholders to agree on standards.

- RSB's "zero draft" still contains broad agenda

Difficult for producers & consumers to follow, especially in developing countries.

- High transaction costs
- Especially difficult for small farmers
- Standards could be difficult to meet.
- How to encourage consumer participation

Difficult enforcement and monitoring; credibility issues.

- Participation is voluntary
- Monitoring is costly

The big picture

- Overall logic:
 - Biofuels are more expensive than fossil fuels, but government should pay some subsidy to gain benefits of energy security and employment
- Question:
 - Assuming the government is willing to pay a price
 - With the same amount of money, could a different form of renewable energy (e.g. solar or wind) provide more benefits (e.g. energy, employment)?
 - Or could other modes of public transportation be promoted rather than personal automobiles?
- Advantages & disadvantages of biofuels should be compared with other means of achieving policy goals

Recommendations / suggestions - 1

- It is better to have more research, analysis, and pilot testing before committing to a high target that could have significant effects.
 - Assess availability of water, land, fertilizer, even labor
 - Assess concerns about the food-fuel conflict
 - Explore the potential of a wider range of feedstocks
 - Develop better crop varieties and cultivation methods
- It is good to research 2nd generation biofuels, but need to analyze potential economic, social & environmental impacts.
- Are biofuels superior and more cost effective compared to other forms of renewable energy? Or other ways to provide transportation services?

Recommendations / suggestions - 2

- Biofuels may have more potential for small scale development or rural electrification rather than large scale.
- What about waste to biofuels?
 - India has a huge waste problem
 - Application in urban areas
 - Example: waste cooking oil (homes, restaurants)
- Reduce or eliminate fossil fuel subsidies.
- Minimum support and minimum selling price may be necessary to promote the industry, but may be difficult to adapt to changing market conditions.
- Multipurpose feedstocks such as sweet sorghum could be considered rather than non-food feedstocks. Jatropha is not a miracle plant.
- Consider sustainability standards to reduce potential negative effects.
- There is still no free lunch.

Acknowledgments

The research for this presentation was conducted as part of the research project "Biofuel use strategies for sustainable development" supported by the Global Environment Research Fund (Hc-082) of the Ministry of Environment, Japan. Financial support for this session was also provided by this project.