



Bioenergy policies worldwide: managing risk and promoting opportunities

Jeffrey A. McNeely, Senior Science Advisor to the International Union for Conservation of Nature (IUCN)

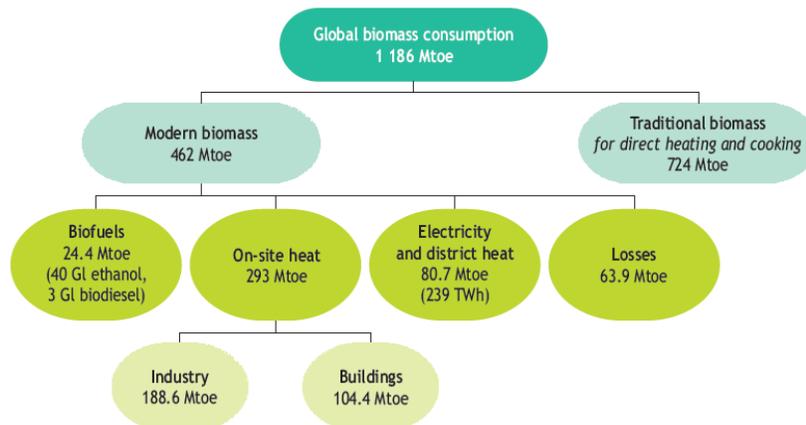
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Introduction

In response to many different policy objectives, including climate change mitigation, energy security, and rural development, more than 50 countries worldwide have put in place targets and/or mandates for bioenergy (Peterson, 2008). However, work by the International Risk Governance Council (IRGC) found that the motivation behind such targets is often incoherent and sometimes contradictory, the targets often are also unrealistic and not based on the reality of the constraints of existing markets, trade and availability of natural resources. Finally, possible unanticipated negative impacts are rarely incorporated into biofuel policies.

According to the OEDC/IEA World Energy Outlook (2008), biomass accounts for approximately 10% of the world primary energy demand. Within that, 3% represents the more than 2.5 billion people who depend on traditional forms of biomass, often for cooking (which carries significant health problems) and 7% if traditional biomass use is excluded (6% for heat, 1% for transport). Within that biofuels accounted for up to 1.5% in 2006, and is predicted to rise to up to 5% in 2030.

Figure 7.1 • Contribution of biomass to world primary energy demand, 2006



Note: Electricity and district heat and industry include combined heat and power.

Source: IEA/OECD, 2008 World Energy Outlook

Incorporating environmental and socio-economic sustainability factors into policies

While the contribution of biofuels may appear small, the related impacts on agricultural prices and the environment can potentially be large. While biomass is potentially a renewable energy source, depending

on how it is grown, the rate of harvesting and how it is used, the negative effects can actually outweigh its benefits, particularly for first generation biofuels.

Some of the negative impacts of biofuels include deforestation and associated biodiversity loss and greenhouse gas emissions, displacement of communities and contribution to food price rises. While the negative impacts are unsurprising when considering impacts of existing unsustainable agricultural models, policy makers have often pushing biofuel policies without due care and attention to measures to reduce the risk and mitigate against these negative effects. The International Risk Governance Council (IRGC) found that, in at least some parts of the world, policies are being decided before sound scientific knowledge about the risks has been considered, or even generated.

In response to these unintended negative effects, some countries such as Germany, New Zealand and Thailand have reduced policy targets or support for biofuels, and others including Tanzania have put a temporary moratorium in place. While some governments have been concerned about unanticipated negative impacts of biofuels, others continue to provide subsidies to support their growth.

However, the more advanced forms of biofuels still have a small but significant role in a future energy mix; policies and practices should be promoted to ensure that the full potential of bioenergy is realised without causing some or all of the associated risks to occur. For example, to date, some US\$800 million has been invested in developing algae for use as biofuels.

In particular, the IRGC recommends:

- Minimise any negative impact of bioenergy production (and in general of all agricultural practices) on water resources; and
- Promote more sustainable agricultural practices, both for food and fuel production.
- Maximise the use of waste, particularly sewage, in bioenergy generation but only deliberately use food crop residues when doing so does not lead to soil erosion or humus depletion.
- Further develop and use risk assessment methodologies such as full “cradle to cradle” lifecycle assessments and Environmental Impact Assessments (EIAs), and apply them locally.
- Adopt internationally agreed definitions, sustainability standards and criteria for certification that would be recognised under international trade rules.

Promote coherent biofuel policies

The IRGC also noted that bioenergy policies are currently designed to pursue specific objectives such as agricultural support, rural development, reduced dependence on foreign sources of energy, environmental rehabilitation, and climate change mitigation. However, pursuing diverse multiple objectives with a single policy is rarely efficient. Because of these links, bioenergy policy should be developed jointly by relevant parts of government, including ministries dealing with energy, environment, climate change, economic development, trade and agriculture.

Land use planning and governance is central to the implementation of sustainable biofuels. The IRGC noted that the food-fuel conflict is being exacerbated by policies that favour the diversion of food crops into biofuel production (in order to compensate for oil price increases and their impact on food prices), at a time when other demands on finite land resources – for food production, housing, recreation, nature conservation, and so forth – are also increasing.

The IRGC recommended the implementation of land-use policies which will reduce the risk of land with recognised high biodiversity value or high carbon stocks being converted to grow biomass feedstock, and encourage the use of abandoned land, but only when environmentally, economically and socially appropriate.

Promote realistic targets

While the policies project into future, they need to be for effective in taking into account limiting factors including uncertainty around land, water, labour and how climate change will affect these.

Biofuel targets often cannot be met nationally, which implies trade. For example, currently the UK only provides 10% of its biofuel target locally, 90% is imported from a range of countries, including some in Africa that are facing food security problems. Trade is not just related to feedstock, but also so-called “land grabs” and disputes over their associated resources, including labour and water.

Policy makers should assess realistic capacities to produce domestic feedstock for bioenergy, avoiding over-optimistic projections about the potential production.

The IRGC also recommended that biofuel policy makers develop adaptive regulatory frameworks that set the conditions for transparent and balanced markets for producing and exporting countries to meet, first, their domestic needs, and, second, the needs of international trade.

At the same time, governments should foster research and development to promote more advanced forms of bioenergy which may require less land and may enable the more efficient use of wastes and non-food feedstock.

Conclusions

Nobody expects bioenergy alone to achieve the objectives of energy security, GHG emission reductions and sustainable development. It needs to be seen as one relatively modest part of a comprehensive, sustainable energy policy in which all the various options are employed optimally, including energy efficiency, conservation, and appropriate technologies. Biofuels have a small but significant role in meeting future energy demand and accordingly, the targets and mandates that are in place worldwide are likely to remain in place.

Moreover, the demand for biomass will increase with additional targets around biomass for heat and power as well as an alternative to fossil fuel as a source for biochemicals. In this case, it is imperative that policies are developed which take full account of the associated risks and that ensure that future biomass production give full account of the associated risks not exacerbate existing biodiversity degradation and social tensions.

Resources

IRGC (2008), Risk Governance Guidelines for Bioenergy Policies, http://www.irgc.org/IMG/pdf/IRGC_Bioenergy-Exec_Sum.pdf

OECD/IEA (2008) World Energy Outlook

Petersen (ERAE, 2008) <http://erae.oxfordjournals.org/cgi/content/abstract/jbn016v1>