

Roundtable on Sustainable Biofuels

An initiative of the EPFL Energy Center

Ensuring that biofuels deliver on their promise of sustainability



ÉCOLE POLYTECHNIQUE
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Global principles and criteria for sustainable biofuels production Version Zero

Preamble

In June 2007, the Steering Board of the Roundtable on Sustainable Biofuels (RSB) published draft principles for sustainable biofuels production, as the basis for a global stakeholder discussion around requirements for sustainable biofuels. Interested stakeholders were invited to join Working Groups and suggest criteria for achieving these principles, as well as rewording for the draft principles themselves. Over the past twelve months, stakeholders have discussed the criteria in about fifty Working Group and Expert Group teleconferences; four in-person stakeholder meetings in Brazil, China, South Africa, and India (totalling 200 participants); on-line via the Bioenergy Wiki; and via direct e-mails and phone calls to the Secretariat at the Swiss Federal Institute of Technology in Lausanne (EPFL).

The resulting draft standard – principles and criteria, along with key elements of the guidance for implementation – is presented in the following pages. While not every potentially interested stakeholder has been consulted on its content, the RSB Steering Board feels that a wide variety of stakeholder input has been gathered, such that interested parties could consider this a good first draft, or ‘Version Zero’ of a globally-applicable standard for sustainable biofuels. Throughout this feedback process, the RSB has remained **committed to an equitable, open and transparent standards-setting process**, following the ISEAL Code of Good Practice for Standards-Setting and involving various stakeholder interests from many different countries and from all parts of the supply chain.

The standard was drafted largely based on work already conducted by the Forest Stewardship Council, the Dutch Cramer Commission, the Low Carbon Vehicle Partnership in the UK, the Roundtable on Sustainable Palm Oil, the ILO’s Decent Work agenda, the Sustainable Agriculture Network, the Better Sugarcane Initiative, and other sustainable agriculture initiatives. The RSB remains committed to incorporating and recognizing other sustainability standards work, and to harmonizing and reducing any eventual reporting burdens as much as possible.

The standard below includes *principles* – general tenets of sustainable production – and *criteria* – conditions to be met to achieve these tenets. We have not yet developed *indicators*, the elements which enable evaluation as to whether a farm, producer, or company is meeting a particular criterion, but many of the Working Group discussions did start to develop the guidance for indicators and implementation. Due to space requirements of this overview document, we could not include all of the detailed guidance, nor the definitions of key terms, the good practices identified by stakeholders, or the exact scope/focus of responsibilities (farm, factory, etc.) for each criterion. We have only highlighted a few elements of the guidance which we thought essential to understanding the direction of the standard. Please refer to the <http://EnergyCenter.epfl.ch/Biofuels> website for the background documents with the full draft of each principle for the full guidance, scope, and the lists of terms to be defined. In general, we aim to be as practical as possible and focus responsibility for compliance with each criterion on the steps in the chain with the most potential impacts.

Finally, the standard does not attempt to quantify an amount of biofuels which could be consumed globally or whether, *as a whole*, biofuels are sustainable. Biofuels cannot replace all of our transport fuel consumption without significant changes in lifestyle and efficiency of use. We hope that these standards will be used in conjunction with new, sustainable consumption patterns for all the planet’s energy needs.

Next steps

The Steering Board is proposing a **further six-month round of global stakeholder feedback** on Version Zero of this draft standard, to ensure that producers, workers, farmers, financial institutions, NGOs, governments, and traders have been given ample opportunities to input into the process. The RSB will be organizing or co-organizing a series of stakeholder workshops around the world through February 2009, and encourages any stakeholder to collect feedback from colleagues, organize group discussions, and send any suggestions to the RSB Secretariat (e-mail: rsb@epfl.ch or telephone: +41 21 693 0079) during this time. All of the suggestions received by the Secretariat and resulting from stakeholder workshops will be synthesized by the Secretariat and will form the basis for the Steering Board's re-drafting of 'Version One' of the standard, to be published in April, 2009.

The RSB will also develop generic protocols and processes to guide companies and farmers so that they can field test the draft standard in their own supply chains in cooperation with third parties. Lessons learnt from these pilot and field tests will be shared in the Implementation Working Group, which will then make recommendations to modify the standard based on these lessons.

These six months will certainly not be the last round of feedback - as the science and understanding of biofuels progress, our understanding of biofuels' sustainability must be updated and the standard adapted periodically, at announced intervals so that business can plan accordingly. Similarly, the full indicators and definitions will need to be developed by the respective Working Groups, including perhaps national-level interpretations through a process yet to be determined by the Steering Board.

Finally, while continuous improvement and the eventual adoption of good agricultural practices is the goal of many stakeholders in the RSB, there is a recognition that small producers may have difficulties complying with some criteria. When discussing the implementation of the standard over the next months, there will be a need to balance some of the aspirational elements of the standard with practical business realities on the ground. Similarly, as part of a new and expanding sector subject to highly variable agricultural pricing, biofuels projects require significant investments that might limit their initial capacity to invest substantially in sustainability measures. Depending on the feedstock and on the level of development of the country of production, the investment required to comply with the RSB standard might vary significantly, especially where producers do not benefit from public support and where capital is scarce and expensive. For these reasons, the RSB's approach will favor gradual and balanced improvements in compliance with the standard.

A note on economic sustainability

According to the triple bottom line approach of sustainability, biofuels shall be environmentally sound, socially fair, and economically viable. While some aspects of the economic sustainability of biofuel projects can be assessed at the production unit level, others depend on national macro-economic policies. To ensure a level playing field for global biofuel production, domestic use and trade, macro-economic policies such as trade barriers and distortive subsidies that disrupt global food and biofuel markets should also be addressed by the appropriate authorities. If produced sustainably, biofuels can create opportunities for developing countries with a comparative advantage in their production to, in some cases, even export biofuels to countries that need them.

A note on direct vs. indirect impacts

Throughout the course of this first year of standards development, it became clear that many of the concerns about the sustainability of biofuels' production can be addressed by direct behaviours of farmers, traders, and processors. However, potentially large impacts can result from off-farm, macroeconomic interactions amongst food, fodder, fuel, and fiber markets. Complying with Principle 3 on greenhouse gas emissions and Principle 7 on conservation is compromised if converting currently productive land into biofuel production results in other lands with high amounts of stored carbon and/or High Conservation Values being converted into productive activities for food, fodder, fuelwood, or other markets. Complying with Principle 6 on food security can also be beyond the control of the producer, if increased demand for biofuels results in higher

global market prices for feedstocks and increased vulnerability for people who spend large amounts of their income on food.

As awareness about these potential impacts is only just developing, there is little consensus about their magnitude and what might be done to mitigate them. Recent agricultural commodity price increases can, for the most part, be attributed to factors unrelated to biofuel production, such as increasing food and fodder demand, speculation on international food markets, and incidental poor harvests due to extreme weather events. High oil prices and related high costs of fertilizers also have an impact on the price of agricultural commodities. Deforestation and loss of biodiversity had already reached unsustainable levels before the recent surges in biofuel demand, and it is difficult to link direct causality of land use changes in one region or country to biofuel production in another. Nevertheless, the potential for negative indirect impacts is high, and within the spirit of the Precautionary Principle, sustainable biofuel supporters should be assured that their good intentions do not have unintended consequences.

Unfortunately, there is to date no scientific consensus as to how to quantify the amount of land use change or food price increases attributable to biofuel production. As stated in the Sustainable Biofuel Consensus¹ reached by a group of biofuels experts who met in Bellagio, Italy in April 2008, “addressing indirect impacts explicitly requires:

- continued global research to identify and quantify links between biofuels and land use change;
- mechanisms to promote biofuels that do not have negative land use change impacts;
- mechanisms that mitigate these negative impacts but do not unduly increase transaction costs for producers; and
- social safeguards at the national level, that ensure that vulnerable people are not further disadvantaged through food and energy price increases and other potential negative economic side effects.”

The criteria below aim to address the *direct* activities that farmers and producers can undertake to prevent some of these unintended consequences. However, the Steering Board recognizes that many efforts to minimize these risks must be taken by governments in their policies that affect land use, land protection, biofuel promotion, and food security even in countries far away. Over the next year, the RSB shall collaborate with governments, international organizations, inter-governmental agencies, and concerned stakeholders to better understand the nature of these impacts and achieve consensus on how to measure and mitigate them.

**Roundtable on Sustainable Biofuels – Standard for Sustainable Biofuels
‘Version Zero’ for global stakeholder feedback**

Legality

1. Biofuel production shall follow all applicable laws of the country in which they occur, and shall endeavour to follow all international treaties relevant to biofuels’ production to which the relevant country is a party.

Key guidance: Includes laws and treaties relating to air quality, water resources, soil conservation, protected areas, biodiversity, labor conditions, agricultural practices, and land rights, including for instance ILO, CBD, UNFCCC, and the Universal Declaration of Human Rights. This standard can go beyond national law, but cannot contradict or contravene national law.

¹ Available at : <http://EnergyCenter.epfl.ch/Biofuels> - Further reading

Consultation, planning, and monitoring

2. Biofuels projects shall be designed and operated under appropriate, comprehensive, transparent, consultative, and participatory processes that involve all relevant stakeholders.

Key guidance: 'Biofuel projects' refers to farms and factories producing biofuels. The intent of this principle is to diffuse conflict situations through an open, transparent process of stakeholder consultation and acceptance, with the scale of consultation proportionate to the scale, scope, and stage of the project, and any potential conflicts. The RSB will develop a scoping process to help determine the extent of the stakeholder consultation based on key criteria. Where many farmers are engaging in the same activity in the same area, there should be flexibility for a group of farmers to combine their work.

- 2.a** For new large-scale projects, an environmental and social impact assessment, strategy, and impact mitigation plan (ESIA) covering the full lifespan of the project shall arise through a consultative process to establish rights and obligations and ensure implementation of a long-term plan that results in sustainability for all partners and interested communities. The ESIA shall cover all of the social, environmental, and economic principles outlined in this standard.

Key guidance: The ESIA shall include the identification of High Conservation Value areas, biodiversity corridors, buffer zones, and ecosystem services; shall evaluate soil health; shall identify potential sources of air, water and soil pollution; shall evaluate potential impacts on water availability; shall cover a baseline social indicator assessment; shall include an economic feasibility study for all key stakeholders; shall identify potential positive and negative social impacts including job creation and potential loss of livelihoods; shall establish any existing water and land rights.

Small-scale producers or cooperatives unable to perform ESIA's will need support and/or modified ESIA's.

'Large-scale producers' and 'relevant stakeholders' will be defined in the indicators.

- 2.b** For existing projects, periodic monitoring of environmental and social impacts outlined in this standard is required.

- 2.c** The scope, length, participation and extent of the consultation and monitoring shall be reasonable and proportionate to the scale, intensity, and stage of the project and the interests at stake.

Key guidance: The focus of this principle shall be on mitigating any potential negative impacts of large-scale projects in regions where stakeholder conflict is potentially high.

- 2.d** Stakeholder engagement shall be active, engaging and participatory, enabling local, indigenous, and tribal peoples and other stakeholders to engage meaningfully.

- 2.e** Stakeholder consultation shall demonstrate best efforts to reach consensus through free prior and informed consent. The outcome of such consensus-seeking must have an overall benefit to all parties, and shall not violate other principles in this standard.

Key guidance: 'Free prior and informed consent' and 'consensus' will be carefully defined. Consensus-seeking will be used to find the best solutions and iron out any potential problems that may arise over the lifetime of the project. Consensus can be sought from a group selected from stakeholders, to prevent decision-blocking by any one group or individual.

- 2.f** Processes linked to this principle shall be open and transparent and all information required for input and decision-making shall be readily available to stakeholders.

Key guidance: Good practices for stakeholder consultation will be developed. Smallholders will need support for complying.

Greenhouse gas emissions

3. Biofuels shall contribute to climate change mitigation by significantly reducing GHG emissions as compared to fossil fuels.

Key guidance: The aim of this principle is to establish an acceptable standard methodology for comparing the GHG benefits of different biofuels in a way that can be written into regulations and enforced in standards. The overriding requirement is therefore a methodology that is not susceptible to subjective assumptions or manipulation.

The fossil fuel reference shall be global, based on IEA projections of fossil fuel mixes.

- 3.a** Producers and processors shall reduce GHG emissions from biofuel production over time.

Key guidance: The RSB shall investigate incentive mechanisms to promote those biofuels with significantly higher reductions than others, for instance by introducing performance categories based on percentage reductions as compared to fossil fuels.

3.b Emissions shall be estimated via a consistent approach to lifecycle assessment, with system boundaries from land to tank.

Key guidance: The scope shall include carbon embedded in the fuel but exclude vehicle technology. Carbon sequestered in the soil and plant matter and carbon emissions from direct and indirect land use change shall all be accounted for whenever accepted methodologies are available – per 3d and 3e. Lifecycle assessment tools that go beyond this scope (for instance that include vehicle technology) shall be recognized as long as any extra elements can be isolated to facilitate comparisons.

3.c At the point of verification, measured or default values shall be provided for the major steps in the biofuel production chain.

Key guidance: The RSB will develop criteria for the quality of acceptable default values and measurements, and work with other institutions to develop default values for typical supply chains in different regions to help small producers comply with this criterion.

3.d GHG emissions from **direct land use change** shall be estimated using IPCC Tier 1 methodology and values. Better performance than IPCC default values can be proven through models or field experiments.

3.e GHG emissions from **indirect land use change**, i.e. that arise through macroeconomic effects of biofuels production, shall be minimized. There is no broadly-accepted methodology to determine them. Practical steps that shall be taken to minimize these indirect effects will include:

- Maximising use of waste and residues as feedstocks; marginal, degraded or previously cleared land; improvements to yields; and efficient crops;
- International collaboration to prevent detrimental land use changes; and
- Avoiding the use of land or crops that are likely to induce land conversions resulting in emissions of stored carbon.

Key guidance: The use of residues and waste shall not violate Principle 8 on Soil. Careful definitions and guidelines for identifying preferred land (marginal, degraded, underutilized, etc.) will be needed. The RSB will work with key international and national agencies and experts to try to provide a methodology to measure the indirect impacts of biofuels production for inclusion in the assessment of compliance with this standard, and to give guidance to producers.

3.f The preferred methodology for GHG lifecycle assessment is as such:

- The functional unit shall be CO₂ equivalent (in kg) per Giga Joule [kgCO₂equ/GJ].
- The greenhouse gases covered shall include CO₂, N₂O and CH₄. The most recent 100-year time horizon Global Warming Potential values and lifetimes from the IPCC shall be used.

Key guidance: The RSB will develop guidelines for how substitution, allocation by energy content, and allocation by market value should be used, as there is a risk of mistakes and variability in results. Waste products (defined by the IPCC as having no economic value) will have zero allocation of historical emissions. It is possible that the definition of 'waste' will be expanded beyond the IPCC definition.

Human and labour rights

4. Biofuel production shall not violate human rights or labor rights, and shall ensure decent work and the well-being of workers.

Key guidance: Key international conventions such as the ILO's core labor conventions and the UN Declaration on Human Rights shall form the basis for this principle. Employees, contracted labour, small outgrowers, and employees of outgrowers shall all be accorded the rights described below. 'Decent work', as defined by the ILO, will be the aspirational goal for this principle.

4.a Workers will enjoy freedom of association, the right to organise, and the right to collectively bargain.

Key guidance: In countries where the law prevents collective bargaining or unionisation, special measures must be developed within the framework of the project implementation plan to ensure that workers can engage with the project owners or partners while being protected from breaking the law.

4.b No slave labour or forced labour shall occur.

4.c No child labour shall occur, except on family farms and then only when work does not interfere with the child's schooling.

- 4.d Workers shall be free of discrimination of any kind, whether in employment or opportunity, with respect to wages, working conditions, and social benefits.
- 4.e Workers' wages and working conditions shall respect all applicable laws and international conventions, as well as all relevant collective agreements. They shall also be determined by reference to, at a minimum, the conditions established for work of the same character or offered by comparable employers in the country concerned.
- 4.f Conditions of occupational safety and health for workers and communities shall follow internationally-recognised standards.

Key guidance: Applicable standards will be referenced by the RSB in the full guidance.

Rural and social development

5. Biofuel production shall contribute to the social and economic development of local, rural and indigenous peoples and communities.

- 5.a The ESIA carried out under 2a and monitoring required under 2b shall result in a baseline social assessment of existing social and economic conditions and a business plan that shall ensure sustainability, local economic development, equity for partners, and social and rural upliftment through all aspects of the value chain.

Key guidance: Small producers will need support or reduced requirements for this criterion. Large producers and processors shall work with local governmental and non-governmental agencies to ensure the proper application of this criterion. There should be measured improvements in the social and economic indicators as set against the baseline and targets, in proportion to the scale and extent of the project and the region in which it is located. The ILO's Decent Work Agenda is a recommended tool for assessing local impacts. The following best practices should be aimed for in the projects: Local ownership, local employment and livelihood opportunities, opportunities for the labour force in the off-season to ensure stable local communities, diversification of crops if shown to improve local economic conditions of communities, training, value added products, credit facilities for local communities and small outgrowers (e.g. through micro credit schemes supported by buyers and/or financial institutions), and/or provision of biofuel or bioenergy to local communities to promote energy security. Appropriate institutional structures should be developed, such as co-operatives that encourage and maximize local involvement and management.

- 5.b Special measures that benefit women, youth, indigenous communities and the vulnerable in the affected and interested communities shall be designed and implemented, where applicable.

Key guidance: Large producers and processors shall work with local governmental and non-governmental agencies to ensure the proper application of this criterion in proportion to the scale of the project.

Food security

6. Biofuel production shall not impair food security.

- 6.a Biofuel production shall minimize negative impacts on food security by giving particular preference to waste and residues as input (once economically viable), to degraded/marginal/underutilized lands as sources, and to yield improvements that maintain existing food supplies.

Key guidance: Clear definitions are needed for waste, residues, and degraded/marginal/underutilized land. ESIA should ensure that these lands were not used for livelihoods support, or that benefits of use for biofuels outweigh any loss of livelihoods. All of these definitions are time-dependent; unused land might come into production anyway given climate change as well as population and wealth growth. These criteria and definitions should be periodically re-assessed.

The RSB will examine different tools for incenting the use of these preferred sources of biofuels.

- 6.b Biofuel producers implementing new large-scale projects shall assess the status of local food security and shall not replace staple crops if there are indications of local food insecurity.

Key guidance: The RSB will work with other actors to develop tools for assessing local food insecurity. To mitigate local food security impacts, the biofuel project could, for instance: take the maximum food value from the crop and use the remainder as an energy stock, offset impacts via economic instruments, and/or intercrop food and fuel.

Conservation

7. Biofuel production shall avoid negative impacts on biodiversity, ecosystems, and areas of High Conservation Value.

Key guidance: HCV areas, native ecosystems, ecological corridors and public and private biological conservation areas can only be exploited as far as conservation values are left intact and can in no case be converted. Definitions of these terms and an appropriate cut-off date will be developed by the RSB.

7.a High Conservation Value areas, native ecosystems, ecological corridors and other public and private biological conservation areas shall be identified and protected.

Key guidance: Identification and mapping of HCV areas should be undertaken by governmental, inter-governmental, and conservation organizations, as part of larger processes involving non-biofuel sectors. Where such mapping is occurring, the results shall be respected by producers. Where such maps do not exist, large-scale producers shall use existing recognized toolkits such as the HCV toolkit or the IBAT. Producers or cooperatives unable to perform an environmental impact assessment and/or a land management plan will need support. The use of native crops shall be preferred. Hunting, fishing, ensnaring, poisoning and exploitation of endangered and legally protected species are prohibited on the production site.

7.b Ecosystem functions and services shall be preserved.

Key guidance: Ecosystem (ecological) functions are described in other systems, for instance FSC criterion 6.3. Ecosystem services are provisioning, regulating, cultural and supporting services obtained by people from ecosystems, as described in the Millennium Ecosystem Assessment. Specific ecosystem functions and services relevant to an area of production shall be locally defined.

7.c Buffer zones shall be protected or created.

7.d Ecological corridors shall be protected or restored.

Soil

8. Biofuel production shall promote practices that seek to improve soil health and minimize degradation.

8.a Soil organic matter content shall be maintained at or enhanced to its optimal level under local conditions.

Key guidance: The optimal level of organic matter is to be defined through the consultation of local experts, communities and producers, taking into account local climatic, geologic and ecologic conditions. Realistic targets should be set, in accordance with the producers' capacities and on a reasonable timeline. Follow-up indicators should focus on the implementation of recognized good practices. The use of agrarian residual products, including lignocellulosic material, must not be at the expense of other essential functions for the maintenance of soil organic matter (e.g. compost, mulch).

8.b The physical, chemical, and biological health of the soil shall be maintained at or enhanced to its optimal level under local conditions.

Key guidance: Soil erosion must be minimized through the design of the plantation or production site and use of sustainable practices (where possible: use of perennial crops, no till, vegetative ground cover, side-hedges of trees, etc.) in order to enhance soil physical health on a watershed scale. WHO class Ia and Ib pesticides are prohibited. Risks to health related to the application of pesticides are covered under 4.f.

8.c Wastes and byproducts from processing units shall be managed such that soil health is not damaged.

Water

9. Biofuel production shall optimize surface and groundwater resource use, including minimizing contamination or depletion of these resources, and shall not violate existing formal and customary water rights.

9.a The ESIA outlined in 2a shall identify existing water rights, both formal and customary, as potential impacts of the project on water availability within the watershed where the project occurs.

9.b Biofuel production shall include a water management plan appropriate to the scale and intensity of production.

9.c Biofuel production shall not deplete surface or groundwater resources.

Key guidance: The use of water for biofuel production must not be at the expense of the daily basic water needs of local communities. Water-intensive biofuel crops and biofuel production systems must not be established in water-stressed areas. The most efficient use of water must be sought through the use of crops that fit the local conditions.

9.d The quality of surface and groundwater resources shall be maintained at or enhanced to their optimal level under local conditions.

Key guidance: Adequate precautions must be taken to avoid run-off and contamination of surface and ground water resources, in particular from chemicals. Waste water must be adequately managed.

Air

10. Air pollution from biofuel production and processing shall be minimized along the supply chain.

10.a Air pollution from agrochemicals, biofuel processing units, and machinery shall be minimized.

Key guidance: the use of ground or aerial pesticides must comply with the FAO's codes of conduct.

10.b Open-air burning shall be avoided in biofuel production.

Key guidance: Open-air burning of leaves, straw and other agricultural residues must be minimized, with the aim of ultimately eliminating burning practices. In specific situations such as those described in the ASEAN guidelines and other appropriate policies, or if workers' health and safety is at stake, limited open-air burning practices may occur.

Economic efficiency, technology, and continuous improvement

11. Biofuels shall be produced in the most cost-effective way. The use of technology must improve production efficiency and social and environmental performance in all stages of the biofuel value chain.

11.a Biofuel projects shall implement a business plan that reflects a commitment to economic viability.

Key guidance: Biofuel projects should seek to be economically viable without distortive public support (for instance, tariffs and production subsidies).

11.b Biofuel projects shall demonstrate a commitment to continuous improvement in energy balance, productivity per hectare, and input use.

11.c Information on the use of technologies along the biofuel value chain must be fully available, unless limited by national law or international agreements on intellectual property.

Key guidance. The focus shall be on technologies that might pose a hazard to people or the environment.

11.d The choice of technologies used along the biofuel value chain shall minimize the risk of damages to environment and people, and continuously improve environmental and/or social performance.

11.e The use of genetically modified: plants, micro-organisms, and algae for biofuel production must improve productivity and maintain or improve social and environmental performance, as compared to common practices and materials under local conditions. Adequate monitoring and preventative measures must be taken to prevent gene migration.

11.f Micro-organisms used in biofuel processing must be used in contained systems only.

Land rights

12. Biofuel production shall not violate land rights.

12.a Under the ESIA described under criterion 2a, land use rights for the land earmarked for the biofuel project shall be clearly defined and established, and not be legitimately contested by local communities with demonstrable rights, whether formal or customary.

Key guidance: The term 'land use' means any land use, whether it be for commercial, industrial, agricultural, customary, leisure use, right of way, or any land rights. Methods for establishing ownership and land use should include advertising, communication with local leaders, and locally-established methods of data collection. Lack of a legal deed shall not hinder the inclusion of local communities in biofuel projects.

12.b Local people shall be fairly and equitably compensated for any agreed land acquisitions and relinquishments of rights. Free prior and informed consent and negotiated agreements shall always be applied in such cases.

Key guidance: Coercion by investors or authorities to change or adapt land use is not allowed. Compensation should be at the value of the land for the community or household, based on existing land uses and livelihood needs.

12.c Appropriate mechanisms shall be developed as part of the ESIA to resolve disputes over tenure claims and use rights.
