WBA Position Paper

on

Certification Criteria for Sustainable Biomass for Energy

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INTRODUCTION

The purpose of the World Bioenergy Association (WBA) is to promote the increasing utilisation of bioenergy globally in an efficient, sustainable, economically and environmentally appropriate way.

To help provide a clear frame of reference on which to base its activities the WBA has commissioned production of reports on a number of key aspects of biomass to energy within a global perspective. The research partner is the Swedish University of Agricultural Sciences. The Swedish Board of Agriculture has funded the research project.

The project has produced three reports:

1. Global Potential of Sustainable Biomass for Energy (Report 013, ISSN 1654-9406, Swedish University of Agricultural Sciences). WBA has produced a position paper with the same title based on this report.
2. Certification Criteria for Sustainable Biomass for Energy (Report 026, ISSN 1654-9406, Swedish University of Agricultural Sciences)
3. Biomass for Energy versus Food and Feed, Land Use Analyses and Water Supply (Report 022, ISSN 1654-9406, Swedish University of Agricultural Sciences)

This WBA Position Paper is based on reports 2 & 3. Both of these draw on the very many research papers published across the subjects of the reports, and analyse and summarise the overall conclusions. The certification criteria should be used as a guide for accrediting the sustainability of Biomass for Energy. After checking that the criteria are met, the cargo will get a document of WBA sustainability accreditation.

The reports and the WBA position papers can be downloaded from the web site:
http://www.worldbioenergy.org/content/news-and-comments-wba

Recommendations

Certification efforts processes must be clearly matched to specific goals. The role of certification processes in this report is to participate in creation of a global market for bioenergy and biofuels. The minimum universal criteria were developed after comparing the standards, principles, criteria and indicators developed by the existing and emerging voluntary standards around the world.

Background

Biomass is unique among the renewable energy sources in that it is easily stored (and is, in effect, stored solar energy) and can provide a readily transportable source of all three energy forms- electricity, heat and transport fuels- relatively cost-effectively and as baseload or on-demand supply. Since the 1970s development of new technology means biomass can be converted into bioenergy increasingly more efficiently.

The first WBA report *Global Potential of Sustainable Biomass for Energy* established that the amount of biomass available on a sustainable yield basis worldwide is theoretically enough to provide for all of the world populations' energy needs. However there are two outstanding issues that will need to be resolved to ensure that any significant supply of biomass or biofuels can be done equitably and sustainably. One main issue is that the availability or distribution of biomass worldwide is rarely in proportion to population density or energy demand, and that there would need to be some form of internationally recognised certification to ensure that export of biomass and biofuels was not at the expense of the populations in the main source countries, or of ecosystems and environmental values.

The other major issue is that sustainable production of biomass must be shown to not reduce production or availability of food, fibre and water, or of living space and living standards for rural and indigenous populations.

Clearly, for the sustainable and equitable production and transport of biomass and biofuels to be done on an extensive scale there must be effective internationally recognised monitoring and certification systems in place.

The example of forestry certification across the world demonstrates how lack of one simple, rigorously enforced, internationally recognised system can result in a mass of possibly incompatible or competitive national and global systems that separately or together may not ensure sustainable production, may not prevent deforestation, may not protect the land rights of indigenous peoples or farmers, and may not prevent environmental abuses including deforestation on a massive scale.

It is also clear that the pressure on arable land, peat lands and forested regions for production particularly of biofuels has already begun. For instance, large-scale planting of oil palm has accompanied deforestation in a number of tropical countries and this appears likely to continue and greatly expand. Acquisition of large land areas in developing countries for growing other crops for vegetable oils for export has resulted in displacement of subsistence farmers and loss of domestic food production.

These examples demonstrate a number of things: that massive amounts of money are involved; that national resource security protection may be inadequate or corrupted in biomass source countries; and that protecting the interests of subsistence landholders and indigenous peoples may rank very low on any list of priorities of corporations or governments involved.

It is a matter of global urgency that the issues involved in the production and transport of biomass and biofuels are urgently solved, and sustainability criteria and certification systems developed. The World Bioenergy Association offers the substance of these reports as an important contribution to the process and will with its accreditation system give a sustainability guarantee on the actual biomass cargo.

CERTIFICATION CRITERIA FOR SUSTAINABLE BIOMASS FOR ENERGY

The table below shows the minimum universal sustainability criteria complemented by additional tools and policies for biomass certification of different sectors and aggregated into 6 basic principles. This can be seen as the building blocks for a new labelling system.

The goal of minimum universal sustainability criteria is to promote environmentally responsible, socially beneficial and economically viable management of the biomass-for-energy production systems, by establishing a worldwide standard of recognized and respected Principles of Biomass Certification System.

The 6 basic principles are described as:

Principle 1:
Biomass shall be produced in an environmental responsible way. This means the protection of soil, water, biodiversity as well as protection of areas of high ecological value. Thus, the EU requirements aim to ensure that biomass, for example palm oil, is not produced at the expense of valuable natural habitats in producer countries. These include rainforests, biodiversity hotspots or wetlands. This principle is covered by criteria 1, 5, 9, 10 and 12.

Principle 2:
Good management practices shall be implemented. This principle is covered by criteria I and J.

Principle 3:
Biomass production shall take place in compliance with regional, national and relevant international laws. This principle is covered by criteria G.

Principle 4:
Safe working conditions. This principle is covered by criteria H.

Principle 5:
Biomass production shall be economically viable. This principle is covered by criteria Q.

Principle 6:
Biomass production shall not violate human rights. This principle is covered by criteria F, M, N and RC.

PRINCIPLES	SELECTED SOCIO-ECONOMICAL AND ENVIRONMENTAL SUSTAINABILITY CRITERIA	FORESTRY	AGRICULTURE	WASTE	OTHER
3	The use of chemicals (G)	+	+	+	+
2	Forest/land management planning (I)	+	?	-	?
2	Forest/land monitoring (J)	+	+	+	?
4	Protecting the health and safety of employees (H)	+	+	+	+
6	Provision of information to increase public awareness of management, planning, operations, and/or outcomes (M)	+	+	+	+
6	Protection of areas of particular historic, cultural or spiritual value (N)	+	+	+	+
5	Maintenance or enhancement of the economic viability of operations (Q)	+	+	+	+
1	Maintenance of biological diversity (1)	+	+	-	?
1	Protection of areas of high ecological value (5)	+	+	+	?
1	Protection of the soil and prevention of erosion (9)	+	+	-	?
1	Protection or enhancement of water quality (10)	+	+	+	?
1	Regeneration following harvesting (12)	+	+	-	?
6	The Rights of Children (RC)	+	+	+	+
6	Recognition and respect for the customary and traditional rights of indigenous/local people (F)	+	+	+	+

The letters and figures within brackets are used in report 2.
Sources:
http://www.forestrycertification.info/phpprograms/viewtemplate.php3?viewchoice=narrativereport);
http://www.pefc.org/internet/html/members_schemes.htm
http://www.fsc.org/

WBA:s REPORTS - HIGHLIGHTS

To further highlight the complexity and importance of the issue we would like to give some quotes from the above referred reports. The following short excerpts give some idea of the depth of these two reports.

The urgency for effective biomass certification (from Report 2, page 3)**:**

Development of various certification schemes for sustainable biomass production is taking place very fast. The focus has been on three main topics: balance of the greenhouse gases, ecological consequences of land use for bioenergy production, and socio-economic effects. In the international arena, the first list of indicators was developed for the International Energy Agency by Lewandowski and Faaij in 2006.

International organizations, e.g. the Food and Agriculture Organization of the United Nations (FAO), the Global Environment Fund (GEF) and the United Nations Conference on Trade and Development (UNCTAD) have started projects to develop sustainability standards as well, but these indicators are often rather vague and have not yet been checked against feasibility criteria. However, an important issue for this development of certification schemes for sustainable biomass is a harmonization of the many different initiatives, which currently exist or are being started.

However, despite the existence of a lot of initiatives and publicly respected certification schemes, such as energy crop certification schemes, certification systems in the power sector, as well as certification systems related to emission trading and certification programs in agriculture, no existing certification scheme has sufficient coverage to be adopted for general biomass certification. There are also other rules that will impact biomass production that are more of internal nature, e.g. for the European Union member states.

In relation to sustainability criteria (quote from Report 3, page 20)**:**

"There are international efforts underway to find ways to regulate the production and trade of bioenergy by establishing sustainability criteria (e.g., Palmujoki, 2009). Policy developments in the European Union (e.g., RED), the US (e.g., CSBP, LCFS) and other countries reflect policy makers' growing efforts to ensure sustainable biomass production. Thus, a set of sustainability criteria was included under the Renewable Energy Directive in order to make biofuels meet certain environmental standards. Important focus points of these policy discussions are the effects included in economic, social and environmental standards.

Thus, the Decision Support Tool ToSIA (Tool for Sustainability Impact Assessment) is the product of EFORWOOD - an integrated project, funded under the EU "Global change and ecosystems" research activity of the European Sixth Framework Programme (www.eforwood.com/) - and represents a dynamic sustainability impact assessment model that analyse environmental, economic, and social impacts of changes in forestry-wood production chains, using a consistent and harmonised framework from the forest to the end-of-life of final products.

ToSIA was developed to assess impact on different parts of the Forestry Wood Chain (FWC) for a broad range of drivers, and to cover up to 80 percent of the wood flows within Europe. The difference between ToSIA and other similar, already existing, tools is that none of those addresses all three sustainability dimensions (environmental, economical and social) along the whole European FWC in a balanced way."

{EU:s Renewable Energy Directive (RED) is Directive 2009/28/EC of the Council of the European Union on the promotion of the use of energy from renewable sources. The aim of this legislative act is to achieve by 2020 a 20% share of energy from renewable sources in the EU's final consumption of energy and a 10% share of energy from renewable sources in each member state's transport energy consumption.

The Council for Sustainable Biomass Production (CSBP) was initiated to develop a voluntary sustainability standard for biomass growers and bioenergy producers and bioenergy companies on sustainable production methods for biomass-based bioenergy in the United States.}

One aspect of the potential of biomass to energy (summary from Report 3, page 25)**:**

"However, modern bioenergy chains are usually associated with burning fossil fuels which is not carbon neutral. Thus, the production of biomass energy almost always entails the use of fossil energy for the farming, transportation and manufacturing stages of the process (e.g., Hill et al., 2006). Nevertheless, increasing biofuels use is an alternative to oil consumption that reduces greenhouse gas (GHG) emissions (Pacala & Socolow, 2004). Thus, sugarcane-based ethanol - currently the most effective biofuel at displacing GHG emissions (Sagar and Kartha, 2007) - is already mitigating GHGs in Brazil (Pacca & Moreira, 2009).

The scenario for producing bioethanol in tropical countries (Pacca & Moreira, 2009) shows that only 4.7% of all agriculture/ cultivated land for food and feeding in 2005 together with sugar cane sector performance similar with the one in Brazil, would be enough to mitigate 1 GtC (100% of one Pacala and Socolow wedge) or 20.4%of all GHG emissions required to stabilize CO_2 atmospheric concentrations by 2039, as predicted by Pacala and Socolow(2004).

However, the full realization of the bioelectricity potential, the implementation of CO_2 sequestration during fermentation, and the adoption of the best available technologies are crucial to enhance the potential of the sugar cane system as a substantial mitigation option (Pacca & Moreira, 2009)."

{1 Pacala and Socolow estimated each wedge-based on1 Gt of carbon mitigation required by 2054. He assumes a linear contribution of each wedge along the 50-year period till 2054. Thus, by 2039 each wedge corresponds to 0.7 GtC or 2.57 Gt CO2 (cited in Pacca & Moreira, 2009).}

In relation to the concern about competition between biomass production and water (Report 3 , on page 34)**:**

"Water is an essential ecosystem component and has a multifarious relationship to energy, food and environment. Freshwater support the very survival of every plant and animal on the earth, but adequate quantities of it are in short supply in many regions of the world. Water plays an important role in producing renewable energy sources both directly in the form of hydropower and indirectly in the form of biomass. That is, both hydropower and biomass require substantial amounts of water.

The new energy pursuit is likely to increase the stress on existing water resources as well as current patterns of water allocation. Disturbances from biomass management can subsequently affect natural processes, including hydrologic flows and physical, chemical, and biological properties of waterways.

The water stress is particularly serious in parts of Asia that are already water short or have difficulty in meeting existing water demand, and also in sub-Saharan Africa which is known for increasing population coupled with under-investment in water infrastructure. As a result, the water sector in these areas is likely to face major conflicts between its energy and environmental goals on the one hand and food and livelihood goals on the other.

The issue of how to resolve these conflicts with acceptable tradeoffs is going to be, therefore, a major policy concern in the Asian and African regions in particular and other developing regions in general (Fraiture, 2008)."

In relation to an increased demand for biomass affecting land availability for growing food, timber or fibre (Report 3, page 26)**:**

"Recently, to estimate the potential for new biomass energy production that does not reduce food security, remove forests, or endanger conservation lands, the estimated available land was combined with climatological Net Primary Production, NPP (e.g., Field et al., 2007).

Based on this approach, it was argued that increasing the area beyond the 386 Mha used for the calculation runs the risk of threatening food security, damaging conservation areas, or increasing deforestation (Field et al., 2007). Increasing yield per hectare does not seem to be option because even with substantial external inputs, NPP for major food crops – whether destined for food or biomass energy uses – will probably remain below native NPP over several decades at least (e. g., Field et al., 2007.

The role of agriculture as a source of energy resources is gaining in importance. Economic models show that biomass energy agriculture would displace food agriculture in a free-market economy. However, even if food and biofuels/biomass can compete for land, this is not inevitably the case. The expansion of biomass energy agriculture could be limited through regulations to surplus and abandoned areas.

Despite that the uncertainty for the abandoned area estimate can be substantial (probably 50% or more) and even more uncertain is the estimate of the amount of marginal land that has never been used for agriculture but that is potentially available for biomass energy production (e.g., Field et al., 2007), agriculture for biomass energy can move into abandoned agricultural land, degraded land and other marginal land that does not have competing uses (e.g., Tilman et al., 2006; Hoogwijk et al. 2005; Hoogwijk et al. 2003).

Moreover, degraded and marginal land could be rehabilitated by bioenergy plantations, which could combat desertification and increase food production (Best, 2006). However, the main factor for the large biomass potentials is the availability of surplus agricultural land, which could be made available through more intensive agriculture (IEA, 2010). Thus, biomass energy modelling studies project that additional areasbeyond degraded, abandoned and marginal lands will become available as agricultural land is abandoned in response to surplus food supplies (Hoogwijk et al. 2005; Hoogwijk et al. 2003; Wolf et al., 2003)."

Stockholm, November 2010

World Bioenergy Association

Kent Nyström
President

Join the **NEW INTERNATIONAL VOICE OF BIOENERGY.**

Objective:

The World Bioenergy Association will actively promote bioenergy development and international trade in biofuels, focusing primarily on issues, which transcend national borders and where national associations do not fill the gap.

The World Bioenergy Association will:

- Bring together buyers, sellers, prospective partners and investors that deal internationally, using a business platform that includes events and web-based communication methods
- Promote increased international trade in bioenergy technology and equipment by harmonizing standards and certification systems where they form a barrier to business
- Contribute to the development of simple, useful international sustainability criteria for biomass, necessary for meaningful trade
- Develop fact sheets, position papers and press releases to correct misinformation on bioenergy
- Support the development of a world-wide bioenergy investment fund to finance bioenergy projects by spreading and minimizing project risks and improving project returns
- Proliferate the understanding that, more than any other renewable energy, bioenergy is about livelihood as well as about improving the environment, contributing meaningfully to the socioeconomic fibre of farmers, landowners, forest workers, and communities
- Continually expose and inventory new biomass sources world-wide
- Promote bioenergy development, bestowing a “bioenergy entrepreneur of the year” award
- Act as a centre of key information that cannot easily be garnered by simply surfing the Internet, including markets, bioenergy conditions and business partners in individual countries
- Form alliances with renewable energy groups internationally, encourage forming of national bioenergy bodies, and identify technology solutions to grow bioenergy in developing nations
- Initiate a project identifying "Global Potential of Sustainable Biomass for Energy" and use that as a base for making decision makers form a framework to promote an increasing utilization of bioenergy.

WBA is supported by national and international bioenergy associations to be the international bioenergy body that can join with the world’s solar, wind, geothermal and hydro associations on the global level in the REN-Alliance.

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