A SUSTAINABLE BIOFUELS CONSENSUS

Understanding the many drivers for sustainable trade, consumption and production of biofuels, and the comparative advantage of supplying regions combined with demand and technology from consuming regions.

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Declaration

Our vision is of a landscape that provides food, fodder, fiber, and energy, that offers opportunities for rural development; that diversifies energy supply restores ecosystems, protects biodiversity, and sequesters carbon; and that contributes to global peace.

When produced responsibly, increased global biofuels trade, transport use and production can be cost-effective, equitable and sustainable. Many nations have the ability to produce their own biofuels derived both from agricultural and forest biomass and from urban wastes, subject to adequate capacity building, technology transfer and access to finance.

Trade in biofuels surplus to local requirements can thus open up new markets and stimulate the investment needed to promote the full potential of many impoverished countries.

This vision also responds to the growing threat of passing a tipping point in climate system dynamics. The urgency and the scale of the problem are such that the capital investment requirements are massive, and more typical of the energy sector than the land use sectors. The time line for action is decades, not centuries, to partially shift from fossil carbon to sustainable live biomass.

The Sustainable Biofuels Consensus calls upon governments, the private sector, and other relevant stakeholders to take concerted, collaborative and coordinated action to ensure sustainable trade, use and production of biofuels, so that biofuels may play their key role in the transformation of the energy sector, climate stabilization and resulting worldwide renaissance of rural areas, all of which are urgently needed.

Summary of Recommendations

- **Integrate and better coordinate policy frameworks**
- **Assess benefits and impacts of biofuels trade, use and production, and monitor them**
- **Address negative indirect effects of biofuels trade, use and production**
- **Reward positive impacts and investments, including through carbon management**
- **Use informed dialogues to build consensus for new projects**
- **Increase investment in research, development and demonstration**
- **Build capacity to enable producers to manage carbon and water**
- **Make sure that trade policies and climate change policies work together**

Context

Biofuels are emerging in a world increasingly concerned by the converging global problems of rising energy demands, accelerating climate change, high priced fossil fuels, soil degradation, water scarcity, and loss of biodiversity. For instance, in its Fourth Assessment Report (2007), the Intergovernmental

Panel on Climate Change - IPCC - identified that in order to avoid more than an acceptable maximum 2.0-2.4 ^{o}C rise in mean global temperature, greenhouse gas - GHG - emissions will need to peak around 2015 and be reduced well below 50% of 2000 levels by 2050. Subsequent peer reviewed research suggests that a lower figure is needed which cannot be achieved by emissions reduction alone.

Hence the need is for carbon removals giving rise to enhanced supplies of biomass raw material and the potential of biofuels related investments to show a profit from biofuels sales revenues. The enormity of this challenge and the urgency needed should not be under-estimated. The impacts of climate change on agricultural productivity are unknown and could be seriously deleterious. The rate and scale of biodiversity degradation is significantly weakening the resilience of the natural world and its ability to deliver key services such as climate control, air and water purification and protection from natural disasters.

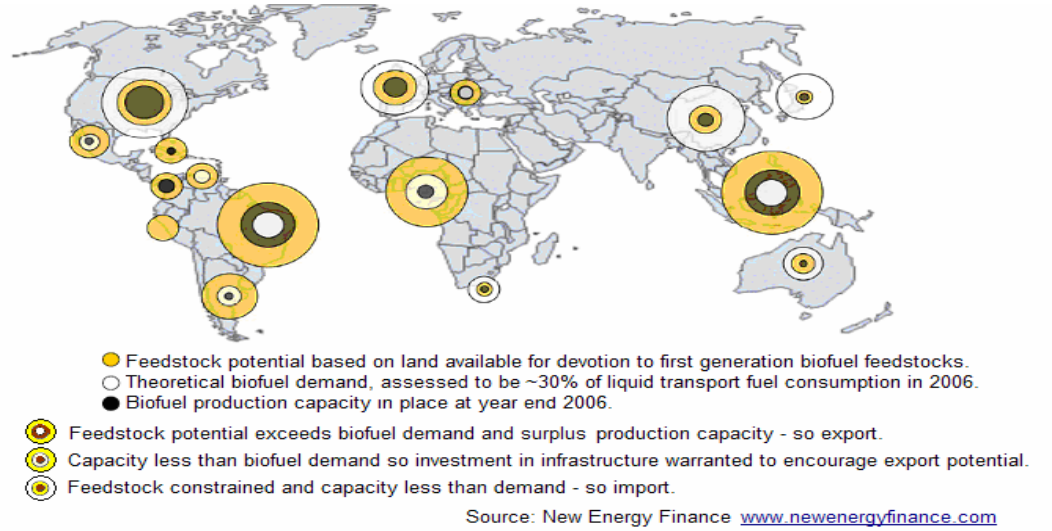
Biofuels are seen by some to be a panacea for a range of global energy, environment and rural development issues. However, there are "good" and "bad" biofuels depending on how they are traded, used and produced, which in turn determines their ultimate economic, environmental and social impacts.

Since most current modern biofuels are made from food crops, concerns about arable land use competition, risks to food security, vulnerable communities, water resource constraints, and deforestation arise. Meanwhile new crop feedstocks are being developed and advanced biofuel production methods using forest, crop, and urban residues, as well as from non-food crops, are also progressing, but have yet to be commercialized and deployed in the marketplace on a large scale comparable with the size of the energy market.

Many countries have a competitive advantage in producing biofuels. Meanwhile, many other countries are unable to meet their biofuel needs from domestic sources (Fig. 1). Therefore, increased biofuel trade holds promise. Also, when bioenergy displaces fossil fuels, in transport and power generation, or is produced in conjunction with soil carbon storage in the form of bio-char for example, opportunities arise for trade in carbon emission reduction units.

Figure 1. Indication of first generation biofuel feed stock potentials, theoretical biofuel demands and production capacities in place at end of 2006 for selected world regions.

(Areas of circles depict approximate comparative scales).



Towards a Sustainable Global Biofuels Market

Future biofuel markets could be characterized by a diverse set of supplying and consuming regions. From the current fairly concentrated supply (and demand) of biofuels, a future international market could evolve into a truly global market, supplied by many producers, resulting in stable and reliable biofuel sources. This balancing role of an open market and trade is a crucial precondition for developing biofuel production capacities worldwide.

While domestic mandates ensure the existence of markets, they can also further distort markets for energy and agricultural products. The co-existence of mandates with other policy instruments such as subsidies, tariffs, import quotas, export taxes and non-tariff barriers have not always resulted in effective deployment and efficient production and can restrict the opportunities that biofuels present.

The current negative image of biofuels in some quarters, provoked in part by a rather complex set of national public support schemes, is threatening the fulfillment of their promise and must be addressed. Paramount to a solution is an orderly and defined schedule for elimination of subsidies, tariffs, import quotas, export taxes and non-tariff barriers in parallel with the gradual implementation of sustainable biofuels mandates. These measures will provide the necessary conditions to reduce risks and to attract investment to develop and expand sustainable production. Several different efforts to reach these goals are ongoing including multilateral, regional, and bilateral negotiations, as well as unilateral actions. Ad hoc public and private instruments such as standards and product specifications and certification may also prove useful for addressing technical and sustainability issues. In addition, the development of a global scheme for sustainable production combined with technical and financial support to facilitate compliance, will ensure that sustainability and trade agendas are complementary.

Actions and Stakeholders

Considering the urgency of the challenges currently facing the global community, the authors of the Sustainable Biofuels Consensus offer the following recommendations to policy makers, trade negotiators, businesses, NGOs and other relevant stakeholders:

- **Integrate and better coordinate policy frameworks**

This requires:

- coordinating national and international action among key sectors involved in biofuel development and use, including agriculture, energy, environment, and transport;

- negotiating a schedule to gradually eliminate the tariff and non-tariff barriers to biofuels trade;
- agreeing on internationally compatible fuel quality technical standards whilst recognizing that several countries are already engaged in efforts to harmonize these standards;
- transparency in blending and other regulatory requirements at national and sub-national levels;
- reviewing policies in agriculture, energy and other sectors that contribute to inefficient production and market distortions in biofuels and their feedstocks; and
- adopting local, bilateral, regional and/or other frameworks for biofuels trade agreements with the objective of collaborating with existing frameworks (for example the UN Framework Convention on Climate Change; and the G8 established Global BioEnergy Partnership) to achieve convergence towards a comprehensive international land use improvement agreement.

- **Assess benefits and impacts of biofuels trade, use and production, and monitor them**

This requires:

- agreeing on sustainability principles and criteria that include effective, mutually agreed and attainable systems, via means such as certification, consistent with World Trade Organization (WTO) rules;
- recognizing that several key international efforts are already underway both in governmental and non-governmental contexts and that an iterative review of such criteria should be undertaken in order to continually raise the standards through advances in knowledge from research and through experience gained in the field;
- harmonizing life-cycle analysis - LCA - methodologies for biofuels, including GHG life-cycle accounting methodologies, recognizing that efforts both at the international and national levels are already under way;
- continued mapping of degraded and marginal land; and
- continued mapping of carbon stocks, areas rich in biodiversity, and other high conservation value areas. Transparency, accessibility and application of these maps need international agreement and must have sufficient resolution such that small scale farmers are not excluded. It is recognized that efforts to map carbon stocks are being stimulated by the IPCC and undertaken by several other global land use mapping organizations but they must be better coordinated.

- **Address negative indirect effects of biofuels trade, use and production**

As with other sources of energy, agricultural and forest products, and urban wastes, biofuels have positive and negative impacts. In an ideal world, sustainability criteria would be applied to all food, feed, fiber and all energy production and thus put biofuels on a level playing field with fossil fuels. Until such a system exists, there will be an excess of indirect positive and negative impacts on conservation areas, GHG balances, and food security from land use change, as well as price variations specifically associated with biofuels.

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.

- **Reward positive impacts and investments, including through carbon management**

Enhanced market opportunities will open up capital in order to follow the most profitable business models. Some benefits from biofuels use do not have an associated income stream. Therefore even sustainable trade as outlined in this document will not necessarily flow to the best performers. Under-funded benefits fall into the categories of:

- rural and social development;
- ecosystem services, including biological carbon fixation and water resource management; and
- better practices that might reduce crop yields but restore ecosystem health, such as conservation agriculture.

Rewarding better practice will require:

- using existing and innovative tools to ensure that markets reward environmental and social performance, including carbon sequestration, without additionality requirements;
- recognizing that the post-Kyoto regime will possibly reward biological carbon fixation, and this should be encouraged;
- ensuring that biofuels development is accomplished by shared benefits, rights and rules of law;
- recognizing that biofuel projects that create significant rural and social development benefits will likely be under-invested in due to difficulties in integrating smallholders into markets, tendencies to concentrate buying power within supply chains, and a lack of financial markets for small producers;
- understanding that many business models exist that equitably share benefits throughout the supply chain, especially at the farmer level. National policies, bilateral agreements, foreign assistance, and international financial institutions should give preferential treatment to these types of production systems to the extent feasible and to projects that encourage development of small scale production and regional biofuels markets; and
- acknowledging the link between bioenergy and rural development for improving rural incomes and abating poverty and thus providing a basis for increased investment and more efficient and sustainable agriculture.

- **Use informed dialogues to build consensus for new projects**

Promoting an informed and continuous dialogue engaging all relevant stakeholders is key to ensuring equitable distribution of benefits of biofuel projects, and to addressing other elements of sustainability. It is particularly important to encourage biomass producers, both farmers and foresters, into the dialogue. To be effective, these dialogues must be translated into the allocation of public and private budgets to meet the consensus achieved on priorities for specific projects and R, D&D portfolios.

- **Increase investment in research, development and demonstration**

While countries could consider other climate related initiatives besides biofuels, the goals of public and private R, D&D investments related to biofuel trade, use and production should include (but are not limited to):

- to produce cost effective second generation biofuels;
- to enable sustainability lessons learned from first generation biofuels to be used for second generation;
- to increase conversion technology performance;
- to maximize climate change mitigation;
- to evaluate the costs and benefits of increasing soil carbon content through such means as bio-char production and application; and

- to increase crop productivity and improve ecosystem health through management techniques, improved mechanization, water management, precision farming to avoid wasting fertilizers and agro-chemicals, and plant breeding and selection.

- **Build capacity to enable producers to manage carbon and water**

Capacity building programs are needed for farmers, foresters and small and medium-sized enterprises active in bioenergy and biosphere carbon management systems, such as biochar soil improvement techniques and water management technologies. Capacity building is also needed for the development of effective technology innovation systems involving research and education, extension, industrial capacity to participate in joint ventures with supportive government agencies and an engaged civil society.

- **Make sure that trade policies and climate change policies work together**

This will include Official Development Assistance (ODA), national subsidies and payments, etc. There is a need for a clear commitment for national climate change policies, including those that promote biofuels, to be additional to ODA. This is best achieved by climate change policies that drive direct foreign investment by energy sector players, in harmony with trade policies and sustainability requirements. Guided by national stakeholders' consensus of the recipient countries, ODA should focus on helping to initiate and develop the institutions needed for sustainable rural development and respective business models, and support countries in defining and meeting sustainability requirements. In connection with biofuels development, ODA should also partner with development and UN agencies such as UNFAO, UNCTAD, UNDP, UNEP and UNIDO and the private sector to help in reducing transaction costs of sustainable development schemes.

Frequently Asked Questions

How much biomass is used today?

- Total biomass contributed around 10% to meet the 470 EJ[1] world primary energy demand in 2007, but mainly in the form of traditional non-commercial biomass[2] (Fig. 2). Commercial biomass is used to provide heat and electricity as well as liquid biofuels for transport.

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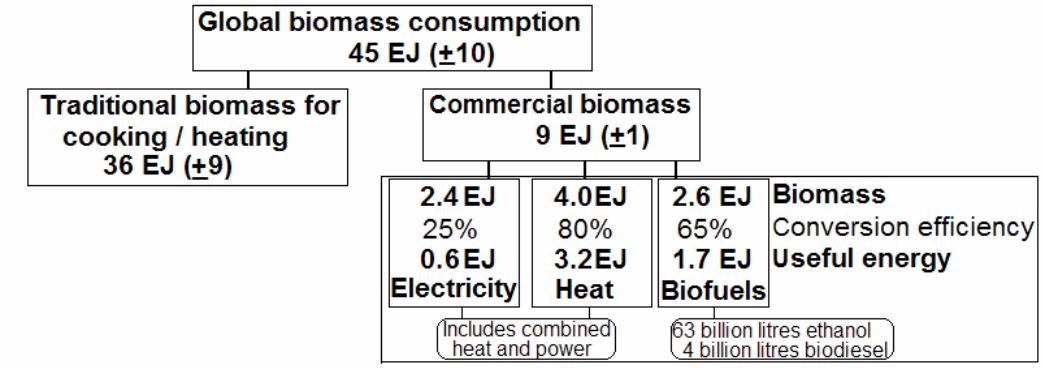
Figure 2. Contribution of biomass to global primary and consumer energy supplies in 2007.



[1] One ExaJoule equals 10^{18} Joules or approximately 164 million barrels (or 22.7 million metric tons) of oil equivalent, about a week of current US oil consumption.

[2] In future some bioliquid fuels such as ethanol gels and dimethyl ether (DME) could be produced as clean-burning, affordable and convenient substitutes for inefficient traditional solid biomass combustion used in rural areas of the developing world.

- Liquid biofuels currently supply around 1-2% of global transport fuels. The potential exists to significantly increase this share in coming decades. But, substantially displacing petroleum fuels will only happen with strong and credible drivers

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- The relative share of biofuels could be increased if a range of demand-side efficiency measures effectively reduce total fuel demand growth in the transport sector.

How much land is needed?

- Of the 13.2 billion hectares (bn ha) of the world's total land area, 1.5 bn ha are used to produce arable crops and 3.5 bn ha are in pasture for meat, milk and wool production. Crops currently used specifically for biofuels, as a result of farmers' choice, utilize only 0.025 bn ha. In Brazil, for example, over 40% of total gasoline demand is provided by ethanol produced from sugarcane grown on 1% of the 320 Mha of arable and pasture land, and none in the Amazon rain forest.
- In addition to biofuel production, crops used for energy often also provide co-products such as animal fodder, fertilizers and electricity.

How much biomass could become available for producing biofuels?

- The future potential for biomass could reach 150-400 EJ/yr (up to 25% of world primary energy) by 2050 using available farm, forest and urban residues and by growing perennial energy crops.
- Some of the 1 bn ha of marginal and degraded lands unsuitable for food production (such as from rising salinity levels) could be reclaimed for productive use by growing selected energy crops.
- There are competing uses for non-food biomass resources (including for heat, co-firing and biofuels, as well as for bio-materials and bio-chemicals). Global trade in biofuels could help compensate for regional differences in the availability and accessibility of biomass resources.

Food versus fuel?

- Recent agricultural commodity price increases for the most part can be attributed to factors unrelated to biofuel production. These are increasing food and fodder demand as such, speculation on international food markets and incidental poor harvests due to extreme weather events. Also, high oil prices and related high costs of fertilizers have an impact on the price of agricultural commodities.
- Low productivity in agriculture in many regions has resulted in unsustainable land-use, erosion and loss of soils, deforestation and poverty. Increased productivity over time as a result of better farm management, new technologies, improved varieties[3], energy related capital investment and capacity building would gradually increase the intensity of land use so that sufficient land becomes available the meet the growing demand for food, fodder, fiber and biofuel production.

Can biofuels support the agricultural sector and help meet the goal of sustainable development?

- Commercial biofuels markets could become a major factor in raising the economic viability of rural enterprises, especially in developing countries. Increased investment in infrastructure for biofuel processing, distribution and transport would also result. At least some of this infrastructure will also contribute to the overall development of the agricultural sector
- "Second generation" biofuel technologies produced from non-food ligno-cellulosic feed stocks are expected to become commercially viable on large scale, and hold considerable promise, compared to "first generation" biofuels, particularly for expanding the energy base and providing significant GHG emission reductions.

[3] Through the Alliance for a Green Revolution in Africa (AGRA), the Rockefeller Foundation, in association with Bill and Melinda Gates Foundation, is supporting the development of 400 new crop varieties in order to reduce hunger and poverty.

- Over time, first generation biofuels are likely to become more GHG efficient and co-exist with second generation biofuels as they are further developed. Tropical and sub-tropical regions will continue to enjoy comparative advantages in producing cost effective feedstocks for both.

Background

In the magic space of the Rockefeller Foundation Study and Conference Center in Bellagio, Italy, we were a group of women and men, based in 12 different countries and heavily involved, from different perspectives, with biofuels, who met there during 24-28 March 2008. We were inspired by the original proposal of Prof. John Mathews, of Macquarie University, Australia, to focus on "Prospects for Global Biopact between North and South on Biofuels", a pact to sustainable free global trade in biofuels. We were there in our personal capacity and operated under Chatham House Rules, which allow participants to use the information discussed at the conference but maintains the confidentiality of the speaker. We came to a consensus on an approach for the sustainable trade, use and production of transport biofuels. We believe strongly in the ideas contained in the Sustainable Biofuels Consensus – SBC and urge all the biofuels' stakeholders in the world to adopt this consensus and to take action to fully implement it. To help achieve this goal we will utilize every opportunity to disseminate the SBC by stimulating initiatives that implement the Consensus on a global scale.

Gratitude

We, the participants, wish to express to the Rockefeller Foundation and to the Bellagio Study and Conference Center and to their staff, our deepest gratitude for the generosity of their hospitality in Bellagio. They allowed us to focus on our common work while enjoying a wonderful and creative environment.

Participants

The participants in the discussion included those listed below along with their current country of residence:

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