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Biofuels: making tough choices

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The jury is still out on biofuels. But one thing at least is certain: serious trade-offs are involved in the production and use of these biomass-derived alternatives to fossil fuels. This has not been lost on the European Union. The year kicked off with an announcement from the EU environment commissioner that it may be better for the EU to miss its target of reaching 10 per cent biofuel content in road fuels by 2020 than to compromise the environment and human wellbeing. The 'decision tree' outlined here can guide the interdependent processes of deliberation and analysis needed for making tough choices in national biofuels development.

Yes or no to biofuels?

Biofuels are a means to a number of ends. Governments may consider supporting the establishment of a biofuels industry as a way of achieving any combination of four policy goals:

- export development (foreign currency earnings plus related benefits of improved trade balance through reduced energy imports)
- rural development (greater income generation and greater value addition in rural areas; maintenance of agrarian systems)
- energy security (given rising global energy prices and uncertainty of supply)
- climate change mitigation (where life-cycle greenhouse gas emissions are less than those from fossil fuels).

The 'decision tree' overleaf can guide the process of deciding how best to use biofuels to achieve a chosen set of policy goals, while avoiding threats to and maximising opportunities for food security, environment, society and economy. There are some difficult trade-offs — and innovative solutions — as the tensions between policy goals illustrate.

Export development vs rural development

Spurred by interest from international buyers and investors, governments may be attracted to large-scale biofuels plantations and processing facilities to maximise efficiency and hence price competitiveness in global markets. On the other hand, governments in countries with agrarian economies are likely to seek ways to ensure that the rural economy captures a greater share of the total value chain, and to include and protect the interests of smaller-scale farmers and processors. The optimum trade-off might involve a range of business models, such as cooperative marketing, partnerships between small and large businesses, and farmer-owned processing facilities (Box 1).

Box 1 Process and profit: value addition in the rural economy

In the United States, the benefit to farmers of a 40 million gallon bioethanol plant is calculated to be about US$1.5 million a year if the facility is owned by an absentee landlord, but rises to US$6-12 million a year if the farmers own it.

Energy security vs climate change mitigation

Biofuels are attractive to governments primarily as a means of diversifying energy budgets and reducing exposure to the risky international oil market. Choices of biofuel crops and processing build most successfully on current practice — for example, maize-based ethanol in the United States and coconut-based biodiesel in Pacific island states. But well-to-wheel environmental benefits differ widely. Sugarcane-based ethanol and second-generation biofuels may achieve impressive reductions in greenhouse gas emissions relative to petrol, but maize-based ethanol still rates poorly, mainly due to the fossil fuel-based inputs involved. Furthermore, the spotlight on climate change and greenhouse gases should not distract from other critical environmental issues (Box 2).

Box 2 Well to wheel: measuring sustainability

Key environmental sustainability metrics for biofuels include life-cycle analysis of water efficiency, energy efficiency, fossil energy ratio, biodiversity impacts related to land use change, and local criteria such as air pollution and soil acidification.

KEY MESSAGES:

- Working out a national biofuels strategy requires both broad-based deliberation and rigorous analysis — which together can be guided by a 'decision tree'.
- Certain risks or threats are 'red lights' for biofuels development — for example, land uses or price trends that compromise food security for poorer producers and consumers.
- Governments and other interest groups need to negotiate difficult, but not intractable, trade-offs in achieving multiple policy goals.

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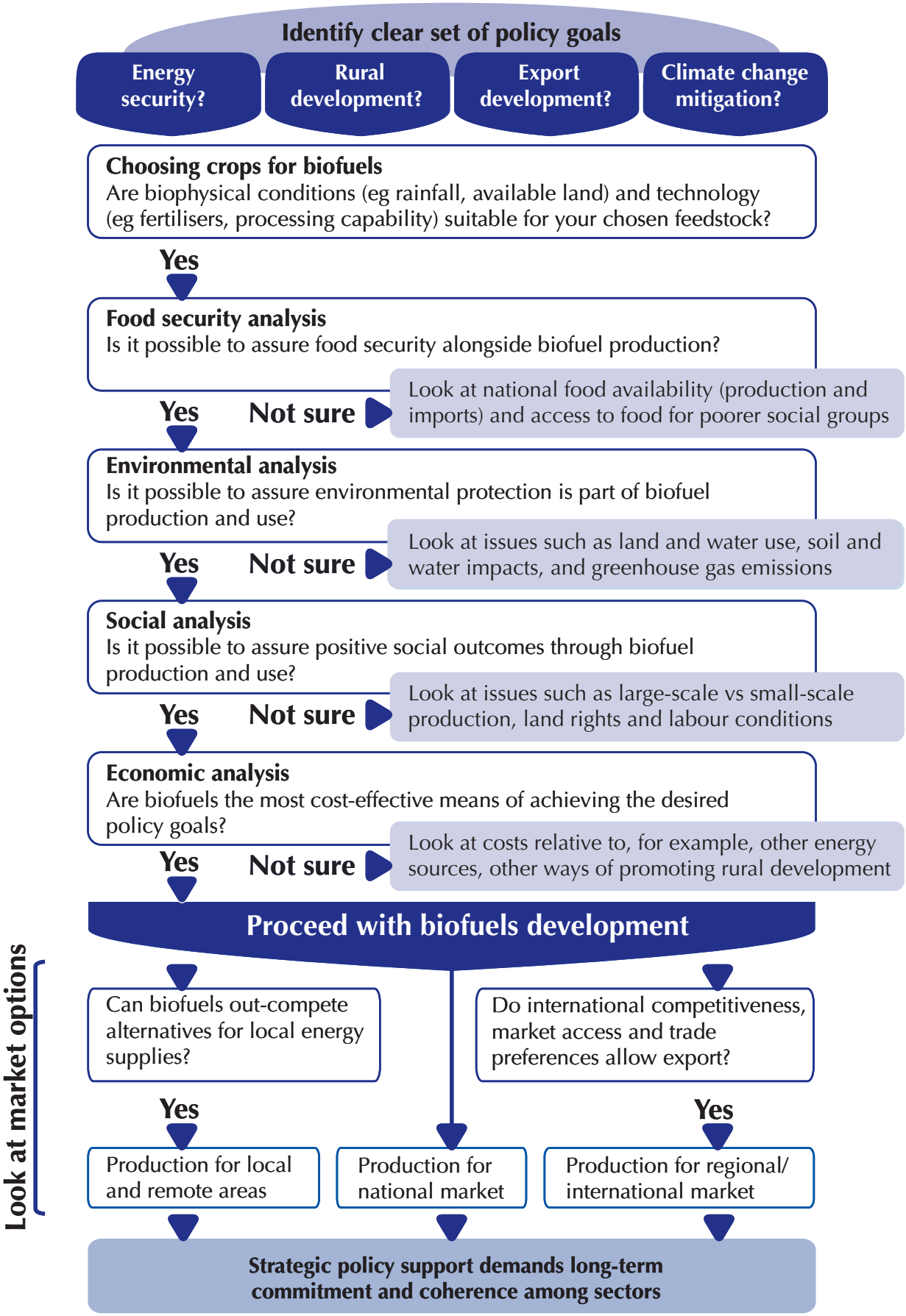
Strategic national choices on biofuel development: a decision tree



Source and more detailed guidance: Dufey, A., Vermeulen, S. and Vorley, W. (2007) *Biofuels: Strategic choices for commodity dependent developing countries*. Common Fund for Commodities, Amsterdam, Netherlands. www.common-fund.org/download/actualiteit/07Biofuels.pdf

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