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Environmental governance and the bioenergy supply chain

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structure

- Overall aim; to understand the social & env repercussions of different biomass energy systems (context specific?)
- General point of carbon optimisation vs profit optimisation
- Different views, values, preferences by states, private sector, NGOs.
- Case study on biofuels

Efficiency = Benefit / Cost

Value for (fixed amount of) Money of a policy intervention (to develop biomass energy systems):

- $B = \Sigma \text{CO}_2$ not emitted;
- $C = \Sigma$ money spent

Carbon Efficiency of a biomass energy system:

- $B = \Sigma \text{CO}_2$ in fossil fuel that's displaced;
- $C = \Sigma \text{CO}_2$ emitted in production, transport...

Economic Efficiency of Ltd operating this system:

- $B =$ price of fuel or energy service sold
- $C =$ cost of production of the fuel/service

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potential perverse incentives

Many reasons why economic B/C may diverge from carbon B/C, e.g.

- Low/non carbon costs (e.g. permits – policy failure)
- Carbon costs not internalised (e.g. loss of carbon from soil – market failure)
- Non-carbon costs avoided (e.g. theft – governance/enforcement failure)
- Different accounting frameworks (esp. spatial and temporal framing)

Contrasts 1; NGOs vs developers

Developers' views:

- We are good guys, benefitting society
- Surely this is green!
- Antis are just nimby
- Bigger is better

NGO concerns

- Mainly shareholder benefit\$\$\$\$
- Look at the wider picture/local context
- Developers R greedy
- Small is beautiful

Contrasts 2: state vs state

More Soc dem:

- Long term strategy 'led' by state
- Big & continuous state intervention
- High targets
- Small business bias
- more focus on env & soc synergies

More Laissez faire

- Create a market & let it do the work
- Funds 'kick-starting' & corn seed.
- No/lower targets
- Large business bias
- Develop 'export industries'

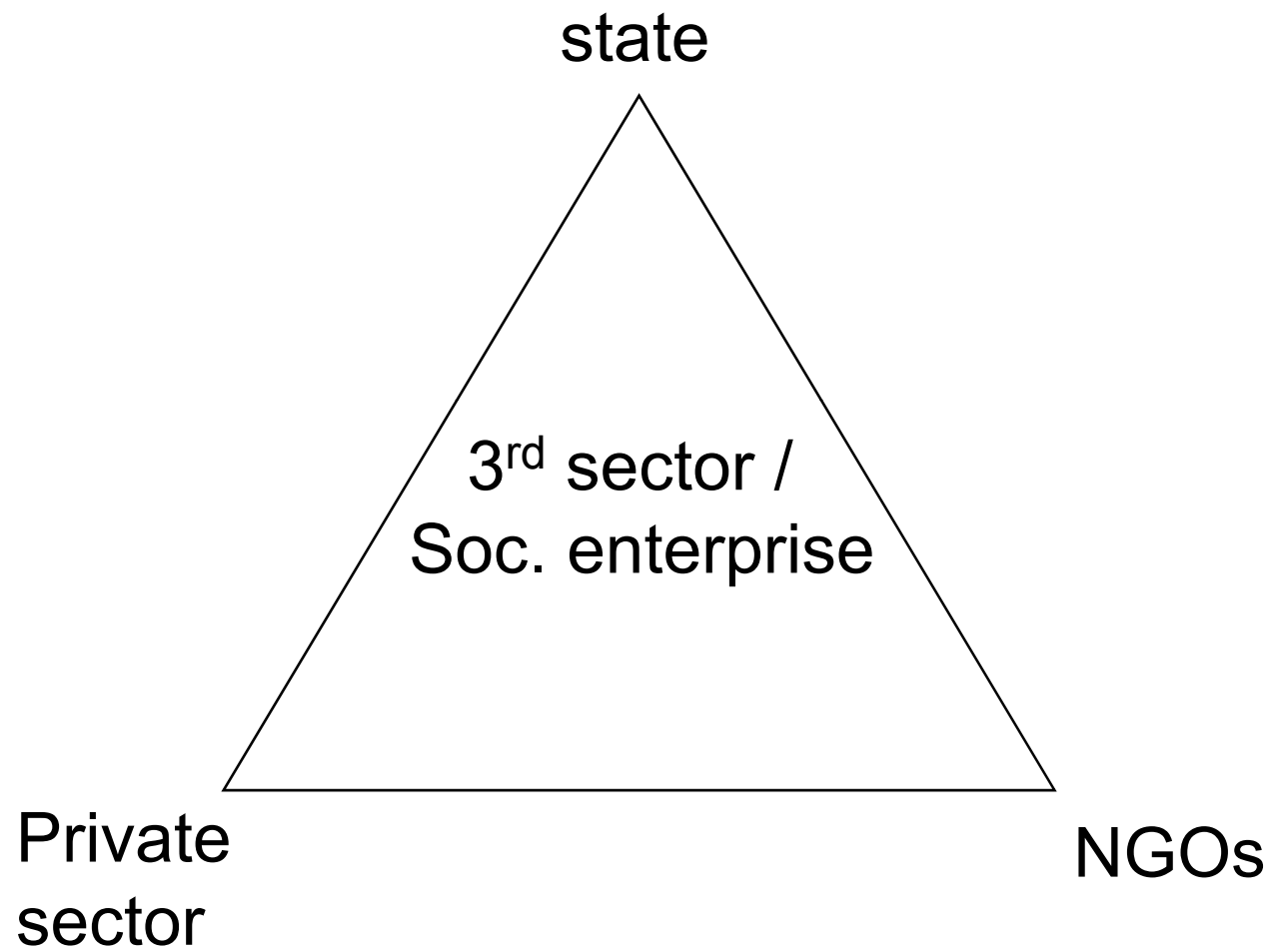
Contrasts 3; state vs private

State action:

- Setting RE targets
- Likes new tech
- Likes win-win
- Defining RE
- Resource mapping (local, national)

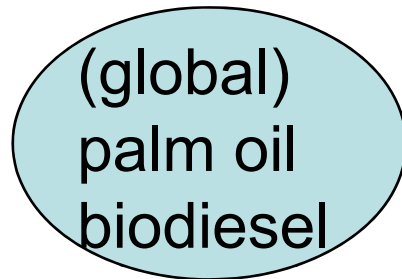
Private sector initiatives

- Waiting for incentives
- Prefers proven tech
- Prefers simplicity
- Mixing = security of supply
- Buy cheapest



inputs

fertiliser



Capitalist production develops technology, and the combining together of various processes into a social whole, only by sapping the original sources of all wealth - the soil and the labourer (Marx)

outputs

Biodiesel

Fodder?

Woody biomass?

Outcomes:

Biodiversity loss

Loss of livelihoods & cultural survival of indigenous peoples

Soil erosion

Loss of water quality

Change of local climatic conditions

GHG emissions??

Income to shareholders

inputs

Slurry

Grass

Paper

Crab shells



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outputs

Domestic heat

Electricity for grid

Fertiliser for land

Outcomes:

Lower heating bills

Income for farmers, income for AD company

Drink water quality improvement

Local & sustainable waste disposal

Cost avoidance for local fish processing plant

Reduced GHG emissions

Checklist of assumptions (3W)

- Big is better than small; Where/when/why?
- Import is better than local; where/when/why?
- Monoculture is ok; where/when/why?
- Best use of land is biomass...?
- Best use of biomass is energy ...?
- New tech is better than intermediate tech...?
- Diversity of supply is more secure ...?
- Certification is better than developing a close relationship with your supplier?
- Switching fuel, regardless of usage is ok....?

Case study; biofuels

Arguments in favour:

- Security of supply
- Carbon +
- Other env. benefits
- “Rural development”

Argument against:

- Engine problems
- Carbon -
- Other env. problems
- Threat to Biodiversity
- Hunger & Social injustice
- A lead free bullet



BioWILLIE
Premium Biodiesel
American Family Farmers Growing Fuel for a Stronger America



Towards a local
“Coalition
of the Willing”?



Wednesday, Mar. 28, 2007

The Tortilla Effect: Biofuel and Food Prices

By James Graff

The growing market for biofuel has had some unintended consequences for the world's nutritional staples. Tens of thousands of people marched on Mexico City in January to protest the skyrocketing cost of tortillas, a development linked to increased demand for corn for ethanol. A similar ripple effect is moving through Europe. German brewers warn that European Union subsidies, which support the planting of rapeseed for conversion into biodiesel, discourage farmers from planting barley, which could mean higher beer prices.

Or a global coalition of antis?



Hype amongst academics?

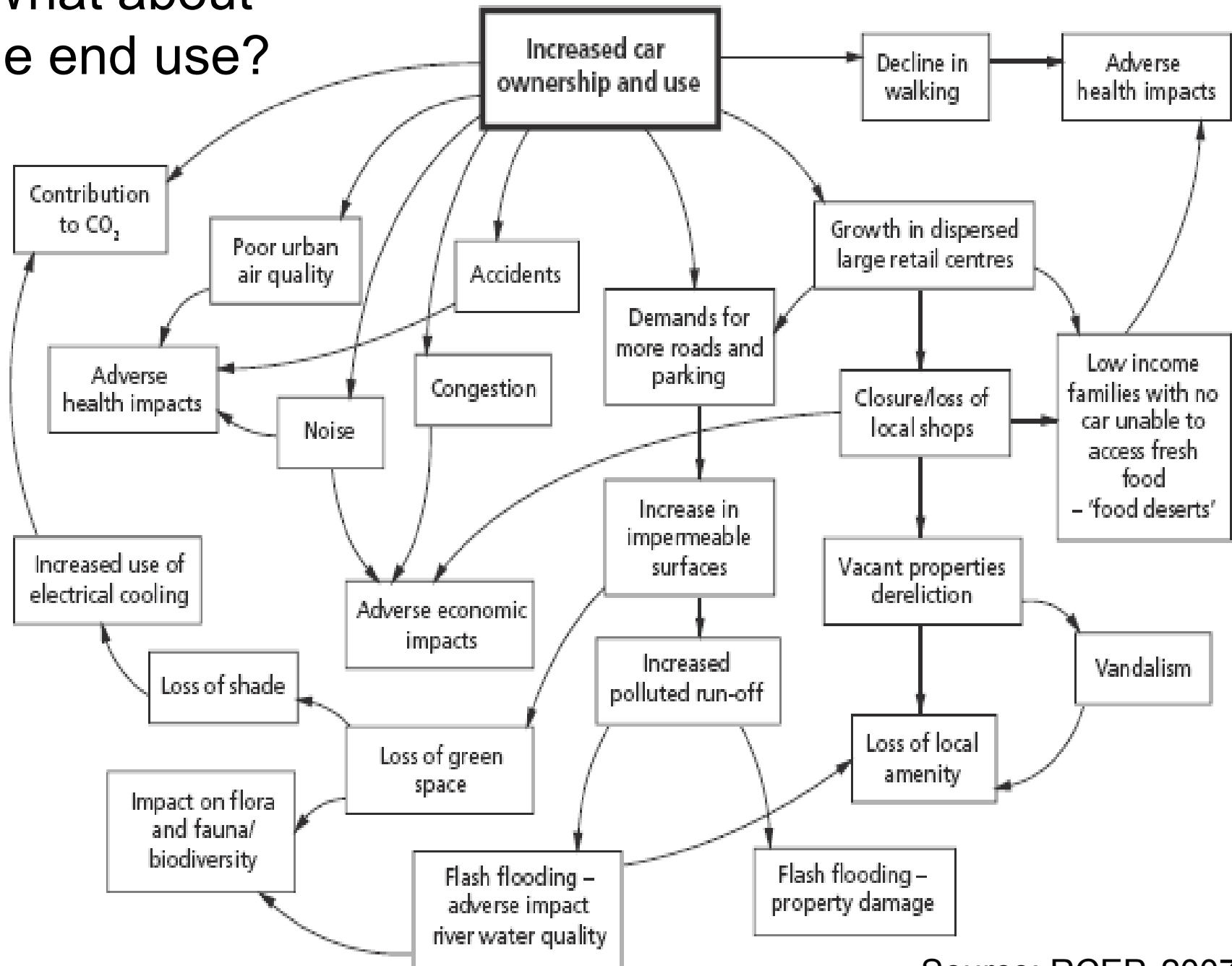
Jathropa's wonderful 'multifunctionality'

Kandpal J. B. Madan M. (1995). *Jatropha curcus* : a renewable source of energy for meeting future energy needs. *Renewable Energy*, Vol 6, No. 2, pp. 159-160

The oil palm's 'life promoting energy'

Sumathi S., Chai S.P.,. Mohamed A.R. (in press) Utilization of oil palm as a source of renewable energy in Malaysia. *Renewable and Sustainable Energy Reviews*.

What about the end use?



Source: RCEP, 2007

When is there a market for biofuels?

When the economics are attractive:

- When they're cheap to produce
- When other fuels are expensive

When governments intervene in the market:

- Compulsory use (Command & Control)
- Price incentives (Market Based Mechanisms)

When the product is otherwise seen as attractive:

- Product seen to represent other values
- Product allows individual expression

Niche markets / supply side

- Processed waste: more plentiful in wealthy societies. More expensive to dispose of in highly regulated societies (has negative value).
- ‘Spare’ biomass from agriculture or forestry (has low/no/negative value)
- Production of biofuel yields multiple products

Niche markets / demand side

- Areas where fossil fuel supply is very expensive or erratic (e.g. parts of rural Africa?)
- Areas where people are willing to pay extra for other values embodied in biofuel (developed countries)

Concluding thoughts

- The most effective way to ‘mainstream’ or scale up bioenergy is through government intervention
- The best way to develop bioenergy systems that have positive social impacts, is through niche marketing of specific & guaranteed products
- The two approaches are very hard to ‘join up’ at the national and international level
- Localised production & consumption is socially ‘safer’ than efforts to certify global supply chains to create a single and standardised commodity