BEFSCI

Bioenergy and Food Security
Criteria and Indicators

Policy Instruments to Promote Good Practices in Bioenergy Feedstock Production

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Policy Instruments to Promote Good Practices in Bioenergy Feedstock Production

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OVERVIEW

Modern bioenergy development, through its environmental and socio-economic impacts, may have positive or negative effects on the four dimensions of food security: availability; access; utilization, and stability.

In order to ensure that modern bioenergy development is sustainable and that it safeguards food security, a number of good practices can be implemented throughout the bioenergy supply chain. Building on FAO's work on good practices in agriculture and forestry, the Bioenergy and Food Security Criteria and Indicators (BEFSCI) project has compiled a set of good environmental practices[1] that can be implemented by bioenergy feedstock producers in order to minimize the risk of negative environmental impacts from their operations, and to ensure that modern bioenergy contributes to climate change mitigation while safeguarding and possibly fostering food security. BEFSCI has also compiled a set of good socio-economic practices[2] that can help minimize the risks and increase the opportunities for food security associated with bioenergy operations.

The FAO's Bioenergy and Food Security Criteria and Indicators (BEFSCI) Project

Building on the Bioenergy and Food Security (BEFS) Analytical Framework, the BEFSCI project has developed a set of criteria, indicators, good practices and policy options on sustainable bioenergy production that foster rural development and food security, in order to:

- inform the development of national frameworks aimed at preventing the risk of negative impacts - and increasing the opportunities - of bioenergy developments on food security; and
- help developing countries monitor and respond to the impacts of bioenergy developments on food security and its various dimensions and subdimensions.

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Most of the good practices that BEFSCI has compiled present various challenges and there are a number of both economic and non-economic barriers to their implementation. If proper policy instruments and incentives are not in place, the costs of implementing these practices might be too high for producers.

BEFSCI has identified a range of policy instruments that can be used to require or promote – either directly or indirectly – good environmental and socio-economic practices in bioenergy feedstock production, and to discourage bad practices.

These instruments can be grouped into four main categories[3]:

- MANDATES WITH SUSTAINABILITY REQUIREMENTS
- NATIONAL STANDARDS FOR CERTIFICATION
- FINANCIAL INCENTIVES
- CAPACITY BUILDING

An overview of these instruments, and examples of their application in bioenergy (where available) or agriculture, are provided below.

The viability and effectiveness of these instruments in a certain country will depend on a number of factors, including the financial resources available, and the administrative and enforcement capacity of the government.

1 See the BEFSCI report Good Environmental Practices in Bioenergy Feedstock Production – Making Bioenergy Work for Climate Change and Food Security: www.fao.org/bioenergy/foodsecurity/befsci

2 See the BEFSCI brief *Good Socio-Economic Practices in Modern Bioenergy Production – Minimizing Risks and Increasing Opportunities for Food Security*: www.fao.org/bioenergy/foodsecurity/befsci

3 The sustainability of modern bioenergy can also be promoted through other policy instruments, including through the application of rights-based approaches, in addition to those considered here, which directly promote or require the implementation of good practices by producers.

1. MANDATES WITH SUSTAINABILITY REQUIREMENTS

Biofuel mandates set a minimum volume or share of liquid biofuels to be blended with traditional fossil-based fuels for transport in order to secure a market for these fuels and create a stable investment environment. In 2011, there were more than 50 countries with biofuel blending mandates in place, including the 27 EU Member States, Brazil, China, India and the United States of America[4] (REN21 2011).

Some of these mandates (e.g. in the EU and the USA) include sustainability requirements that biofuel producers shall comply with. These requirements address the environmental sustainability of biofuel production, and especially the climate change mitigation potential of these fuels. Under the US Renewable Fuel Standard (RFS) 2, for instance, the following reductions in lifecycle GHG emissions are required compared to traditional fossil-based fuels: 20 percent for any renewable fuel produced at new facilities, 50 percent for biomass-based diesel or advanced biofuel, and 60 percent for cellulosic biofuel. Biofuel mandates can also address other environmental sustainability issues, such as the preservation of biodiversity. Under the EU Renewable Energy Directive – RED (2009/28/EC), for instance, biofuels will not be made from feedstocks obtained from land with high carbon stock or high biodiversity value (e.g. primary forest, protected areas and highly biodiverse grassland) in order to be eligible for financial support.

A few biofuel mandates are also concerned with social sustainability issues. With regard to these issues, however, no binding requirements are in place. Under the UK Renewable Transport Fuel Obligation (RTFO), for instance, suppliers of biofuels must report whether their feedstocks have been assessed, either directly or by certification to an existing suitable scheme, against criteria addressing social issues such as workers' rights and land rights.

In addition to the scope, there are also differences in the way the sustainability requirements associated with biofuel mandates are implemented.

Compliance with the sustainability requirements of biofuel mandates can be ensured through command-and-control approaches (i.e. direct regulation and associated enforcement), market-based instruments (e.g. the financial incentives described in section 3), or a combination of them both. Command-and-control approaches require adequate enforcement capacity and associated resources in order to be effective. On the other hand, market-based approaches, while providing more flexibility to biofuel suppliers and potentially reducing the cost of compliance, can be associated with high transaction costs. Under the EU RED, for instance, third country producers can demonstrate compliance with the biofuel sustainability requirements through the certificates issued by one of the voluntary schemes recognized by the EU. Under the UK RTFO, when complying with the Obligation, participants are awarded a Renewable Transport Fuel Certificate (RTFC) for each litre of biofuel supplied. Certified suppliers can then trade their certificates with other participants in the scheme, with the price of these certificates set by the market.

Another important difference in the way the sustainability requirements associated with biofuel mandates are operationalized concerns the types of chain of custody systems allowed. Mass balance and physical segregation are among the most common chain of custody systems[5]. A mass balance chain of custody is characterized by a tracking system where the amount of certified product sourced and sold by each supply chain actor is tracked, but the certified product does not have to remain separated from the uncertified product. In a system with physical segregation, "certified" products are physically segregated from non-certified products throughout the supply chain. Physical segregation is generally perceived by stakeholders as being more transparent and credible than a mass balance system. The former, however, presents a number of practical issues and requires significant investments in logistical infrastructure in order to be operationalized. On the other hand, a mass balance system poses a higher administrative burden – with associated transaction costs – on various actors along the entire supply chain. Overall, however, this type of chain of custody system is more cost-effective than physical segregation, especially at low volumes (Dehue *et al.* 2008).

4 For an overview of a selection of these policies, including the US RFS2, the EU RED and the UK RTFO, see the BEFSCI *Compilation of Bioenergy Sustainability Initiatives*: www.fao.org/bioenergy/foodsecurity/befsci/compilation

5 For further information on these and other chain of custody systems, please refer to: Dehue, B., Meyer, S., Hamelinck, C. 2007. *Towards a Harmonized Sustainable Biomass Certification Scheme*. Ecofys, Utrecht.

2. NATIONAL STANDARDS FOR CERTIFICATION

Over the past few years, a number of voluntary sustainability standards for the certification of biofuels or of specific biofuel feedstocks have been developed, mostly as a result of multistakeholder initiatives. As described in section 1, governments can recognize these standards and allow foreign producers to use the certificates obtained through them as a way to demonstrate compliance with their domestic sustainability requirements (as in the case of the EU RED).

Alternatively, governments can develop their own standards to certify the sustainability of biofuels or of specific biofuel feedstocks, taking stock of the work conducted under the aforementioned initiatives. For instance, the Government of Indonesia, building on the principles and criteria (and the associated indicators and guidance) developed by the Roundtable on Sustainable Palm Oil (RSPO), has established the Indonesian Sustainable Palm Oil System[6] (ISPO). Through this initiative, the Government of Indonesia aims to enhance the sustainability of palm oil production (through specific principles, criteria and indicators) and foster the international competitiveness of the country's palm oil sector. ISPO is currently being piloted and is expected to be fully implemented nationwide by 2014. The standard, which addresses both environmental and social sustainability, will be mandatory for all palm oil producers and non-compliance will be sanctioned under national law. Subsidies should be offered to smallholders to help them comply with the standards. A similar standard has been established in neighbouring Malaysia as well, i.e. the Malaysia Sustainable Palm Oil (MSPO).


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An advantage of these national standards is that they can be tailored to the specific country context, reflecting local circumstances and concerns, as in the case of the national interpretations of international voluntary standards such as the RSPO[7]. At the same time, however, the emergence of a plethora of national standards and the lack of harmonization among them (e.g. in terms of requirements, definitions and approaches) can give rise to confusion among market actors, leading to high transaction costs and representing a potential obstacle to international trade; the confidence of stakeholders in bioenergy markets can be undermined as well. In order to reduce these risks and ensure that national standards for certification contribute to fostering the international competitiveness of the domestic bioenergy sector (rather than hindering it), it is key that these standards are recognized by the main importing markets, as foreseen, for instance, under the EU RED.

6 For further information, see the official ISPO Web site: http://ispo-org.or.id

7 National interpretations of the RSPO Standard have been developed for a number of countries, including Indonesia and Malaysia.

3. FINANCIAL INCENTIVES

Governments can use different types of financial incentives in order to stimulate sustainable bioenergy production. These incentives can be either used on their own or, as is often the case, in conjunction with other instruments, such as the biofuel mandates described in the previous section. In the EU, for instance, financial incentives are granted to biofuels that comply with the sustainability requirements set forward in Directive 2009/28/EC.

The main types of financial incentives that can be provided to different market actors along the biofuel supply chain, from feedstock production to fuel consumption, are:

- Direct payments
- Tax credits
- Payments for Environmental Services (PES)
- Grants

As described below, these instruments entail financial commitments by governments that can be substantial and long term in some cases. In addition, the implementation of these instruments can require high administrative capacity. Therefore, the viability of these instruments in a developing country context should be carefully evaluated, and due consideration should be given to the opportunity costs (i.e. the possible alternative uses) of the financial resources committed.

Direct payments are payments granted directly to farmers (including producers of biofuel feedstocks) under certain support schemes. These payments, which can be decoupled from production, offer a safety net for farmers, through the provision of a basic income support.

Direct payments can be made conditional to farmers' compliance with specific environmental and socio-economic good practices. In the EU, for instance, where this system is known as "cross-compliance", farmers who do not comply with certain requirements in the areas of public, animal and plant health, environment and animal welfare are subject to reductions of, or exclusion from, direct support. In particular, under the new EU Common Agricultural Policy (CAP), compliance is required with the a set of rules on "good agricultural and environmental condition", designed to: prevent soil erosion; maintain soil organic matter and soil structure; ensure a minimum level of maintenance; avoid the deterioration of habitats, and protect and manage water[8].

Direct payments linked to cross-compliance can provide a strong incentive to farmers for the implementation of good practices, including potentially in biofuel feedstock production. However, direct payments schemes can absorb considerable financial resources and require a complex and costly administrative set-up.

The second type of financial incentives considered here are Tax credits. Governments can use tax credits in order to promote investments in, and production of, renewable energy, including biofuels, especially during the initial stages of development of the related industry. Even though these instruments, unlike direct payments, do not require financial disbursements by the government, nonetheless there are opportunity costs associated with them, in the form of foregone tax revenues.

The biofuel mandates described in section one are often combined with tax credits. When these mandates are associated with environmental sustainability requirements, only biofuels that are produced according to such requirements are eligible for these tax incentives.

Tax credits can also be used to foster social sustainability objectives, such as the inclusion of smallholder farmers in biofuel supply chains. Under Brazil's Social Fuel Seal[9], for instance, biodiesel producers are granted tax credits, as well as preferential access to credit, if they purchase a minimum share of feedstock from smallholder farmers, which vary depending on the regions of origin[10]. In order to be eligible for the tax credit, biodiesel producers will also enter into legally binding agreements with smallholder farmers, setting specific income levels and guaranteeing technical assistance and training.

8 For further information on the EU CAP and the associated direct payments and cross-compliance, see the dedicated EU Web page: http://ec.europa.eu/agriculture/direct-support/index_en.htm

9 For an overview, see the BEFSCI *Compilation of Bioenergy Sustainability Initiatives*: www.fao.org/bioenergy/foodsecurity/befsci/compilation

10 These shares are: 10 percent until the 2009/2010 harvest, and 15 percent starting from the 2010/2011 harvest, for purchases coming from the northern and midwestern regions; and 30 percent for purchases coming from the southern, southeastern, northeastern and semi-arid regions.

Payment for environmental services (PES) is another key instrument that governments can use in order to promote good practices in biofuel feedstock production and in agriculture in general. PES schemes entail "voluntary transactions (monetary or in other forms) where a service provider is paid by, or on behalf of, service beneficiaries for agricultural land, forest, coastal or marine management practices that are expected to result in continued or improved service provision beyond what would have been provided without the payment" (FAO 2007, p.7). Government-run PES schemes are most common. Key examples include the US Conservation Reserve Program[11] (CRP), under which farmers receive annual rental payments in exchange for interrupting crop production on their land for up to 15 years, with the aim of averting soil erosion, and Costa Rica's *Pagos de Servicios Ambientales*[12] (Payment for Environmental Services), under which land and forest owners receive payments for adopting land use and forest management activities conducive to forest and biodiversity preservation and to ensuring people's quality of life. There are also examples of private PES schemes, such as the *Scolel Té* project[13] in Chiapas (Mexico), where private individuals and firms pay farmers and rural communities for carbon emission offsets through the adoption of good agroforestry practices.

If adequate incentives are provided to farmers for the implementation of good practices, for instance through PES schemes, agriculture can be a key supplier of environmental services, such as climate change mitigation, enhanced quality and quantity of water provision, and biodiversity preservation. In addition to fostering sustainable agricultural management, payments for environmental services can contribute to poverty reduction and agricultural development. In particular, PES can increase the income of farmers who produce the services, while other poor households may also benefit, for example from increased productivity of the soils they cultivate or improved quality of the water they drink. In some cases, however, payments may also lead to adverse impacts on poverty and food security, for example if they reduce agricultural employment or increase food prices. In addition, the lack of clearly defined property and use rights may prevent the poor from participating.

The establishment and operation of PES schemes require a substantial financial commitment over a long period of time, as well as high administrative capacity. The implementation of PES schemes also poses other challenges. Most environmental services arise from complex processes, and thus it is difficult to determine the specific actions affecting their provision, to identify precisely both providers and beneficiaries, to agree on who holds the rights to enjoy these services, and to determine how much to pay for such services.

Grants are another type of financial incentive that can be used by governments in order to promote good practices in agriculture and on-farm production of renewable energy (including biofuels), as well as to foster research, development and deployment of renewable energy technologies, especially frontier ones.

The US Department of Agriculture (USDA), for instance, through the Sustainable Agriculture Research and Education[14] (SARE) programme, provides grants to farmers, extension agents and educators for research and education projects related to on-farm renewable energy production, no- or minimum tillage, pastured livestock and rotational grazing, and agroforestry, among other things. The US Department of Agriculture also provides, through the Biorefinery Assistance Program[15], grants for demonstration scale biorefineries (covering up to 50 percent of project costs) for the production of advanced biofuels, which are expected to offer a number of advantages compared to "traditional" fuels, including in terms of sustainability.

Grants can be an effective instrument to support the development of the biofuel industry, especially during its early stages. However, in order for grants to be effective and to have tangible effects, substantial financial resources are required for a long period of time.

11 For further information, see the dedicated US Department of Agriculture (USDA) Web page: www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=crp

12 For further information, see the dedicated Fondo Nacional de Financiamiento Forestal (FONAFIFO) Web page: www.fonafifo.go.cr/paginas_espanol/servicios_ambientales/servicios_ambientales.htm

13 For further information, see the project fact sheet: www.piqqoprojects.com/uploads/documents/0/19.pdf

14 For further information, see the official SARE Web site: **www.sare.org**

15 For further information, see the dedicated US Department of Agriculture (USDA) Web page: www.rurdev.usda.gov/BCP_Biorefinery.html

4. CAPACITY BUILDING

Capacity-building policies and programmes are key instruments that governments can use in order to create an enabling environment for the development of a sustainable bioenergy sector, including through the implementation of good practices in bioenergy feedstock production. Generally, capacity-building programmes on good agricultural practices include information sharing and dissemination, education and research, and trainings.

Capacity-building policies and programmes require long-term financial commitments by governments. In addition, in order to ensure the effectiveness and long-term sustainability of these policies and programmes, all the relevant stakeholders need to be consulted on their design and implementation. In particular, the involvement of the target beneficiaries (i.e. farmers) is key to ensure that capacity-building programmes adequately reflect their needs and that farmers feel ownership of, and are fully committed to, such programmes. Extension agents should be actively engaged as well, and should receive proper training.

In Brazil, for instance, the Ministry of Agrarian Development launched a new Technical Assistance and Rural Extension Policy in 2003. The policy was designed through a participatory process, involving representatives from different stakeholder groups, including smallholders, governmental/non-governmental agricultural extension workers, and social movements, with a total of 100 organizations and 500 individuals. This participatory policy design aims to: ensure rural extension and technical assistance as a free public service for smallholders; promote sustainable rural development; adopt a multidisciplinary and interdisciplinary approach to policy formulation; allow the contribution of civil society to a democratic decision-making process, and develop learning processes for stakeholders in the agricultural sector. Following the revision of the policy, the Department of Technical Assistance and Rural Extension developed a series of training initiatives for extension agents. Under the new policy, in 2004 the Department also developed an agro-ecological programme to directly support family-based ecological agriculture. As part of this programme, a nationwide competition for documenting field experiences related to the implementation of the principles of agro-ecology throughout the country was held[16].


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Capacity building on good agricultural practices can be conducted through different means and via different information and communication technologies. An interesting example is the: "Three Reductions, Three Gains" project launched by the Government of Viet Nam in 2003[17]. The project, which was designed with the involvement of farmers, comprised a nationwide communication campaign (on television, radio and newspapers), whose primary objective was to optimize in-farm resources, improve rice farmers' health and decrease pollution by minimizing the use of seeds, water, fertilizers and pesticides, and by reducing postharvest losses. Significant reductions in the use of seeds, fertilizers and pesticides were reported among the farmers reached by the campaign, with positive effects on their net profits.

16 For further information, see: Caporal, F.R. 2006. *Documenting Agroecology: a competition in Brazil*. LEISA Magazine 22.1 www.agriculturesnetwork.org/magazines/global/documentation-for-change/documenting-agroecology-a-competition-in-brazil

17 For further information, see the dedicated bulletin by the International Rice Research Institute (IRRI): http://bulletin.irri.cgiar.org/2006.22/default.asp

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