

Biofuels and Wetlands

Policies, Perceptions and Priorities

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Executive Summary

The world market for biofuels has expanded rapidly in recent years. Biofuel production brings both opportunities and challenges from a sustainability perspective. The Quick Scan has identified the following main issues of concern relating to biofuel production impacting wetlands, namely:

- Green House Gas (GHG) emissions;
- Biodiversity loss;
- Bad water and soil management practices;
- Infrastructure development and related environmental and social impacts;
- Land rights, indigenous people's rights, labor and human rights;
- Socio-economic development and fair prices;
- Competition with food, feed and local uses;
- Use of marginal and degraded land;
- Indirect Land Use Change (ILUC).

A wide range of policies and standards dealing with the sustainability of biofuel production cover these priority issues in various degrees. Most of these policies and standards are currently in a test phase or are under development. This makes their impact very unpredictable. Issues like GHG emissions, biodiversity loss, and impact on local food security seem to be well covered. It is less obvious how the Indirect Land Use Change or marginal land concept will be incorporated.

The overview of the contents of current or future standards and policies indicates that many policies and standards contain omissions or gaps. Most of these omissions are the direct consequence of the highly political arena in which standards or policies are being negotiated and the interests of stakeholders compromised, although time pressure is sometimes also the reason. It is too early to state whether from a sustainability perspective, one standard will encompass all important aspects. Most likely, the policies and standards will be complementary.

The multitude of initiatives that are particularly related to biofuels show that sustainability is high on the agenda. This is understandable from the perspective that climate change mitigation is one of the key motivations behind the promotion of biofuels. The step from climate change related matters to other sustainability issues is not a large one. As a consequence, biofuels will likely receive more attention on sustainability issues than other agro-commodities.

Regardless of whether these priority issues will be covered by standards and policies, they will receive increasing attention in the future. Wetlands and the people depending on them are increasingly under pressure, and biofuels production directly or indirectly contributes to this. As a consequence, the various governing or economic actors in the biofuel production chains will likely receive more criticism from civil society organizations, consumers and various political institutions.

The responsibility regarding the various issues of concern is likely to be attributed at different levels. Most are considered as the direct responsibility of the company engaged in the activity of producing or processing feedstock. Increasingly the issues at production level are considered to be within the sphere of influence of all actors in a specific supply chain. Issues can also be considered the responsibility of a whole sector. Issues such as Indirect Land Use Change (ILUC) are in general not linked to the activities of one specific company, but to the whole biofuel sector (except for activities in controversial sectors such as palm oil, in which the ILUC argument can be easily used against any company sourcing palm oil for biofuels). The third level of attribution is the level of provincial, national or supra-national governmental institutions.

Table 1 Priority issues per level

Issue	Level	Company	Sector	Government
GHG emissions		X (eg. peatland conversion)	X	X
Biodiversity loss		X	X	
Bad water and soil management practices		X	X	
Infrastructure development		X (if private investments are involved)		X
Land rights, indigenous people rights, labor and human rights		X	X	X
Socio-economic development and fair prices		X	X	
Competition with food, feed and local uses		X	X	
Use of marginal and degraded lands		X		X
Indirect land use change		X (eg. palm oil sector)	X	X

Source: Aidenvironment

Although responsibility can be attributed to various levels or actors, the individual economic operators are and will be considered as primary responsible actors regarding most issues in the biofuel supply chain. They will receive the blame for most scandals and mismanagement. The hot issues in the near future are likely to be: GHG emissions, biodiversity loss, land rights and human rights, and competition with food.

Adhering to mandatory and voluntary standards will not be sufficient for economic operators to assure sustainable sourcing. A more comprehensive sustainability strategy is recommended to mitigate the socio-economic, environmental and climate risks of biofuel production and sourcing and to valorize the development potential. This should encompass the development of a sustainability policy and pro-active attitude at governance and operational levels. Only a comprehensive approach towards sustainability can secure sustainable sourcing and provide a competitive edge in managing sustainability risks and in brand building.

Introduction

Background

The production and use of biofuels is promoted by many governments. It is promoted as an instrument to reduce GHG emissions, to improve energy security, to support the agricultural sector, and to improve a country's trade balance.

Whereas biomass to energy production has several potential positive effects, in practice it also has several negative effects. Negative effects appear to be mainly associated with the initial phases of rapid area expansion and large-scale production of agro-commodities as feedstock. Some of these effects are an increase in GHG emissions, loss of natural carbon sinks, soil depletion, biodiversity loss, land tenure disputes, human rights issues, competition for land with other applications including the production of food and feed, water shortages, pollution of water and air, impacts on the welfare of local communities, and increased food prices. Because of these (potential) negative impacts, biofuels are currently a much debated topic. Many stakeholders do not perceive biofuels as a sustainable product. To address these sustainability issues, various policies and sustainability standards have been developed and are currently under development.

In this context, Wetlands International is conducting a Quick Scan on the implications of biofuel development in or near wetlands on their capacity to provide ecosystem services and maintain biodiversity. As part of the Quick Scan, Aidenvironment has been asked to analyze the framework of existing and emerging standards and policies relating to biofuels with a focus on wetlands, as well as to provide insight into the relationship between selected biofuel feedstocks / biofuels in general and indirect land use change (ILUC) impacting wetlands. Biofuel feedstocks selected for purpose of the Quick Scan are corn, palm oil, soy and sugarcane.

The Quick Scan aims to improve insight into these implications by providing answers to the following six questions:

1. At the global level, what is the relationship between the selected biofuel feedstocks (corn, palm oil, sugarcane and soy) and indirect land use change impacting wetlands?
2. What are the most globally relevant current and anticipated pieces of legislation, international agreements and certification regimes for biofuels and biofuels feedstock? Selection should consider importing and exporting countries (or regions) in both the north and south.
3. What are the current standards, guidelines and sets of criteria that are approved by these bodies, and how do they directly or indirectly impact wetlands?
4. How do gaps in legislation, international agreements and certification agreements also directly or indirectly impact wetlands?
5. What are the main views and issues of concern that have been raised publicly about biofuels and about omissions in standards, guidelines, criteria or certification schemes, and how do these issues directly or indirectly impact wetlands?
6. Which issues of concern are top priority, and may lead to changes in policies or to ongoing criticism of certain biofuels and / or feedstock?

Research scope and approach

Triple P has been guiding Aidenvironment during the Quick Scan. While the objective of the research was on identification and clarification of Policies, Perceptions and Priorities, the scope integrated People, Planet and Profit aspects of sustainability in its findings. Environmental as well as socio-economic impacts of biofuel production and use in relation to wetlands were included in the analysis.

Since the current understanding of indirect impacts of biofuels production and use is still limited - the debate and research has only started recently - the analysis on ILUC was largely dependent on the current restricted state of information and knowledge. Hence, indirect land use changes have only been differentiated for selected feedstocks to a limited extent, and the analysis has largely been performed in a more general manner.

The research approach taken in the quick scan consisted of various methods, including consultation of colleagues, interviews with representatives of regional and national governments, industry, roundtables and civil society organizations as well as literature review and consultation of colleague researchers in the Quick Scan.

Reading guidance

Chapter one of the report sketches the landscape of biofuels and wetlands, with a special focus on potential and actual beneficial and adverse impacts of biofuel production as reflected in current debate.

The second chapter provides insight into the contents of the globally most relevant current and anticipated pieces of legislation, international agreements and certification regimes for biofuels and biofuel feedstocks, with particular emphasis on their relevance for wetlands. This overview includes national, regional, international mandatory and voluntary policies and standards. Perspectives and views of representatives of governments, industry, civil society organizations, academics and others on these policies and standards are reflected upon as well.

The third chapter discusses perspectives and developments of the priority issues in relation to biofuels impacting wetlands. These criteria include GHG emissions, indirect land use change (ILUC), water and land (use) rights. This chapter ends with some overall recommendations to Wetlands International on how to position itself in the current field of standards and policies.

This report ends with some general conclusions and recommendation on how policies and standards could fit into an overall sustainability strategy of economic operators active in the biofuel sector.

1. Wetlands and Biofuels: Sketching the Landscape

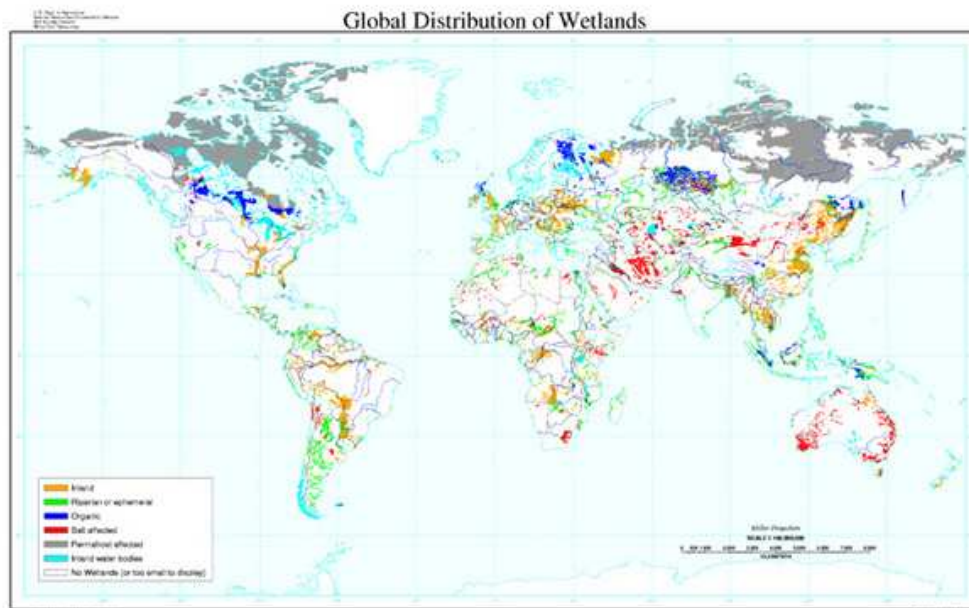
1.1 Wetlands

Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life.¹ They occur where the water table is at or near the surface of the land, or where the land is covered by water. The international Ramsar Convention takes a broad approach in determining the wetlands which come under its protection. Under the text of the Convention (Article 1.1), wetlands are defined as “areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters”.

In addition, for the purpose of protecting coherent sites, the Convention provides that wetlands to be included in the Ramsar List of Internationally Important Wetlands may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands. Five major wetland types are generally recognized:

- marine (coastal wetlands including coastal lagoons, rocky shores, and coral reefs);
- estuarine (including deltas, tidal marshes, and mangrove swamps);
- lacustrine (wetlands associated with lakes);
- riverine (wetlands along rivers and streams); and
- palustrine (meaning “marshy” - marshes, swamps and bogs).

Figure 1: Global Distribution of Wetlands



Source: Natural Resources Conservation Unit.

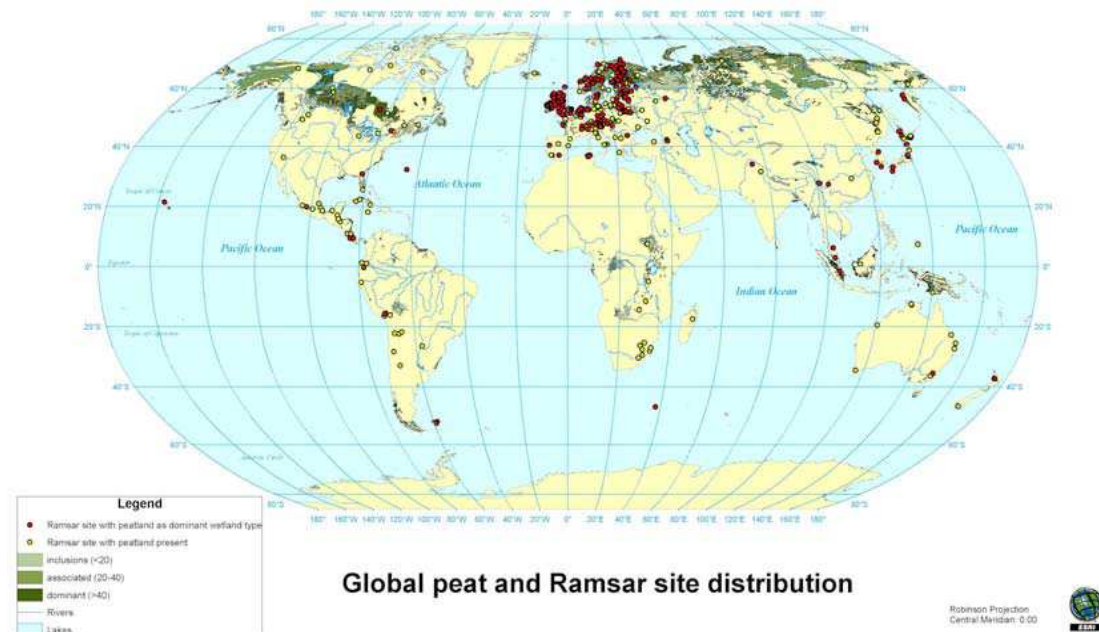
¹ http://www.ramsar.org/cda/ramsar/display/main/main.jsp?zn=ramsar&cp=1_4000_0_

Wetland values

Wetlands are among the world's most productive environments. Water saturation largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands provide many important ecosystem services such as the storage and purification of water, buffering of water discharge, recharge of subterranean aquifers, maintenance of biodiversity, carbon storage and the production of renewable natural resources such as fish, natural pasture, timber and wildlife. They are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals depend for survival. They support high concentrations of birds, mammals, reptiles, amphibians, fish and invertebrate species. Wetlands are also important storehouses of plant genetic material.

Wetlands are valued for their capacity to store, filter and provide water. Certain wetlands, notably peatlands, store large amounts of carbon. As long as these wetlands are preserved, they impede this carbon dioxide from being released into the atmosphere.

Figure 2: Global peat and Ramsar site distribution



Source: Robinson projection, Central Meridian.

Wetlands also provide habitation and sustenance for people. They are important for the health, welfare and livelihood of people who live in or near them. People use wetlands for fishing, hunting, for the collection of water and food such as fruits, vegetables and plants. Wetlands have special attributes as part of the cultural heritage of humanity: they are related to religious and cosmological beliefs, and form the basis of important local traditions. Recreation and tourism opportunities are also amongst the functions of wetlands.

1.2 Biofuels, policies and principles

Biofuels

Biofuels are any liquid, solid or gaseous fuels produced from organic matter. The extensive range of organic materials used for biofuel production includes starch and sugary plants such as corn, wheat or sugar cane, oily plants such as rape seed, soya beans or jatropha, vegetable oils and animal fats, wood and straw, algae and organic waste and others. Biofuels are commonly referred to as first generation, mainly bioethanol and biodiesel, or second generation, which refer to variety of biomass-to-liquid technologies.

The Quick Scan focuses on first generation biofuels and particularly on biofuels from corn, palm oil, soybean and sugarcane feedstocks as selected by Wetlands International for purposes of the research.

Biofuel policies on the rise

The world market for biofuels has expanded rapidly in recent years. Ethanol and biodiesel are biofuels mainly used as transport fuels. Global biofuel production tripled between 2000 and 2007. In this time period global bioethanol supply doubled to over 40 billion litres. Global bioethanol production is dominated by Brazilian sugar cane and US corn. Biodiesel production is significantly lower but expanded to around 10 billion litres in 2007.²

Worldwide, consumption of oil for transport is projected to grow by 1.7% per year over 2005-2030. Biofuels are expected to play an increasing role in meeting demand for transport fuel, with an expected average annual rate of growth of production at approximately 7-9% per year. Depending on the scenario, the total share of biofuels in the transports sector is estimated at 3% to 6%.³

Governments have provided substantial support for biofuel development to enable it to compete with conventional gasoline and diesel.⁴ The measures to stimulate development, usually laid down in government policies and programmes but sometimes in binding legislation, include consumption incentives (fuel tax reductions), production incentives (reduced taxes and direct subsidies), mandatory blending standards and support for research and development. This has contributed significantly to the growth in biofuel production and use in several markets worldwide.⁵

The main objectives behind these laws and policies are:

- *Energy security and energy prices:* home-produced bio-energy diversifies risks to increasing energy costs of conventional fuels and uncertainty regarding future energy supply, while it reduces the costs of energy imports.
- *Climate-change (human-induced) mitigation through reduced greenhouse gas emissions:* international commitments under the Kyoto protocol and growing awareness of the adverse environmental impacts of fossil fuels are increasing the demand for alternative energy sources, such as bio-energy.
- *Agriculture and rural development:* bio-energy production generates a new demand for agricultural products, reduces commodity surpluses and improves commodity prices. It contributes to employment, the creation of new value adding activities, and increases energy access in remote areas.

² Renewable Fuels Agency (2008).

³ International Energy Agency (2007).

⁴ Raswant et. Al. (2008)

⁵ FAO (2008) and Oxfam International (2008).

- *Export development:* Bio-energy carriers offer opportunities for new export revenues, as it is unlikely that the main international consumer will have the capacity to supply their domestic demand.⁶

Following concerns about the sustainability of biofuel production and use, several international platforms and organizations have developed or are in the process of developing standards, policies or methodological frameworks which address sustainability aspects of biofuels in general, or specific biofuel feedstocks. Examples of these include the Global Bio Ethanol Platform (GBEP), The Roundtable on Sustainable Biofuels (RSB), Roundtable on Sustainable Palm Oil (RSPO), Roundtable on Responsible Soy (RTRS), Better Sugarcane Initiative (BSI) and International Organization for Standardization (ISO).

Furthermore, biofuel production and use is guided by an international framework, which consists of mandatory international obligations on the state level such as the Convention on Biological Diversity, the Convention on International Trade of Endangered Species in Wild Fauna and Flora (CITES), the Universal Declaration of Human Rights (UDHR), the International Labor Organization (ILO) Conventions and Declarations and the ILO Convention relating to Indigenous people. These standards provide minimum requirements and guidance as to environmental and social impacts of state policy and practices.

The following chapters will provide insight into the substance and scope of these standards and policies.

1.3 Biofuels and wetlands: the main issues

Based on interviews and a literature review, the Quick Scan has identified the following issues that are most relevant in relation to wetlands:

- GHG emissions
- Biodiversity loss
- Bad water and soil management practices
- Infrastructure development and related environmental and social impacts
- Land rights, indigenous people rights, labor and human rights
- Socio-economic development and fair prices
- Competition with food, feed and local uses
- Use of marginal and degraded land
- Indirect land use change (ILUC)

This section shall briefly explain the various issues.

GHG emissions

Biofuel feedstock production can lead to increased greenhouse gas emissions in various ways. The way the soil is treated under cultivation does make an important difference in the greenhouse gas balance of feedstock production. Activities such as plowing, direct planting, the use of cover crops, agrochemicals and fire all have different effects. However, the most important factor contributing to increased GHG emissions is the conversion of carbon rich natural areas into cropland. The removal of natural vegetation in order to plant biofuel feedstock crops can result in a carbon release from both above the ground as well as from the soil. This carbon debt is highly sensitive to the type of land cleared. Wetlands and especially peatlands, have carbon rich soils. Converting

⁶ Aidenvironment (2008b) and Dufey, A. et al. (2007).

peatlands to biofuel crops may result in a carbon debt that takes hundreds of years of gasoline displacement to repay.⁷ Drainage and degradation of primary peat forests results in enormous carbon losses. Most of today's peatland degradation is linked to the expanding of oil palm cultivation.

The increasing demand for biofuel feedstock is likely to result in the further expansion of agricultural areas and competition with natural resources. There exists a great concern that by increasing aggregate demand for agricultural land, farming will expand into critical carbon sinks such as forests, wetlands, and grasslands, triggering the release of carbon from soils and vegetation.

Biodiversity loss

Wetlands are important pockets of biodiversity. Many wetlands are protected areas and/or are recognized as Ramsar Wetlands of International Importance, Key Biodiversity Area, Important Bird Area or United Nations Educational Scientific and Cultural Organization (UNESCO) World Heritage Site. An important threat to biodiversity is habitat loss by the conversion of wetlands into agricultural plantations or infrastructure. Numerous examples of wetlands under threat for feedstock production exist, such as the Tana River Delta in Kenya, the Wami Basin in Tanzania and the Pantanal in Bolivia. The biodiversity in and around wetlands can as well be threatened by drainage, pollution, eutrophication, and infrastructure development.⁸

Bad water and soil management practices

Both biomass cultivation designed for high productivity and the conversion plants for biofuels need water. As a result, valuable water resources may be affected. This can occur by (excessive) water use and the water competition that may result from it, including possible conflicts, in particular, in areas with scarce water resources. These include competition of water with other water users (industry, hydro-energy, food production, household use, riparians and indigenous people) and with respect to environmental and nature conservation objectives (water protection, ecosystem protection, biodiversity).

According to a report published by UN's World Water Assessment Programme, the sharp increase in biofuel production has impacted significantly on water demand. Despite their potential to reduce dependence on fossil energy, biofuels, with current technology, are likely to place a disproportionate amount of pressure on biodiversity and the environment. The report highlights the increase in production of ethanol which will rise from 77 billion litres in 2008 to 127 billion liters by 2017. Between 1000 and 4000 litres of water are needed to produce a single litre of biofuel.⁹ Many of the crops currently used for biofuel production – such as sugar cane, oil palm and maize – have relatively high water requirements at commercial yield levels and are therefore best suited to high-rainfall tropical areas, unless they can be irrigated.

Water quality can be negatively impacted by biofuel crop production in two ways: sedimentation and eutrophication. Sedimentation of wetlands can be caused by erosion on biofuel production sites upstream on rivers that feed into the area. Eutrophication can be a result of two things. First, of nutrient leaching caused by inappropriate fertilizer use. Second, of the release of waste water or effluent from production facilities such as ethanol plants or oil palm mills. Furthermore, chemical use by farmers might pollute surface and groundwater. In Brazil, water pollution is a constraint in ethanol production following from application of fertilizers and agro-chemicals, soil erosion and sugar-cane washing. Most water quality related problems can easily be reduced by respecting

⁷ Kocolowski, M., et al. (2009) and FAO (2008).

⁸ Aidenvironment (2008a).

⁹ UN World Water Assessment Programme (2009).

improved soil fertility and pest management practices. In reality, many farmers do not respect these practices.

Infrastructure development and related environmental and social impacts

An inherent tension exists between economic development and the conservation of natural areas. As with agricultural production in general, the development of infrastructure often follows the expansion of biofuel production. Especially if biofuel plantations are situated in the surroundings of wetlands, there is a high risk of (parts of) the wetlands being converted in order to make way for roads, buildings, settlements or harbors. This is particularly the case when wetlands are in riverine or in coastal areas. This indirect effect of biofuel production will increasingly occur as demand for land is pressing. An example of agricultural related infrastructure threatening wetlands is the ambitious project to construct a canal across the Pantanal, Paraguay and Parana river systems.

Land rights, indigenous people's rights, labor and human rights

Millions of people depend on wetlands for their livelihood, mostly by depending on their reliable availability of fresh and clean water for domestic use and irrigation, using the areas for seasonal grazing or agricultural lands or for fishing. The rise of biofuels may be both an opportunity and a threat to them. Biofuel development could increase income generating opportunities and create employment. On the other hand, it could deprive local communities from their traditional livelihood opportunities such as fishery, hunting and collecting. High pressures on existing arable lands and the need to reduce production costs favors large-scale agribusiness operations and concentrated land ownership. This causes land conflicts in countries with poor land tenure regulations or poor law enforcement. In some regions, the number of land conflicts is increasing, particularly related to the expansion of large-scale plantations (for instance palm-oil in Indonesia and soy and sugarcane in Brazil and Paraguay).¹⁰ People who do not own their land or who own the land according to customary legal systems, are particularly vulnerable to negative impacts of biofuel production. Women, who generally grow subsistence crops or use land for picking fruits, tend to lose the most. Also pastoralists and indigenous people are especially affected as they live according to customary right systems, which are often not officially recognized by national governments.

Fundamental rights at work are essential for farm workers. These include a living wage, maximum working hours, trade union rights, health and safety, and prohibition of forced and child labor. In regard of working conditions, women are likely to be worse off than men, as they tend to work often for lower wages, without contracts and in low-skilled jobs.¹¹ About 70% of the child labor in the world is in agriculture, representing approximately 132 million girls and boys aged 5-14 years. In Brazil, various cases of slave labor are discovered each year related to soy and sugarcane production.¹²

Apart from these direct impacts, labor could be indirectly affected by the development of biofuel production. Subsistence farmers, while becoming dependent on a secure income from biofuel plantations, might now have to buy food on markets, while food prices increase. In other cases, subsistence farmers will have to start farming in other areas, or will have to leave for urban areas. Both consequences constitute high risks for increasing poverty.

¹⁰ Oxfam International (2008).

¹¹ Friends of the Earth (2009).

¹² www.reporterbrasil.org.

Socio-economic development and fair prices

Biomass for energy production can benefit smallholders through employment generation and higher rural incomes, but the scope of these impacts is likely to remain limited in many parts of the world. For instance, ethanol production with current technologies requires fairly large economies of scale and vertical integration and may provide little advantages to small-scale farmers.¹³ The arrival of large-scale investments in a region do not necessarily benefit the local economy. Evidence from areas with rapid expansion of agro-commodity production shows that the likely result is increased inequality in terms of income, access to land and gender.¹⁴ For instance, oil palm smallholders in Indonesia and Malaysia fully depend on neighboring plantation companies for inputs, such as seedlings, credits, and fertilizers, and on the use of palm oil mills. These companies have in general a local monopoly position. There are reports of companies exploiting their bargaining power to offer very low prices to smallholders.¹⁵ In Indonesia and Papua New Guinea the expansion of the oil palm sector has been characterized by the erosion of land rights.¹⁶ Large investments are signaling the emergence of a new 'bio-economy' in the coming decades.¹⁷ There are risks that farmers will be squeezed out by companies that control the feedstock market.

Competition with food, feed and local uses

Competition between biofuel production with food and feed can be found at different levels, from local to international. At the local level, food production can be displaced by production of biofuel crops if local farmers lose their land, either by selling or being expropriated, or if they switch to biofuel crop production themselves. This disrupts the local food market, probably resulting in higher local food prices. Secondly, local food production can be affected by decreased availability of water. The nutritional impact of a decline in fish stocks can be very negative. Likewise, the land used for the production of biofuel feedstock or the biomass itself can compete with feed or local construction materials. The use of agrarian and forestry residual products for biofuel production can as well be at the expense of long-term soil stability and organic matter content.

Concerning a higher geographical scale, the indirect and significant effects of biofuel production on agricultural markets and on food security on the global level is generating much debate and controversy.¹⁸ Threats to food security are seen as an enormous adverse impact of large-scale biofuels. Replacement of more controversial feedstock such as palm oil with other less contentious and more sustainable feedstock such as rapeseed, might also feed the competition between food and fuels as other crops will be needed to supply the food market.¹⁹ Using food to produce biofuels might further strain already tight supplies of arable land and water all over the world, thereby pushing food prices up even further. With global demand for food production projected to increase substantially, potential competing demands upon agricultural land for food and biofuel production may lead to pressure for the conversion of wetlands.

Use of marginal and degraded lands

Various policies and standards promote the use of marginal, degraded or idle lands to reduce pressure for land change and to avoid competition between food and fuel production. Marginal land is described by the OECD as land of poor quality with regard to agricultural use, and unsuitable for housing and other uses. Many other definitions are under development. The concept of marginal land forms a particular risk to wetlands and its inhabitants. Wetlands generally have

¹³ World Bank (2008b)

¹⁴ Kessler et al. (2007).

¹⁵ Aidenvironment (2006b).

¹⁶ Common Fund for Commodities (2007).

¹⁷ World Watch Institute (2007).

¹⁸ FAO (2008) and Energie Transitie (2008).

¹⁹ Friends of the Earth (2009).

low population densities, little infrastructure, little formal economic activities and are often remotely situated. This makes them ideal lands to depict as marginal or idle. As a consequence, they are regularly being converted for agricultural or industrial developments, even though yields might be lower especially in case of degraded land. Examples of these (potential) developments are wetlands and other natural areas in Malaysia, Indonesia, Brazil (Pantanal), Kenya (Tana River Delta) and Botswana (Okavango Delta). In reality, these wetlands could be marginal, but certainly not idle, in the sense of abandoned or disused. Many local and indigenous people, including pastoralists, might use the marginal wetlands for purposes of collecting food, fruit of fishing and small-scale farming.

Indirect land use change (ILUC)

The production of biofuels has a range of indirect effects at global level. Of these indirect effects, the rising food commodity prices effecting food security and the displacement of agricultural production onto uncultivated land effecting biodiversity, GHG emissions and land rights have been most widely discussed. This section focuses on the latter, namely the indirect land use changes (ILUC) due to biofuel production, with specific reference to the feedstocks corn, palm oil, sugarcane and soy. Indirect land use changes (ILUC) occur if a different use (such as food or feed cultivation) previously prevailed on areas designed for biomass cultivation, and is “crowded out” (displaced) by the biomass cultivation. Since there still is demand for food or feed formerly produced on the land, their production is now relocated to different areas.²⁰ These different areas might have high carbon stocks, high biodiversity values and indigenous customary land rights. According to the ILUC concept, the resulting CO₂ emissions, loss of biodiversity or land conflicts are indirectly caused by biomass cultivation and must be allocated to it.

Of the world's 13.5 billion hectares of land surface area, 2 billion hectares are considered potentially suitable for rainfed crop production. Increased biofuel production on existing croplands could trigger expansion in the production of non-biofuel crops elsewhere.²¹ Natural areas such as wetlands and peatlands are at risk for production of crops and other land uses as a result of biofuel production.

In September 2009, President Lula of Brazil released a new law regarding agro-ecological zoning of sugar cane. The law prohibits the expansion of new sugar cane production areas on about 80% of the national territory including the Amazon, the Pantanal and the Upper Paraguay River Basin. While currently 1% of Brazilian territory consists of sugar cane plantations, this means that about 7.5% of national territory could possibly be converted to sugar cane plantations. As a consequence, sugar cane could push current or other crop production into areas such as the Amazon, Pantanal and Paraguay River Basin, thereby increasing GHG emission through land conversion and harming biodiversity, and the rights of local and indigenous people.²²

In relation to wetlands, the impacts derived from indirect land use change following the production of biofuels, focuses on GHG emissions. Wetlands are converted in order to provide for land use purposes which were previously carried out on the biofuel crop lands.

Demand for corn in the USA has skyrocketed as a result of the ethanol programme. In response, American and Canadian farmers are switching out of soy and into corn. This in turn pushes up the price of soy, which is correlated to rates of deforestation in the Amazon Basin – South American

²⁰ Fritzsche et al (2009).

²¹ Renewable Fuels Agency (2008).

²² Diário de Cuiabá (2009).

soy farmers respond to higher prices by bringing new (in this case rainforested) land into production. There are similar concerns that expansion of sugarcane for ethanol in Brazil is also pushing cattle and soy farmers further into the Amazon.²³

Indirect land use changes may also lead to loss of biodiversity, soil depletion and loss of water resources, the violation of land rights and indigenous people's rights, the vulnerability of the local population for changes in global commodity prices, and endangered food security.

²³ Oxfam International (2008) and Morton et al. (2006).

2. Relevant Policies and Standards

2.1 Introduction

Biofuel development is influenced by a wide range of standards designed to ensure sustainability of biofuel production as well as national and regional policies in multiple sectors ranging from agriculture and energy to transport and trade. In collaboration with Wetlands International, fourteen standards and policies have been identified for analysis (table 1 gives some characteristics per standard and policy). These include national, regional and international, certification, voluntary and mandatory standards and policies, as well as government-initiated and multi-stakeholder platforms, and general and feedstock specific ones. A selection was made on the basis of particular relevance in relation to biofuel production impacting wetlands and selected feedstock (corn, palm oil, soy and sugarcane) as well as significance in the sense of potentially or actually influencing the sustainability of biofuel production.

The choice for national and regional policies was based on the criterion of main consumption markets in the world: the United States of America (USA), Europe and Brazil.

This chapter provides an insight into the contents of the various policies and standards, with a special emphasis on the relation to wetlands. Based on a broad concept of sustainability, the focus is on environmental and socio-economic aspects of sustainability including GHG emission reduction, soil, biodiversity, water, competition with food / natural resources, human rights and socio-economic development. Indirect impacts have been taken into account as well. Perspectives and views of representatives of governments, industry, civil society organizations, academics and others on these policies and standards including (potential) strengths and weaknesses and (possible) future developments are also reflected upon. Appendix IV sketches a broader background of the policies and standards.

The following table provides an overview of the focus (geographical, feedstock, market relevance and target-group) of the selected standards and policies. It also typifies the policies and standards as binding agreements, certification standard, non-binding guidelines, and platform. As the Brazil and USA policies consist of several standards and policies, they include various typifications.

Table 2: Overview of standard and policy framework

Standard, policy / Focus	Geo-graphical	Feedstock	Market	Target group	Kind of initiative
BSI	GL	S	IM	EO	G / C
Brazil policy	N	GE / S	E / IM	EO	G / C
CBD IX\2	GL	GE	E / IM	MS / EO	G
CEN TC 383	R	GE	IM	MS / EO	G / C
GBEP	GL	GE	E / IM	MS	G
ISO/PC	GL	GE	IM	MS / EO	G / C
NTA 8080	N	GE	IM	EO	G / C
Ramsar R X.25	GL	GE	-	MS	G
RED	R	GE	IM	MS	BA
RSB	L	GE	IM	EO	G / C

Standard, policy / Focus	Geo-graphical	Feedstock	Market	Target group	Kind of initiative
RSPO	GL	S	IM	EO	G / C
RTRS	GL	S	IM	EO	G / C
UNFCCC	GL	GE	E / IM	MS	BA / G
USA policy	N	GE	E / IM	EO	BA / G / C

Source: Aidenvironment

Key Explanation:

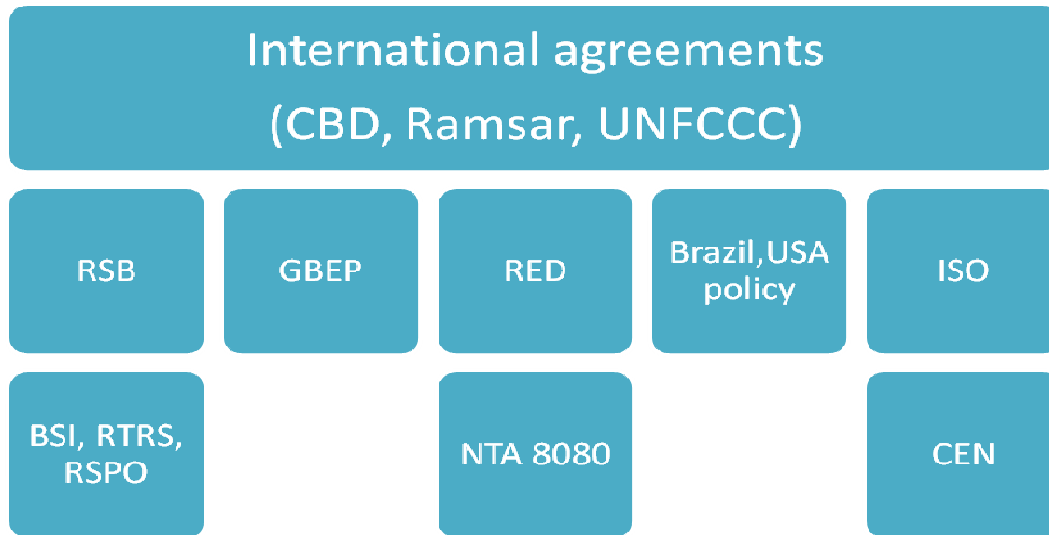
- BA: Binding Agreement for Member States or Economic Operators
- C: Certification standard
- E: Export market relevance
- EO: Economic Operator
- G: Guidelines (non-binding)
- GE: General feedstock
- GL: Global application
- IM: Import market relevance
- MS: Member State
- N: National application
- R: Regional application
- S: Specific feedstock

The following figure provides an overview of the relation and interdependence of the various policies and standards identified. The international agreements are high up in the hierarchy as they provide for binding obligations for governments. Even non-binding decisions and recommendation based on these conventions might offer guidance for other national, regional and international standards and policies. The European Directive (RED) is an important binding regulation which requires national standards (NTA 8080), European certification scheme (CEN) and voluntary general or feedstock specific Round Tables (RSB, RTRS, BSI and RTRS) to follow.

While the feedstock-specific voluntary sustainability standards are each important in relation to their own crop, the RSB functions as a meta-standard, providing guidance to feedstock-specific standards and to feedstock for which no such standard exists (yet). Similarly, the future GBEP standard will stimulate policy-making and harmonize existing policies, standards and tools in the field of biofuels.

National, regional and feedstock specific certification schemes will have to be in line with the future ISO certification standard.

Figure 3: Relationships between policies and standards



Source: Aidenvironment

2.2 Policies and standards

2.2.1 Better Sugarcane Initiative (BSI)

Contents

Respect for human and labor rights, and actively managing biodiversity and ecosystem services are core principles of the BSI standard. The standard which will consist of criteria and indicators covering the major sustainability issues encountered in the sugarcane industry. They include labor issues, indirect land use change, biodiversity and High Conservation Value Areas (HCVA's), Green House Gas (GHG) emissions and a reference to the emissions resulting from indirect land use change.

The technical working groups will develop universally applicable guidelines which will focus on significant social and environmental issues such as soil productivity, rational water use, effluent management, biodiversity maintenance and equitable labor.

Perspectives and future developments

The BSI standard, which will be finalized in 2010, is perceived as very important as the market for bio-ethanol from sugarcane is increasing and currently no standard for sugarcane exists.²⁴

During meetings worldwide, stakeholders provided input on version one of the standard. While they welcomed sustainability standards for sugarcane production, growers from South Africa emphasized that they would need some indication of scientifically backed up relationships between practices and "global warming burden" to be confident in use of this measure (criteria 3.2). Research may still be needed to provide this, as the global warming measure is not deemed in line with international measurements.²⁵

²⁴ BSI (2009a).

²⁵ BSI (2009a).

During a stakeholder meeting in Ethiopia, various delegates raised the issue of the BSI certification process acting as a barrier to trade especially for developing countries that have yet to penetrate the market.²⁶ The establishment of such a standard could eliminate their potential role in this industry. Similarly concerns on the possibility of the BSI standard being used as a cut-off requirement for investors and banks and, potentially, becoming a barrier to access credit (that could be used to improve production practices), were raised during the Brazil meeting.²⁷ In response, BSI emphasizes that the certification process was being established precisely to facilitate trade and encourage better targeted investment and development in this area.

Finally, while BSI is an associate member of ISEAL, many stakeholders have stressed the importance of definitions (such as HCVA) being compatible with existing policies and standards such as the RED.²⁸

Conclusion

The BSI standard, as a feedstock specific certification scheme, is expected to be compliant with regulatory environments such as the European Union, and it aims to be a practical and useful means for ethanol exporters to the EU of demonstrating compliance with for instance RED (for instance in relation to GHG emission levels). As its principles and criteria will only be finalized in 2010, it can be concluded that while the standard will cover the major sustainability issues encountered in the sugarcane industry (such as indirect land use change, biodiversity and HCVA's, GHG emissions) the final specification of the criteria and indicators is not certain yet.

Because the methods and data requirements for calculating emissions from indirect land use change are not fully developed, the assessment of emissions arising from indirect land use change is not included, though referred to. This could change in the future if indirect effects can be calculated with more certainty and accuracy.

The significance of this Initiative lies in the fact that it provides sustainability principles and criteria for sugarcane ethanol production, which constitutes such a large share of biofuel use and production worldwide.

2.2.2 Brazil policy

Contents

The National Programme for the Production and Use of Biodiesel (PNPB) focuses on sustainable agricultural practices, potential GHG emission reductions, food security, social inclusion of local farmers and regional development, while the later National Climate Change Plan focuses on reduction of GHG emissions.²⁹

The Iniciativa Brasileira de Verificacao Agropecuaria, focuses on 5 principles including environment and social management, treatment of workers and working conditions, community relations, integrated crop management, and land management.³⁰

The sustainability certification scheme for sugar-cane ethanol (Regulamento de Avaliacao da Conformidade), developed by INMETRO (National Institute of Metrology, Regulation and Industrial

²⁶ BSI (2009a).

²⁷ BSI (2009a).

²⁸ BSI (2009a).

²⁹ GBEP (2008).

³⁰ Friends of the Earth - Brazilian Amazon (2009),

Quality), is based on compliance with minimum standards, including current legislation (labor, environmental). It focuses on GHG emissions, and social issues such as labor rights and social development.

Perspectives and future developments

According to Roberto Smeraldi of Amigos da Terra - Amazônia Brasileira, the PNPB is a conceptual programme of which the impact is relatively small, particularly in the context of large infrastructure investments and agricultural developments in Brazil. Nevertheless, The PNPB has received many reactions from civil society organizations and scientists. They tend to focus on the social inclusion objective as well as on environmental criteria. As PNPB is far from meeting its target of including at least 200.000 family farmers into the biodiesel production chain, and Brazil's biodiesel programme has gradually increased its dependence on raw materials from agribusinesses - soybean, bovine fat, and cotton - which raises questions about the future of family agriculture in Brazil's agro-energy sector. On the other hand, organizations and social movements linked to rural workers have adopted conflicting stances regarding biofuels. Some have given their unconditional support to government projects by campaigning for their members to join in biodiesel production. Others question the imposition of policies that keep family farming at the base of the production chain as a mere provider of raw materials, and demand more participation in processing of oleaginous plants. Still others adopt distinct positions internally, according to the state where they act.³¹

The current PNPB policy does not sufficiently address the motivation of good agricultural and industrial practices to contribute to the mitigation of climatic changes through the reduction of GHG emissions. Nor does it include the expansion of some crops like soy, which encourage deforestation in the forested areas and the protected areas in the Amazon and the savannah areas. It is therefore suggested that the Policy should be modified in such a manner that environmental criteria are added to the biodiesel certification, changing the Social Fuel Certification into a Social and Environmental Fuel Certification.³²

The Principles and Criteria for Verification, being developed by the Iniciativa Brasileira de Verificacao Agropecuaria, are regarded as an important and promising standard as it takes a common approach, encompassing all agricultural crops and sectors. The standard might serve as a precedent for other countries.³³

The National Climate Change Plan, which sets ambitious objectives in relation to the reduction of greenhouse gas emissions from deforestation, as well as regarding energy efficiency and renewable energy, has only been initiated in 2008. Roberto Smeraldi of Amigos da Terra - Amazônia Brasileira emphasises that: 'Despite the fact that the NCCP is rather weak, it is at least a starting point for Brazil'.

At least three public arenas are projected as strategic spaces for governance in sugarcane production in Brazil in the forthcoming two years: the National Commitment to Improve Labor Conditions in the Sugarcane Industry, the Agro-environmental Protocol and Agro-ecological Zoning. They might contribute to increased public control over production and the activity in the country, but they can also become strategies to launder the image of the sugar-alcohol industry. Therefore, monitoring them is crucial to establish the first alternative.

³¹ Reporters Brazil.

³² Garcez et al. (2009) and Soares et al (2007).

³³ Friends of the Earth - Brazilian Amazon (2009),

The National Commitment to Improve Labor Conditions in the Sugarcane Industry

Launched in July 2009, the protocol was the result of a dialogue table established in July 2008, which included businesses, labor representatives and government officials. It is not legally binding, but it was voluntarily joined by 309 out of 413 processing companies active in the country, which should be inspected by independent audits. In general, the pact only underscores legal obligations. Its main achievement is the end of labor intermediation (outsourcing): sugarcane companies committed themselves to directly hiring workers for their plantations as well as sugar and alcohol processing plants. But the agreement does not mention working conditions such as the provision of meals for workers. At least 10 ethanol plants which subscribed the Commitment were part or will enter the "Dirty List" of slave labor users, according to Reporter Brazil.³⁴

Agro-ecological zoning of sugarcane

On 17th of September 2009, the Brazilian government released a new law regarding Agro-ecological zoning of sugarcane.³⁵ The law, announced more than a year ago, prohibits the expansion of new sugar cane production areas on about 80% of the national territory including the Amazon, the Pantanal and the Upper Paraguay River Basin. This means that about 7.5% of national territory could possibly be converted to sugar cane plantations (currently 1% of Brazilian territory consists of sugar cane plantations). As a consequence, sugar cane could push other crops into other areas leading to indirect land use change in areas as the Amazon, Pantanal and Paraguay River Basin.

Agroenvironmental Protocol

With nation-wide zoning in place, state-wide efforts may become more effective. In São Paulo - the state that accounts for 60% the Brazil's ethanol production and 40% of the world's production - 157 processing companies joined the Green Ethanol Programme, led by the State Environmental Department. State law establishes 2021 as the limit for mechanisable sugarcane plantations to discontinue using fire and 2031 for non-mechanisable ones, but the Agro-Environmental Protocol advances that deadline to 2014 and 2017, respectively.

Conclusion

Even as Brazil has been a pioneer in national regulatory efforts for the bio-energy sector with a large emphasis on use of ethanol as a transport fuel, biofuel policies are in their infancy. The various policies, standards and programs focus on sustainable issues such as potential GHG emission reductions, food security, the protection of biodiversity, social inclusion of local farmers, land management, labor rights and regional development. The weakness of the PNPB policy is its small impact and the little emphasis on environmental criteria. The relatively new NCCP, though being perceived as currently weak, is a good starting point for Brazil, especially in regard of reduction of GHG emission from deforestation. On the other hand, the Principles and Criteria for Verification seem to be an important and promising standard, also for biofuel producers, traders and buyers, as it takes a common approach, encompassing all agricultural crops and sectors.

2.2.3 Convention on Biological Diversity (CBD) Decision IX/2

Contents

The CBD Decision IX/2, while emphasizing the beneficial and adverse effects of biofuel production and use, does not specifically differentiate between direct and indirect effects. Recommendation XII/7 (2007), on which the decision is based, refers to adverse effects related to the loss, fragmentation and degradation of valuable habitats such as wetlands and peatlands and other carbon sinks, their biodiversity components and the loss of essential ecosystem services and

³⁴ Reporter Brazil.

³⁵ Diário de Cuiabá (2009).

leading to increases in greenhouse gas emissions due to these changes. Competition for land managed for the production of alternative crops, including land managed by indigenous and local communities and small-holder farmers, competition for the commodity prices potentially leading to food insecurity as well as increased water consumption, increased water pollution and eutrophication, and soil degradation and erosion are also named as negative effects. Thus, the indirect effects named in the recommendation relate to food security and indirect land use change.

Perspectives and future developments

The final report will be at the agenda of the tenth meeting of the Conference of Parties in Japan in October 2010.

The strength of the decision is that it places people in the context of eco-system management, thereby embracing a broad concept of sustainability and indirect effects of biofuel production. As with the principles of the CBD and its other resolutions and decisions, civil society organizations question whether the recommendations and guiding principles as to be included in Decision IX/2, will lead to mainstreaming into local, national and international decision-making (also at producer, traders and buyers levels).

Conclusion

The 1992 Convention on Biological Diversity (CBD) is binding at government level and, with its 195 signatories, has global relevance. The CBD calls on all parties and governments to encourage the sustainable production and use of biofuels with a view to promote benefits and minimize risks to the conservation, sustainable use of biodiversity, socio-economic conditions and food and energy security resulting from the production and use of biofuels. Indirect effects are named in Recommendation XII/7 (2007) in relation to food security and indirect land use change.

While the recommendations and decisions such as CBD IX/2 are likely to guide national, regional and international policies and standards, the impact at producer, trader and buyer level might be more limited.

2.2.4 CEN/TC 383 (sustainable biomass)

Contents

Currently, several working groups are working on the development of the certification standard. However, due to the pressure of the European Commission, the scope and contents of the standard have been limited, and the themes of socio-economic effects and indirect effects have been excluded.

Perspectives and future developments:

The development of this standard (like many others at the global level) is difficult as they have to take account of the political interest of so many players. Many civil societies, dissatisfied with the developments and involvement from European authorities, left the CEN working groups in June 2009.

It is expected that the standard will be additional to and following the RED. Due to the circumstances, it is uncertain whether the deadline for submission of the first part of the standards, namely late 2010, will be met.

Conclusion

The CEN 383 standard is a voluntary standard (unless called upon in legislation), which aims to describe(s) different sustainability themes (including those incorporated in the RED). As, due to the

pressure of the European Commission, the scope and contents of the standard have been limited and many civil society organizations have left the working groups, the outcomes of the development process are highly uncertain.

2.2.5 The Global Bio Energy Partnership (GBEP)

Contents

The Task Force on Sustainability is in the process of selecting and describing sustainability criteria and indicators, divided over environmental, social and economic and energy security baskets. Indirect effects are proposed to be included in the environmental basket. During the last Task Force meeting in June 2009, it was emphasized that the developing country perspective on ILUC needed better reflection and inclusion. Following this, four activities were proposed:

- inventory of existing/planned national policies on ILUC, with a focus on developing country experiences (e.g. land-use planning/zoning laws, feedstock restrictions);
- briefing paper on ILUC and possible responses (for GBEP at first, later for public);
- two or three working-level meetings to collect science-based indicators for ILUC;
- follow-up workshop in spring 2010.

The GBEP Common Methodological Framework for GHG Lifecycle Analysis of Bioenergy consists of 10 steps of analysis. Steps 1 and 2 are checkboxes in which the user identifies the GHGs included in the life-cycle analysis. Steps 3 to 9 walk through a full Life Cycle Analysis (LCA) appropriate for bioenergy production and use.³⁶ This includes emissions due to land use change, biomass feed production, co-products and by-products, transport of biomass, processing into fuel, transport of fuel and fuel use. Step 10 consists of the comparison with replaced fuel. In order to maximize completeness and transparency in the framework, it was decided to include options for reporting direct land use change or indirect land use change or a combination of both. Within indirect land use change, domestic and international methodologies will be reported in separate sections.³⁷

Perspectives and future developments

A final report containing the agreed sustainability criteria and indicators, together with recommendations on their use would be published by May 2010 for submission to the 2010 G8 Summit in Canada.

The role of wetlands as carbon stocks is regarded as crucial, and has therefore, been integrated in the development of the methodological framework and the work on the sustainability indicators. The inclusion of perspectives and experiences from Southern countries is an additional strength.

The risk with the concept of indirect land use change is that it could be used as an instrument for political reasons. While some countries are very much on the forefront in developing the concept and related methodologies (like Germany), other countries like Brazil do not show a large interest herein. GBEP is an international platform consisting of governmental partners, UN organizations and umbrella industry organizations. As the decision-making is based on consensus, it might be a slow and difficult process to reach an agreement.

Conclusion

The significance of GBEP lies in the fact that it provides a wide-range of sustainability criteria including GHG emissions and both direct and indirect land use change. Despite its governmental focus and political decision-making process, the standard could provide guidance to biofuel

³⁶ GBEP (2009).

³⁷ GBEP (2009).

producers, buyers and traders. Especially the Common Methodological Framework for GHG Lifecycle Analysis of Bioenergy could be important in the future as it can be applied by manufacturers, producers and traders of biofuels as well as governments and civil society organisations.

2.2.6 International Organization for Standardization (ISO)

Contents

The new ISO/PC standard will focus on sustainability criteria for production, supply chain, and application of bio-energy. The scope, which will be wider than the CEN standard by also including solid biomass, will entail terminology and aspects related to the sustainability (for example, environmental, social, and economic) of bio-energy. It is anticipated that working groups will be set up that will cover: greenhouse gas emissions, environmental aspects, social aspects, economic aspects, verification and auditing and indirect effects. It is not necessarily the case that all these will be addressed in the final standard.

Perspectives and future developments

The ISO standard, which will only be finalized in 2013, is based on a worldwide multi-stakeholder process. In practice, this might lead to a compromising standard as agreement will be difficult to reach. When completed, the standard will be overruling other regional and national certification standards in the sense that those standards will have to be compatible with the ISO standard.

Conclusion

As an international certification standard, the new ISO/PC standard will guide and overrule other regional and national certification standards and be of relevance for biofuel producers, traders and buyers worldwide. While the focus of the standard will be on a wide-range of sustainability matters, the contents might be compromised due to its multi-stakeholder process.

2.2.7 NTA8080

Contents

The NTA 8080 has embraced a broad concept of sustainability. It sets minimum requirements for GHG emission savings for the various end-use of the biomass (art 5.2.1.) It also contains minimum requirements to ensure that biomass does not originate in high bio diverse areas. The NTA excludes the use of 'High Conservation Value Areas' (after 1-1-2007), unless it can be demonstrated that the biomass production does not affect the high biodiversity values. (art 5.4.3.) Wetlands are specifically excluded for the installation of new production units for biomass, as they are defined as areas with high risk of significant carbon losses from the soil. (art 5.2.2)

The NTA also sets requirements for the improvement of biodiversity (art 5.4.4), and for environmental impacts (to soil, water and air) and for the management of natural resources on the production unit (art. 5.5). Art 18.3 requires member states to ensure that economic operators report on relevant measures taken to protect soil, water and air. Finally, social sustainability requirements, both in relation to human rights and labor rights, and in respect of socio-economic development and prosperity of the community, are included in the standard.

Perspectives and future developments

The NTA 8080 has been applauded by many, including European governments and the European Union, as being progressive and very comprehensive in terms of sustainability aspects. Unfortunately in this respect, the NTA 8080 as a national certification standard is overruled by

RED, which is a binding framework.³⁸ The NTA 8080 might, however guide and influence further developments of RED.

Civil society organizations such as Greenpeace, Friends of the Earth-NL, Oxfam Novib and the Society for Nature and Environment have jointly criticized the NTA 8080.³⁹ The main arguments include the date for permissible land conversion being too recent, leading for instance to tolerating recent deforestation to give way to biomass crop production as well as the absence of macro-effects of large-scale production of biomass feedstocks. Indirect effects of biofuel production such as the conversion of wetlands, are ignored, despite the fact that they are crucial and should be taken into account in GHG emission calculations. Macro-effects relating to indirect land use change cannot be only perceived to be a national issue and relating to poor national land use planning as has been argued by the Dutch Government.⁴⁰

The minimum threshold of 30% GHG emission reductions, which is too low according to civil society organizations, does not take account of effects of deforestation, which might result in a very positive and unrealistic picture. Furthermore, the NTA contains obligations pertaining to measures to manage and mitigate direct effects only. This is valid for various subjects such as the GHG emissions, biodiversity and the protection of soil, water and air.

Conclusion

Despite the criticism of civil society organizations, the NTA 8080 is being regarded (for instance at the European level) as a comprehensive sustainability standard for certification. The NTA 8080 is important as it not only currently fills the gap in relevant existing European guidelines (CEN/TC 383 and RED), but also might influence the regulatory developments at the European level. Dutch buyers, distributors and traders have to abide by these minimum requirements for sustainable biomass when, for instance, applying for licenses in the field of biomass or for financial governmental support.

2.2.8 Ramsar 2008 Resolution X.25

Contents

The draft Ramsar resolution encourages contracting parties to avoid negative impacts on ecosystem services, availability and quality of water as well as biodiversity. Indirect effects are referred to as well. Contracting Parties, when seeking to increase their biofuel crop production, should prefer those crops that do not risk damage to wetlands either directly through drainage and conversion to agricultural land or indirectly through increased water abstraction demands or pollution. The resolution will also include indirect impacts including changes in food security and resultant impacts on wetlands.

Perspectives and future developments

The Resolution X.25 to be finalized late 2011, will only provide support and guidance to the Contracting Parties to the Ramsar Convention on the topic of biofuels and wetlands. While the resolution does not specify (minimum) criteria or requirements, it does urge and recommend contracting parties to consider and assess impacts of biofuel crop production on the environmental and social values of Ramsar sites and other wetlands. It has been commended for its broad sustainability approach as well as the inclusion of indirect effects.

³⁸ Friends of the Earth (2009).

³⁹ Greenpeace et al. (2007).

⁴⁰ Greenpeace et al. (2007).

Conclusion

The Resolution X.25, which particularly calls for preservation of the social and environmental values of wetlands by avoiding negative impacts as far as possible, has global application and directly focuses on wetlands and biofuels. However, the significance of the resolution might be limited as it concerns a non-binding resolution directed at governments. The work of the Convention's Scientific and Technical Review panel (review existing best management practice for growing biofuel crops and a technical report on the identification of impacts and analytical tools as well as a risk assessment based on primary impacts and secondary impacts) might be relevant for governments, civil society organizations as well as biofuel producers, traders and buyers.

2.2.9 Renewable Energy Directive (RED)

Contents

The directive aims to ensure that, while expanding the use of biofuels in the EU, only sustainable biofuels are applied. The sustainability criteria are laid down in article 17 of directive 2009/28/EC. Failing to comply with these social and environmental criteria means that the biofuel will neither count towards the target nor will it be eligible for any other governmental support.

RED sets minimum requirements for GHG emission savings from the use of biofuels and other bioliquids. (art 17.2.) These obligations pertain to measures to manage and mitigate direct effects only. The tool used to calculate CHG emissions, does not currently incorporate the GHG-emissions from land-use change (the JRC/EUCAR/Concawe). The emission model, which is a life-cycle assessment, is compatible with the GBEP framework for LCA, and is one of the two tools which are available globally, the other one being the California legislation tool.

The directive includes a list of land types from where raw materials must not be sourced. These land types include land with high biodiversity value and land with high carbon stocks. As a consequence, raw materials are not allowed to be sourced from wetlands, including peatland, as land with high carbon stock. Wetlands are defined as land that is covered with or saturated by water permanently or for a significant part of the year (art.17.4.a).

RED contains measures taken for soil, water and air production, which are defined as reporting obligations, requiring member states and economic operators to report on. These obligations pertain to measures to manage and mitigate direct effects only.

The RED does not set social sustainability requirements, neither in relation to human rights and labor rights, nor in respect of socio-economic development and prosperity of the community. This absence of social criteria has to be seen in the light of compliance to WTO agreements and possible legal challenges if not adhering to these trade obligations. Member States, however shall report every two years on the state of ratification and implementation of relevant ILO Conventions (labor issues) both for third countries and Member States that are a significant source of raw material for biofuels consumed within the European community. Reports shall also address the respect of land use rights and the impact on food security. These obligations pertain to measures to manage and mitigate direct effects only.

The Commission shall monitor the origin of biofuels and bioliquids consumed in the Community and the impact of their production, including impact as a result of displacement, on land use in the Community and the main third countries of supply. The analysis will include indirect land-use changes in relation to all production pathways. Such monitoring shall be based on Member States' reports and those of relevant third countries, and will result in a report, the first of which will be

submitted to the European parliament and the council in 2012. The Commission is currently developing a baseline method for monitoring.

Perspectives and future developments

As a binding directive, RED is the most important standard at the European level shaping the future of biofuel policies. It overrules national standards such as NTA 8080 and requires certification standards (CEN) and voluntary feed-stock specific standards such as BSI, RTRS and RSPO to conform to its requirements.

“RED is an important step forward from an international policy perspective in the sense that it sets minimum sustainability criteria and principles irregardless of feedstock type. While the development of the directive is commendable, there are certainly gaps in the criteria, such as the omission of social issues. Furthermore, the RED, which of course prioritizes European interests, tries to provide criteria with low administrative burden; however, this results in definitions being too simplistic and not taking into account complexities around local values and sustainable development.” (Nadine McCormick, IUCN)

Apart from the omission of social issues, RED does not pay attention to down-stream areas and impact on water availability or use, mainly because the quantification of water use is difficult. Most likely, RSB will follow RED in this respect.

Measurement of indirect land use changes as a possible result of biofuel demand is not spelt out in the directive either. When the Renewable Energy Directive proposal was discussed in 2008, the topic of indirect land use changes (ILUC) as possible result of biofuel demand was high on the agenda. Currently, the commission is conducting research on the impacts and ways of minimizing the impact. The Commission will assess the scale and substance of the impact, followed by proposals for a methodology of the assessment. The Commission is obliged to draft a report reviewing the impact of ILUC and addressing manners to manage and mitigate the impacts (article 19.6 of Directive 2009/28). The report which might be accompanied by a concrete methodology should be submitted by late 2010.

The research process, started by the commission early 2009, encompasses two steps:

1. Seven elements that could build up the new EU policy to address ILUC were identified. They include international agreements on protecting carbon-rich habitats, expansion of ILUC criterion to other commodities, increasing the level of GHG savings, extending the possibility of bonuses, adding additional sustainability criteria for biofuels from high risk crops / areas, and the inclusion of a preventive ILUC-factor in the GHG calculation method, or doing nothing. Stakeholders such as industry, civil society and member states were consulted in July 2009. The commission is currently assessing the contributions.
2. Research on ILUC impact through scientific models will be conducted by external research centres. Many scientists, however, doubt whether it is possible to develop an analytical model that can explain satisfactory the relationship between biofuel demand and the effect it has on ILUC. The results of the research are expected late 2009.

In relation to this, Pieter Depous of EEB, stated that: ‘Currently the European Commission is estimating the scale of the problem of indirect land use change, looking at different feedstocks. It would have been good if they had done more on this before RED came into existence. The displacement effect of indirect land use change is potentially enormous, particularly in relation to peatland and wetland.’

The target for biofuel use set by the EU will have as a consequence that a large amount of the edible oil has to be diverted to biofuel use, with the effect that more oil, mainly palm oil, has to be imported, indirectly affecting production area increase in Indonesia and Malaysia. Oxfam expressed great concerns on the CO₂ emissions following land conversion related to palm oil production as a result of unmanageable indirect land-use change within the palm oil sector. It does as well concerning the (potentially significant) emissions from expansion of other cropland.⁴¹

Friends of the Earth, in a recent report on the expansion of oil plantations in Indonesia, mentions RED as an enormous driver for unsustainable practices worldwide: "As RED does not require biofuel companies to guarantee and demonstrate the legality of their imports, it is likely that palm oil from illegal sources ends up being subsidized and promoted by EU member state governments."⁴² The reliance on voluntary certification schemes, the omission of mandatory obligations requiring conducting Environmental Impact Assessments prior to biofuel development as well as failing governance in producer countries all need urgent attention by European policymakers.⁴³

Conclusion

RED provides for mandatory minimum standards and obligations which could be and are complemented by voluntary standards or (certification) schemes at national, regional or international level. RED assesses the complementary voluntary schemes and standards such as NTA 8080, CEN 383 and voluntary Roundtable standards (BSI, RTRS, RSPO) and is therefore authoritative and guiding from the perspective of the European consumption market. European biofuel buyers and traders have to abide by these minimum requirements.

Civil society organizations criticize RED for its gaps and omissions such as the absence of criteria of social sustainability and indirect land use change, the demonstration legality of imports and reliance on voluntary certification schemes. During the forthcoming years, however, RED will be further developed. This includes, amongst others the development of a methodology and guidance for determining GHG balances, which also encompass the indirect effects of land use changes, as well as expanding sustainability criteria to other biomass.

2.2.10 Roundtable on Sustainable Biofuels (RSB)

Contents

After public consultations, version 0.5 of the draft global principles for sustainable Biofuels Production was released mid-2009. The draft Global principles focus on themes like climate change and greenhouse gas emissions, human and labor rights, socio-economic development, food security, conservation, soil, water, air and bio-technology. The global principles state that biofuel production shall maintain or enhance the quality and quantity of surface and ground water resources, and respect prior formal or customary water rights. The quality and quantity of water resource covers, amongst others, wetlands.

The RSB's preferred methodology for carrying out a life-cycle assessment of GHG emissions of biofuels will be outlined in a separate guidance document. This tool for complete GHG calculations will be based on tools currently under development in EU member states, but will go further than tools used by for example RED (the JRC/EUCAR/Concawe).

⁴¹ Oxfam International (2008).

⁴² Friends of the Earth (2009).

⁴³ Friends of the Earth (2009).

GHG emissions from direct land use change and carbon sequestered in the soil and plant matter shall be included. The RSB reserves the right to introduce more requirements for measurements as scientific consensus allows, including for instance calculations on indirect land use change. The methodological framework will allow operators to calculate GHG emissions and compare calculations obtained through different methodologies.

Perspectives and future developments

In November 2009, the RSB aims to publish a 'Version One' of its sustainability standard. According to Nadine McCormick of IUCN, 'RSB is a meta-standard which is leading the way in sustainability matters relating to biofuels'. The standard is regarded as leading in respect of voluntary feedstock-specific certification standards (BSI, RSPO and RTRS) as well as national and regional certification standards (NTA 8080, CEN).

The standard embraces a broad concept of sustainability and will most likely regard peatlands as 'no go areas' for biofuel production. Even though environmentalists will be pleased with the exclusion of peatlands, industry will definitely be upset about the strength of such a requirement.

According to some civil society organizations, however, the standard does not go far enough. Pieter Depous of EEB mentions that: 'While some national legislations, policies and strategies are well-advanced (for instance in the UK) in respect of GHG calculations, the RSB does not do enough in this respect. They argue that science is not that advanced yet; arguments are too much based on industry'.⁴⁴

Conclusion

The RSB is a voluntary meta-standard for the certification of biofuels, against which existing certification systems have been benchmarked (RSPO, RTRS), and which will function as a full generic standard for crops which do not have sustainability standards already. It will be an important standard for biofuel producers, traders and buyers worldwide. While the standard aims to set high criteria for sustainable biofuels, also in relation to wetlands, the standard is being criticized for not including GHG emissions following indirect land use change in its assessment methodology.

2.2.11 Roundtable on Sustainable Palm Oil (RSPO)

Contents

The (revised) Principles and Criteria for Sustainable Palm Oil production include social, economic and environmental standards for sustainable palm oil production. The extensive set of criteria and indicators focuses on land use rights, maintenance of soil fertility, occupational health & safety, greenhouse gas emissions, working conditions, prohibition of child and forced labor and socio-economic development, all in the light of the existence of a developed management system.

The quality and availability of ground and surface water should be maintained. This encompasses the protection of water courses and wetlands, including maintaining and restoring appropriate riparian buffer zones. Environmental impacts may be identified on soil and water resources, air quality biodiversity and ecosystems, and people's amenity, both on and off-site.

The status of rare, threatened or endangered species and high conservation value habitats that exist in the plantation or that could be affected by plantation or mill management, shall be identified and their conservation taken into account in management plans and operations.

⁴⁴ Pieter Depous, EEB.

Comprehensive and participatory independent social and environmental impact assessment is undertaken prior to establishing new plantings or operations, or expanding existing ones, and the results incorporated into planning, management and operation, which consists of assessment of High Conservation Values that could be negatively affected. This assessment includes, amongst others, the potential effects on adjacent natural ecosystems of planned developments, including whether development or expansion will increase pressure on nearby natural ecosystems; potential effects on hydrology by planned developments and the assessment of current land use patterns, analysis of land use rights and potential effects on surrounding communities. Assessment of above and below ground carbon storage is deemed important but regarded as beyond the scope of an impact assessment. This aspect is being considered by the RSPO Greenhouse Gas Working Group.⁴⁵

The RSPO Greenhouse Gas Working Group, which issued the document 'GHG emissions from palm oil production', recommends that RSPO will closely follow developments in science and policies towards measuring and attributing GHG emissions from indirect land use change, and reconsider the issue once conclusions have been reached.⁴⁶ Proposals for amendment of the RSPO principles and criteria focus on the direct effects of land use change and exclude peatlands as production areas. In addition, the GHG-WG has considered the possibility to offset unavoidable GHG emissions from existing plantations on peat, through investments in a carbon mechanism project. However, the GHG-WG has not yet come to a final conclusion as regards the desirability of formalizing this in an indicator. During its meetings in May 2009, the Working Group emphasized the importance of the use of the precautionary principle as a guiding tool if it appears impossible to accurately quantify carbon stocks on areas to be converted to new plantings.⁴⁷

Perspectives and future developments

The conclusions of the working group were announced in November 2009. The GHG-WG was unable to reach consensus, so no amendments to the RSPO principles and criteria were proposed. As second GHG-WG will be convened to work towards resolving the stalemate.

The principles and criteria of the Roundtable have been commended as being comprehensive from a sustainability perspective. However as each (group of) stakeholders has its own interest, such comprehensive concept might lead to dissatisfaction amongst some stakeholders. Jan Kees Vis, director of sustainable agriculture Unilever emphasizes that "While RSPO is the most important operational standard for Unilever, the exclusion of peatlands for palm oil production has led to great resistance from producers as this would mean large losses for them, unless companies would be compensated for this. Especially as the Copenhagen meeting on climate change will probably not lead to any concrete agreements, producers are less willing to compromise in standard setting. Inclusion of the peatland proposal might lead to some members leaving the RSPO as has happened recently with the main producers association in Brazil (APROSOJA) leaving the RTRS, because of objections to the deforestation criterion that was finally agreed upon".

Other omissions as identified by civil society organizations include the lack of consideration of a due process for environmental impact assessments, which could lead to products entering the European market without approved EIA reports, and the reliance on voluntary certification.⁴⁸ Until now no plantation has been certified in, for instance, the Ketapang regency in the West Kalimantan

⁴⁵ RSPO (2009b).

⁴⁶ RSPO (2009b).

⁴⁷ RSPO (2009a).

⁴⁸ Friends of the Earth (2009).

province of Indonesia, although RSPO members control over 600,000 hectares of plantation in Ketapang.⁴⁹

Conclusion

The RSPO Principles and Criteria for Sustainable Palm Oil Production is a voluntary certification standard. Proposals for amendment of the RSPO principles and criteria focus on the direct effects of land use change and excluding peatlands as production areas. The work of the RSPO Greenhouse Gas Working Group is important in this respect.

The standard comprises of sustainability principles, criteria and indicators covering a wide range of social and environmental sustainability issues including direct land use change, water use, and land rights. This comprehensive concept might, however, lead to dissatisfaction amongst industry members as for instance the exclusion of peatlands as production areas will result in large losses for them. Furthermore, civil society organizations have pointed out several omissions in relation to the standard, including the fact that its voluntary nature leads to uncertified plantations controlled by RSPO members.

2.2.12 Round Table on Responsible Soy (RTRS)

Contents

The RTRS principles and criteria for responsible soy, which are currently being field tested, encourage each soy producing country to make a national interpretation (Nis) of the principles and criteria which, once endorsed by the RTRS, will become the basis for voluntary certification in that country.

The criteria include land use rights, prohibition of child and forced labor, health and safety, freedom of association, working conditions, avoidance of land conflicts, employment opportunities, no environmental pollution, and the quality and supply of surface and ground water.

Criterion 4.3 pertains to efforts to reduce emissions of GHGs relating to direct fossil fuel use. Further development will be informed by field testing and by other processes working on this issue and may include issues such as farm carbon balance, and mechanisms for calculating fossil fuel use. Other issues which are relevant to GHG emissions are covered in other principles including emissions from land-use change of which the requirements still need to be finalized as discussed under criterion 4.4.

Criterion 4.4.1. sets the standard for conservation by stating that expansion for soy cultivation during the field test period may not take place on land cleared of native habitat after May 2009. An exception has been made for producers who want or plan to clear native habitat after the cut-off date of May 2009; they must produce scientific evidence from a comprehensive and professional third-party assessment of the area concerned that identifies the absence of all primary forest, other High Conservation Value Areas (HCVAs) or local peoples' lands. Payment for Environmental Services will be explored during field test period beginning after the cut-off date of May 2009.

Perspectives and future developments

The RTRS Principles and Criteria contain sustainability criteria, several of which are related to wetlands or which could affect wetlands (including those on the quality and supply of water and land rights). A final revision will be made in 2010, after a year of field testing.

⁴⁹ Friends of the Earth (2009).

RTRS has set up a Technical Committee to assess the inputs from the stakeholder meetings and field test, as well as to integrate them in the Principles and Criteria.

Civil society organizations have highlighted several areas for further development. For instance, the reference to the Ramsar Convention has been left out due to time constraints and principles and criteria pertaining to direct and indirect land use change and related GHG emissions have not been developed yet, despite the fact that the principles and criteria make a direct reference to HCVA's and therewith to wetlands in which no soy cultivation is allowed after May 2009. As due to time constraints, Social and Environmental Impact assessments as well as the theme of biodiversity have not been included, these are also areas which need further consideration.

Furthermore, in relation to criterion 4.4. (Conservation and compensation of native vegetation), scientific reports on possible developments planned in primary forest, HVCA's and on peoples lands and input on the identification on no-go zones in relation to wetlands is needed. Currently ISA (Instituto Socio Ambiental) in Brazil is working on this in the context of the Xingu area. Also ICV (Instituto Centro Vida) and IUCN are very much involved in this.

The RTRS process has been criticized by several Dutch civil society organizations for the lack of or limited participation of major players like China and the USA, as well as many stakeholders such as NGO's, civil society organizations from production and consumption countries.⁵⁰ According to the Dutch organizations the criteria and principles are not sufficiently comprehensive (for instance the indigenous people and HCVA criteria as well as the lack of consideration of deforestation before 2008) and are short of measurable and specific indicators. They doubt whether the standard will contribute to the future sustainability of the soy production and trade, and consider the current governance instruments and organization as insufficient for the successful introduction of the system.

Conclusion

The RTRS standard encourages each soy producing country to make a national interpretation (Nis) of the principles and criteria which, once endorsed by the RTRS, will become the basis for voluntary certification in that country and will guide soy production, and trade.

Civil society organizations have criticized the current RTRS system, principles and criteria and they have made recommendations for improvement during this field-testing period. The extent to which the standard will be perceived as contributing to the production and trade of sustainable soy depends on the revisions to the standard and on the supporting implementation system to be developed.

2.2.13 UN Framework Convention on Climate Change (UNFCCC) work

Contents

Global concerns about the greenhouse effect and other climate issues resulted in the United Nations Framework Convention on Climate Change (UNFCCC). The Kyoto Protocol, based on the UNFCCC, outlines the commitments of individual countries to reduce greenhouse gases. A reduction in the use of fossil fuels is an essential part of the Kyoto Protocol.

Article 3.1 of the Protocol prescribes developed (Annex 1) countries to account for all emissions due to fossil fuel use. Emissions due to biomass / biofuels are not accounted. The philosophy behind this is that organic carbon is in fact carbon neutral; photosynthesis already removed the same amount of carbon dioxide from the atmosphere as is being released. Emissions connected to

⁵⁰ Fairfood, Friends of the Earth-NL, Both Ends, IUCN-NL, Cordaid, Oxfam Novib and Foundation Nature and Environment (2009),

the production of biofuels are accounted under fossil fuels or in the part about land use emissions (3.3 and 3.4)

Regarding the land use sector, only a change in forest cover in Annex 1 countries is mandatory accounted. Article 3.3 of the Protocol requires that the greenhouse gas stock changes since 1990, resulting from direct human-induced forestry activities, and limited to afforestation, reforestation and deforestation, are accounted. According to article 3.4 of the Protocol, other land use activities such as grassland, cropland, forest lands are can optionally be elected for accounting. Because of this, countries only 'cherry pick' these if emissions in these categories dropped since 1990. Unmanaged lands such as wetlands are in no category to be elected.

Emissions connected to biofuel production outside Annex 1 countries are not accounted. The Kyoto accounting rules that differentiate non-fossil fuels provide a huge incentive for the use of biomass in Annex 1 countries.

Perspectives and future developments

- Fossil fuel rules for biofuels

Oil imported to a country is accounted, when combusted. Wood, sugar cane or any other organic product that is imported and turned into carbon dioxide is not accounted. These emissions are ignored for national emission figures. Some countries have proposed to at least account for some carbon flows. This would mean that a country with a large and exporting agricultural and forestry sector can claim removals while an importing and user has to report all these emissions. Copying the rules for fossil fuel use is unlikely; there is far too little political support for these ideas.

- Land use emissions in developed countries (Annex 1)

The question of how to deal with organic carbon loss, notably land use and forestry emissions is one of the key issues for the UNFCCC negotiations. Different proposals are on the table.

For the future, it seems inevitable that land use emissions will be accounted, just like fossil fuel emissions. The methods for accounting are still unclear (land based full accounting, accounting for land use sectors). Many countries are pleading for this. In this way, carbon losses in the land use sector due to for instance biomass / biofuel production have to be accounted. This is for instance very relevant for Nordic countries with a (potentially) large biomass production and a large agricultural and forestry sector on drained peatlands. This production has very large greenhouse gas emissions that are so far unaccounted. Peatland carbon dioxide emissions from just Finland amount to 50 million tons per year, compared to 67 million tons for all fossil fuel emissions. Accounting these emissions will diminish the current favourable circumstances for biomass use, created by the Kyoto protocol.

- Land use and forestry emissions in developing countries (non-Annex 1)

The rapidly increasing emissions from developing countries are more and more seen as something that needs to be addressed. To reduce the emissions from deforestation, a so called Reducing Emissions from Deforestation and Forest Degradation (REDD) scheme is under development. A country's forest carbon loss is measured against a reference level (base year, or business as usual); this could provide credits and thus a clear incentive for countries to reduce their forest carbon loss.

The scope of REDD is still under discussion. Therefore it is unclear if forest soil carbon (peat) is accounted and if conversion from natural to plantation forest is seen as a forest carbon stock loss or not. If so, plantations on drained peatlands in Indonesia will not get any REDD-credits and will

be accounted as a net forest carbon loss. This will be a clear incentive against conversion from forests to plantation forest or palm oil plantations.

If a UNFCCC REDD mechanism excludes the emissions from carbon rich peat soils, this will cause a situation where countries may even receive support for forest plantations on drained peatlands that would actually emit huge amounts of carbon.

Eventually, it is expected that soil carbon will be accounted for through accounting forest carbon, in line with the IPCC 2006 guidelines that identifies soil as one of the forest carbon pools.

Many peat swamp forests in Indonesia have been logged, but still contain large quantities of carbon. Conversion to, for instance, palm oil plantations will increase the loss of soil carbon. Many ecosystems outside forest contain large quantities of carbon, especially different types of marshes. It is unclear if REDD / REDD++ will deal with these carbon stocks by accounting or by preventing leakage. It is likely thought that at a certain stage reducing emissions from these carbon pools will also be rewarded, for instance by REDD or via the new concept of Nationally Appropriate Mitigation Actions (NAMAs).

Conclusion

It is impossible to predict when a new climate deal will be agreed and what the content of this will be. It is clear though that there is major attention to the carbon losses from organic carbon such as forest vegetation and peat soils. Accounting for the use (and combustion) of products with organic carbon such as biofuels is unlikely.

However, a system to address emissions from land use and land use change can be expected in the future. With many options proposed by groups of countries to account for organic carbon emissions in the land use sector in developed countries and to provide incentives to reduce these emissions in developing countries, it seems more a question of when, rather than if this is adopted in a certain form in the near future.

Accounting for these emissions will have an impact on the attractiveness of biofuel production in many areas. Palm oil plantations on peat might cause the loss of potential carbon credits. Peatland emissions due to forest biomass production in Sweden will have to be accounted. Once a system to address carbon loss in the land use sector is adopted, it will mean that some important crops in some important production areas will lose at least part of their economic attractiveness as a biofuel.

2.2.14 USA policy

Contents

The U.S. Farm Bill explicitly supports bioethanol production with subsidies. From 2005 through 2008, the tax credit given to ethanol producers was 51 cents per gallon of ethanol blended with gasoline (in practice, production is mostly of a 10% ethanol blend). For 2009, the credit has been reduced to 45 cents per gallon, but producers of cellulosic biofuel receive a new tax credit of \$1.01 per gallon.

This subsidy scheme is strengthened by other financial support mechanisms. A tariff on ethanol imported into the United States has been in place since 1980. It is currently set at 54 cents per gallon of imported ethanol plus a 2.5% duty on the value of the import. This policy ensures that blenders only benefit from the subsidization program when using domestically produced ethanol.

In 2007, Congress closed a loophole which had previously allowed foreign-produced biodiesel to be imported to the United States to receive the tax credit without being used in the United States.⁵¹

In recent years, the federal government has also implemented policies requiring the use of certain volumes of biofuel. In 2005, the target was 7.5 billion gallons in 2012. Those requirements were replaced by the Renewable Fuel Standard (RFS) enacted in 2007, which required use of 9 billion gallons of renewable fuel by 2008, 20.5 billion gallons by 2015, and 36 billion gallons by 2022. The federal RFS further specifies that “advanced biofuels” made from non-food crops must make a specific portion of this: the amount of conventional renewable fuel allowed under the RFS grows from 9 billion gallons in 2008 to 15 billion gallons in 2015 and then remains constant. All increases above 15 billion gallons will be from advanced biofuels. The RFS also requires certain portions of advanced biofuels to come from cellulosic biofuel. The amount of cellulosic ethanol will become larger than conventional biofuel by 2022.⁵²

The combined tax credit subsidies and mandatory minimum blends have led to significant growth in the American biofuel industry. The focus is on ethanol produced and used in the United States. In fact, the minimum specification of the renewable fuel standard was on track to be surpassed before it was enacted. The use of cellulosic biofuel and other non-food sources is currently minimal, though the Renewable Fuel Standard will change this.

The Wetlands Reserve Program (WRP), based on the Farm Bill, provides a voluntary, non-regulatory, incentive-based program for private landowners, farmers and ranchers to protect and restore the functions and values of wetlands on their property. WRP has provided an avenue for farmers and ranchers to remove marginal croplands. The changes that occur through the WRP provide societal benefits such as improved water quality and quantity, reduced flood damage and enhanced wildlife habitat.

The Renewable Fuel Standard based on the Energy Independence and Security Act (EISA) also requires that renewable fuels produced from new biorefineries are reduced by at least 20% the life cycle greenhouse gas (GHG) emissions relative to life cycle emissions from gasoline and diesel. These emissions include those from direct and indirect (including international) land-use change. Advanced biofuels must save over 50% GHG emissions and cellulosic fuels must save over 60%. Renewable fuels must now be made from feedstock harvested from land “cleared or cultivated” prior to the EISA of 2007.

The GHG lifecycle analysis combines a suite of peer-reviewed process models and peer-reviewed economic models of the domestic and international agricultural sectors to determine direct and significant indirect emissions, respectively. As required by EISA, the broad system boundaries of the analysis encompass all significant secondary agricultural sector GHG impacts, not only impacts from land use change.

In June 2009, in an amendment offered by Peterson to the Bill, the Environmental Protection Agency (EPA) has been prohibited from imposing indirect land use change (ILUC) metrics on biofuels in the new Renewable Fuels Standard for 5 years while research is conducted by the National Academies of Science on the issue. The report is to include a review and assessment of all pertinent scientific studies, methodologies and data; evaluate potential methodologies for calculating such emissions (including an evaluation of methods for annualizing emissions

⁵¹ State of Minnesota (2009).

⁵² State of Minnesota (2009).

associated with forest degradation or land conversion); and make appropriate recommendations. The amendment however, is not law yet, and is being contested.

Perspectives and future developments

The Low Carbon Fuel Standard of California has received many objections from members of industry and scientists. The main objections include the fact that science is far too limited and uncertain for regulatory enforcement and that indirect land use change effects are often misunderstood and should not be enforced selectively (letter to California Air Resources Board, March 2009). The CARB has responded to these defending ILUC findings, by stating that the models and methods used to estimate ILUC impacts are widely accepted, and ignoring ILUC impacts in LCFS policy effectively assumes that the carbon impact of ILUC is zero, a value that current research estimates to be very unlikely.

Following the Low Carbon Fuel Standard though, investments are made as if the standard is going to stay. For instance the city of Berkeley has decided to review its choice of biodiesel feedstock amid concerns of increasing greenhouse gases. They are looking to replace virgin biodiesel with yellow grease or any other product that is at least 5% lower carbon content than petroleum levels). The city finds that crops like corn, date and soya used to generate biodiesel have a negative impact.⁵³

As mentioned above, an amendment to the RFS has been made to prohibit the federal EPA from using ILUC metrics when enforcing the RFS, at least for the next 5 years. This follows the current hot debate on the contribution from American biofuel production to indirect land use changes. Manning Feraci, VP of the National Biodiesel Board (NBB) has outlined his fears that the EPA dubiously assumes that increased US biodiesel production will lead to land conversion in South America: "We recognize that the statute requires the EPA to consider significant indirect emissions when calculating a renewable fuels emission profile, but this does not require the EPA to rely on faulty data and to fabricate unrealistic scenarios that punish the US biodiesel industry for wholly unrelated land use decisions in South America".⁵⁴

It has been emphasized by interviewees that the USA does not have strong position on land use change. Possibly this is because biofuel trade patterns will be affected when ILUC is included in quantification of GHG emissions. The current state of knowledge is uncertain. Rising production of corn for ethanol largely comes from the replacement of soybean crops, and so it seems intuitively plausible that this may encourage the activities of expanding soy farmers in South America in response to escalating world demand. However, no model is available that demonstrates the significance of this type of relationship. Moreover, biofuel policies in this regard would have to be considered alongside of the other significant farmer subsidization schemes that exist throughout Europe and North America.

President Barack Obama has been a staunch supporter of biofuels, and may continue to be while in office. Reuters reported that in May 2009 Obama commented he "wants to see new types of biofuels commercialized as quickly as possible, but the corn-based ethanol industry needs to remain viable in the meantime." The U.S. biofuels industry was supported by the economic stimulus package, with investments renewable energy and advanced biofuel production. A new Farm Bill will not be passed until Obama's (potential) second term in office, but the current Secretary of Agriculture is Tom Vilsack, former governor of Iowa, which is the country's largest ethanol

⁵³ Biofuels International (June 2009).

⁵⁴ Biofuels International (June 2009).

producing state. Any legislation passed will likely support the continued growth of the biofuel industry.

Individual states have also made a variety of medium and long-term investments in the biofuel industry. About half of American States have grant programs that support research and development of biofuel technologies, and some specifically invest in the development of ethanol from sources other than corn, encourage cellulosic ethanol, and improve the efficiency of use of waste products in biodiesel production. Iowa, Arizona, and Illinois especially have made significant investments strengthening ethanol delivery infrastructure by providing new types of motor fuel pumps and converting existing equipment to use biofuels. Hawaii, Iowa, Louisiana, Minnesota, Missouri, Montana and Washington have renewable fuel standards that in some cases exceed federal requirements.⁵⁵

Conclusion

The United States biofuel policy has increased the country's use of ethanol through a comprehensive set of subsidies and mandates for consumption. This large consumer market, however, is fed almost entirely by domestic production. The legislation and policies discussed show a clear focus on the domestic impact of biofuel use - domestic industry support and investments in energy independence - without much concern for broader ecological or climate impacts. However, medium and long-term plans prescribe a shift away from less effective biofuels that compete with food stocks towards advanced and cellulosic production.

The impact of these policies on wetlands is inconclusive and indirect. Wetlands in the United States are threatened by urban development, water pollution, and invasive species, but not agricultural expansion. The potential impact is from indirect land use changes outside of the U.S., caused by shifting trends in American production. The science of modeling the extent of these changes - and isolating the impact of biofuel policies compared to other agricultural policies - has not reached maturity. While import tariffs largely limit the American consumption of biofuels grown in other countries, it is possible that the expansion of soy production in South America may be accelerated by these policies. The degree to which this may displace cattle ranchers, for example, into the Pantanal is unknown, but should be considered. This has been acknowledged in the domestic debate about American policy by the EPA and at the state level, but has yet to become an operational measurement in policy or legislation.

2.3 Conclusions

2.3.1 Policies and standards

The policies and standards discussed in this chapter do cover to a various degree the priority issues of concern that are brought forward by various stakeholders, and were discussed in Chapter 1. The coverage is presented in table 2.

⁵⁵ Moore and Anderson (2007).

Table 3: Overview of contents of standard and policy framework.

Standard policy \ Theme	GHG	Bio-diversity	HCVA/ protection of wetlands	Water & soil	Infrastructure	Land, labor and human rights	Competition	Socio-economic development	Marginal & idle land	Indirect impacts
BSI	C	C	C	C	-	C	C	C	-	I
Brazil Policy	MR	MR	-	MR	-	MR	M R	MR	R	-
CBD IX\2	I	I	I	I	-	I	I	I	-	I
CEN TC 383	?	?	?	?	?	?	?	-	-	-
GBEP	MR	MR	?	MR / ?	?	MR	M R	MR	?	MR
ISO/PC	?	?	?	?	?	?	?	?	?	?
NTA 8080	MR / RO	MR / RO	MR / RO	RO	-	MR / RO	R O	RO	-	-
Ramsar R X.25	R	R	-	R	-	-	R	R	-	R
RED	MR / RO	MR / RO	-	RO	-	RO	R O	-	-	MR / RO
RSB	MR	MR / PR	MR / PR	MR / PR	-	MR	M R	MR / PR	?	-
RSPO	C	C	C	C	C	C	C	C	C	-
RTRS	C	C	C	C	C	C	C	C	-	-
UNFCCC	MR	MR	-	I	-	-	M R	-	-	-
USA policy	MR / C	MR / C	-	MR / C	-	MR / C	M R / C	-	R	MR

Source: Aidenvironment

Key:

- C: Criterion for certification
- I: Issue of Concern
- MR: Minimum Requirement
- PR: Progress Requirement
- RO: Reporting Requirement
- R: Recommendation (non-binding)
- ?: Uncertain yet as standard is being developed

Unfortunately it is too early to determine the real impact of these policies and standards, and certainly not regarding wetlands. Most standards and policies are still in development. Many uncertainties exist on the final outcomes. Some of the questions that remain open are:

- In what way principles will be translated into criteria and indicators?
- How will certification and verification systems function?

- What methodologies will be used for issues like GHG emission, efficient water use and Indirect Land Use Change (ILUC)?
- How long will it take for the multi-stakeholder processes to become operational?
- How mainstream these standards will become?
- Who should bear the costs of the implementation of these standards?

And when a voluntary standard does become operational, like the RSPO, still many practical constraints are to overcome before they become credible systems. It is very unlikely that voluntary standards alone will assure sustainability in commodity chains. Roberto Smeraldi of Amigos da Terra – Amazônia Brasileira cautions that: ‘While RSB is well on its way and will be an important step towards sustainable biofuel production, the certification scheme (and this pertains to all certification standards) should not be seen as a solution to solve all problems. Sustainability standards should not be ‘blamed’ when problems continue at landscape level due to the broader policy context. Standards are a necessary, but not sufficient condition.’

In the short term, mandatory certification systems will neither assure sustainable practices, as they have not yet been able to provide sufficient guidance concerning the broader environmental and social impacts because this would result in trade law problems. In this sense the voluntary sustainability standards are an important complement which may extend the “reach” of the legal provisions in the medium term by demonstrating best practices.⁵⁶

In this sense the year 2010 will be an important year, as important developments will happen in towards the standards and policies

The future landscape of sustainability in the biofuel sector will probably consist of a legal bottom line imposing certain sustainability criteria, with a panoply of voluntary standards covering most of the other sustainability issues.

Fortunately, many of the organizations, who developed or are developing standards, closely work together. For instance the EU Commission is an observer to GBEP, while the Governments of Brazil and the Netherlands are partners. Although many standards and policies relate to biofuel production, the likelihood of ‘standard shopping’ in order to use the best suitable standard is limited, according to most interviewees, as each standard has its own focus. Either standards are meta-standards (RSB, RED), directed at governments (CBD, Ramsar, UNFCCC), or they are specific for certain feedstock (RSPO, RTRS, BSI). National standards (Netherlands, Brazil and USA) will have to follow the regional (EU) and international ones.

2.3.2 Recommendations for Wetlands International

Wetlands International aims to sustain and restore wetlands, their resources and biodiversity for future generations. Working toward this goal, Wetlands International engages within standard and policy making processes, advising on the specific impact of biofuel production on wetlands and lobbying for the integration of sustainability aspects.

Biofuel production provides challenges and opportunities from a sustainability perspective as highlighted in Chapter 1. Many policies and standards pertaining to biofuel production have been recently developed to address these issues. Several are currently in a test phase or are being developed. This provides ample opportunity for Wetlands International to strategically contribute and influence the making of policies and standards, which have a bearing on wetlands.

⁵⁶ Fritzsche et al (2009).

The overview of the contents of current or future standards and policies in this chapter has indicated that many policies and standards contain omissions or gaps from a sustainability point of view. Following the main views and issues of concern on biofuel production with a particular emphasis on wetlands in combination with the analysis of the biofuel standard and policy landscape, three priority issues could guide Wetlands International in choosing options for future strategic decisions in regard of standards and policies impacting wetlands.

1. Contribution to the harmonization of policies and standards;
2. Engagement in the fine-tuning of selected policies and standards; and
3. Ensuring the implementation of standards and policies.

These three priority issues are further elaborated in Appendix V.

3. Perspectives on Priority Issues of Concern

3.1 Introduction

To a large extent table 2 represents the future outline of the policies and standards, as most policies and standards are still under development. It represents as well the views and perception of most stakeholders, as many of these policies and standards are based on multi-stakeholder processes. As multistakeholder processes imply compromises, it is for certain that for different stakeholder groups these standards will not be sufficient. This chapter gives an impression on how stakeholders perceive the current development of standards and policies concerning the priority issues discussed in Chapter 1.

3.2 Perspectives on priority issues of concern

GHG emissions

Much uncertainty exists on whether and how GHG emissions will be included in standards and policies. The absence of an accepted and reliable scientific base for calculating emissions is a top priority according to all interviewees. Direct land use change is increasingly accounted for in measurements of GHG emissions, despite the fact that data for specific countries and feedstocks are not available yet and different measurement models include different aspects such as the use of fertilizers, the burning of land, and handling of co-products etc.

Many civil society organizations, international organizations and scientists promote the inclusion of GHG emission calculations following land use change (direct and also indirect) in policies and standards, especially in the light of the current global climate change debate. The whole lifecycle of the production of biofuels should be included in calculations, and indirect impact should be taken into account by policymakers.⁵⁷ According to Jan Kees Vis of Unilever, "The main issue in the current debate around the standards and policies related to biofuels is whether or not emissions from land use change will be included. As a consequence of the inclusion of land use change either in voluntary standards or in mandatory legislation, the adverse impact on wetlands from biofuels will significantly be reduced as wetlands will probably be no-go areas for production. However, opinions are divided and the results of this political process are uncertain."

Due to scientific uncertainties, the quantification of indirect land use changes remains uncommon. It will likely take several years before the first attempts to include quantification of indirect land use change will be integrated in a policy or standard.

Anyhow, GHG emissions will remain a crucial issue in the biofuel sector, as they are directly related to one of the biggest motivation of promoting biofuels: the mitigation of climate change. Even if crop specific standards like the RSPO will refrain to include GHG emissions in their standards, more generic standards or regulations like RSB or RED will assure these.

Biodiversity loss

Any negative impact on biodiversity by biofuel production will remain a big issue for civil society, with much room for public campaigns. The respect of protected areas and internationally recognized important biodiversity areas, should be the bottom line for any investment in biofuel production.

⁵⁷ Tearfund (2008).

Certain aspects of the relation between biofuel production and biodiversity are covered by national conservation laws and mandatory international obligations at state level such as the Convention on Biological Diversity. In reality, international obligations are difficult to operationalise and give few incentives for sustainable feedstock production. More practical methodologies have been developed in identifying high biodiversity areas. These areas include existing protection zones, but there are many other areas deserving the same protection status. Existing identification approaches such as Key Biodiversity Areas, Important Bird Areas and High Conservation Value Areas could be used for this purpose. The HCV concept is now also used in standard setting for sustainability schemes for various commodities such as the Roundtable on Sustainable Palm Oil (RSPO), the Roundtable for Sustainable Biofuels (RSB), the NTA 8080 and the Round Table on Responsible Soy (RTRS). High Conservation Value areas are critical areas in a landscape which need to be appropriately managed in order to maintain or enhance High Conservation Values (HCVs). As outlined in Appendix II, there are six main types of HCV areas, based on the definition originally developed by the Forest Stewardship Council for certification of forest ecosystems, but now increasingly expanded to apply to assessments of other ecosystems.⁵⁸ The first pilots in working with the HCVA methodology have finished.

The future threshold for biodiversity friendly agriculture will likely be higher than to stay out of protected areas. It is internationally recognized that protecting biodiversity in the protected zones alone is not sufficient, and that cultivated areas also have to be included. Up to now, only few agricultural practices for biomass cultivation – and for other products – have been developed that have low negative impacts on biodiversity. Such practices comprise the following principles: Use of domestic species and local varieties, avoiding monocultures, giving preference to perennial crops, use of methods causing low erosion and machinery use, low fertilizer and pesticide use and avoiding active irrigation. In addition, buffer zones must be set up to protect sensitive areas, and corridors and stepping stone biotopes must be included (or preserved) on cultivated land in order to improve the exchange of species between regions. For the moment standards give little attention to these aspects.⁵⁹

Bad water and soil management practices

With 70% of abstracted water already being used for irrigated agriculture, replacement of crops with a high water demand will add to this pressure, even though irrigation requirements differ per feedstock and per region. In general global expansion of irrigated biofuel production systems could multiply this effect and potentially result in even more substantial impacts at local and regional levels.⁶⁰

Most basic requirements concerning water extraction and avoiding pollution are covered by national legislation. However, in many countries enforcement is weak. Most standards do include water related aspects. Excessive use of water and the use of non-renewable water resources is often forbidden, and the use of efficient irrigation technology and management is promoted. Concepts on how to define excessive use of water are under development. In regions with physical water scarcity the use of any irrigation will remain a sensitive issue. It is expected that the water issue will become more urgent in the future due to overall increased water scarcity. Water may be the key limiting factor for biofuel feedstock production, as for any agricultural production.⁶¹

⁵⁸ RSB (2009).

⁵⁹ Fritzsche (2009).

⁶⁰ Ramsar Resolution X.25 (2008).

⁶¹ FAO (2008).

Infrastructure development and related environmental and social impacts

The development of infrastructure can have considerable adverse environmental and social impacts on wetlands.⁶² In order to assess the potential adverse impacts of planned infrastructure developments, good quality and appropriate impact assessments should be conducted prior to the establishment of the infrastructure. The Principles and Criteria of the RTRS do require such ESIA for on and offsite infrastructure developments (Criterion 4.1). Assessments should be followed by appropriate measures taken to minimize and mitigate potential adverse effects. Other standards hardly pay attention to the effects of production, processing and transporting related infrastructure. Media attention to the effects of infrastructure is likely to increase. The construction of an ethanol pipeline through a wetland will likely receive much resistance.

Land rights, indigenous people's rights, labor and human rights

In line with international law and regulations, people should have the opportunity to provide full, prior, and free consent to changes to land (use) and livelihood, and they should be offered adequate and prompt compensation for land acquired, while their cultural heritage is preserved and protected. Maintenance or restoration of livelihood is the goal of these international rules. Marginal lands are worth far more to local communities than their market value suggest. They are essential for sustainable livelihoods. While many of the standards and policies analyzed refer to land and indigenous people's rights to some extent, the criteria pertaining to these rights are often only formulated as issues or reporting obligations.

Especially civil society organizations demand that all social and environmental impacts of increased bioenergy should be included in sustainability criteria.⁶³ The broad palette of social issues should be incorporated in biofuel standards and policies, thereby adhering to international legal agreements such as the Universal Declaration of Human Rights and the International Labor Organization standards.

The reason for leaving out some sustainability aspects in policies and standards (ie RED) is argued to be the consequence of the alignment with the World Trade Organization regulations. Rules developed in the WTO do limit national and regional governments' ability to regulate or to take other measures to promote or protect human rights and socio-economic issues. In promoting free trade, the WTO restricts governments focusing on sustainability issues of concern in name of trade priorities. Human rights as fundamental principles, however, lay obligations on governments as well as international organizations, which means that WTO and governments should ensure that trade and trade rules are equitable, and support rather than threaten human rights.

Socio-economic development and fair prices

Standards like the NTA8080 and RSB addresses this issues in the sense that companies should contribute to the local economic development. It is unclear yet to which extent these criteria will be transformed into hard requirements. For the moment, the issue of local economic development and fair prices seem to receive less attention than other issues.

An aspect which is related to this issue and which does get more attention is the question on who should bear the costs needed to reach the threshold of sustainable production. To reach the sustainability criteria sometimes important investments are needed. Especially smaller farmers are unable to make these investments and risk being excluded from future sustainable commodity chains. Certain standards risk being too complex for smallholders. Therefore it is of utmost important to adapt standards to meet smallholders' realities and to provide them with sufficient

⁶² IUCN (2007a).

⁶³ EU Forest Watch (2009), IUCN (2009) and Tearfund (2009).

technical and financial assistance. The RSPO and RTRS give already quite some attention to these aspects. It is expected that in the future, the pressure on the larger industry players to support the inclusion of small producers in sustainable commodity chains will grow. The creation of public-private partnerships could be an important strategy to facilitate this process.

Competition with food, feed and local uses

The food versus fuel debate has calmed down compared to last year. Still it is expected to remain an issue. It will certainly be back on the agenda the moment food prices start to rise. Especially the use of food products like palm oil or soybean oil, even if sustainably produced, will be controversial. These sectors have such a bad reputation. The general opinion will be that each litre used for fuel instead of food will need additional production, most likely done in unsustainable ways. Even if productivity gains are used as an argument against this displacement effect, it will probably remain controversial to source these vegetable oils for fuel. The key formula of a long-term strategy for sustainable biomass is that renewable resources are primarily used as raw material whereas biogenic wastes and residues are primarily used as energy sources.⁶⁴

Use of marginal and degraded lands

Although the use of degraded lands will not always make economical sense for biofuel production, there are good potentials of merging the objectives of land rehabilitation with production of biofuel feedstock. However, this potential might be limited as the concept of marginality might be different in the eyes of an agro-economist from a biodiversity or human rights perspective.¹ In order to avoid natural protected areas or HCV areas including wetlands to be regarded as marginal or idle land, clear definitions of such land need to be integrated in international and government legislation or policies, and mapping of protected or HCV areas should be promoted. Furthermore, high-quality social and environmental impact assessments or strategic environmental assessments will assist in the process of identifying potential adverse impacts to so-called marginal or idle land.

The question as Nadine McCormick of IUCN has stated, is: "What land should we prioritize for biofuel development? We should be careful in how we specify so-called "degraded lands" for example and not assume that no value is being derived from it by local communities. Appropriate land could be areas which previously were used for agricultural purposes, with low biodiversity value, and the local stakeholders are willing to develop agriculture again. Importantly, developers should avoid high risks such as around highly biodiverse areas.' As long as current national and regional policies do not encourage production occurring in suitable areas and land use planning is governed by poor governmental decision-making, there is a significant risk that current policies will lead to adverse impacts on the environment and people.⁶⁵

It is most likely that in the coming years, NGO's will carefully monitor the implementation of the concept of degraded lands. For example in Ghana, ActionAid already monitors whether the expansion of biofuel production into 'degraded land' harms local communities. The appropriateness of using marginal or idle land should be investigated on a case by case basis, thereby considering the current use, status and value of the land.

Indirect land use change (ILUC)

Of the policies and standards analyzed, only few contain provisions on or refer to the indirect effects of land use change. Positive examples include BSI, CBD IX/2, GBEP, Ramsar X25, RED, and USA policy. The extent to which the concept and measurement of ILUC is described and developed, differs per standard or policy. This is extensively discussed in Chapter 2.

⁶⁴ Fritzsche (2009).

⁶⁵ Renewable Fuels Agency (2008).

While the direct effects of land use change are increasingly incorporated in methodologies, often the effects of indirect land use change are excluded from life-cycle analysis.⁶⁶ The indirect effects are variable with a number of circumstances such as the type of natural area converted, the sort of crops, the availability of water, the type of vegetation and soil. The complexity of these factors relating to indirect land-use change has led to its omission from these analyses.

Failing to include these indirect effects, might present unrealistic pictures of the actual situation, thereby even providing incentives for higher green house gas emissions by encouraging feedstock that lead to higher net land use. As a consequence hereof, policies have been developed which restrict the conversion of certain types of land for biofuel feedstock. Examples of these are the NTA 8080 and RED, regulating biofuel development in HCV habitats, forests and/or wetlands.

Nevertheless, opinions remain divided on the matter. Some policymakers and scientists are convinced that it is necessary to include emissions due to direct and indirect land use change attributable to bio-fuel production. Within this paradigm, some argue that indirect land use calculations should include market-based models that estimate global indirect land use change, while others prefer to constrain the analysis to domestic land use change.⁶⁷

On the other hand, some experts, including representatives of industry and government feel that linking biofuel production to indirect land use change is currently too uncertain for policy applications. They dispute the causality between biofuel production and indirect land use change and therewith the attribution of the indirect effects to biofuel production.⁶⁸ They argue that land use change due to bio-fuels is over-estimated or that there is a risk of double-counting land use change when both direct and indirect effects are included.⁶⁹ Other arguments include that especially for developing countries, the priority lies in economic development and food security for the local population despite the importance of the reduction of GHG emissions. The debate is highly politicized.

At the moment, many institutions worldwide are developing and applying methodologies for the assessment of emissions of bio-fuels. The development and use of the methodologies, which do reflect the various philosophies outlined above, are stimulated by biofuel policies and standards. While Searchinger for instance uses the econometric and analytical approach (the partial equilibrium modeling), the Oeko-Institut has developed a deterministic approach (the ILUC factor approach).⁷⁰ This latter approach is based on the assessment of lifecycle greenhouse gas emissions that include indirect land use change, avoided land from co-products, effects of competition for limited wastes and residues and potential additional carbon sequestration from utilizing marginal land.

Methods for estimating indirect land use changes are, however, in their infancy. They are short of agreement and peer review. Generally speaking, they lack reliability, predictability and scientific consensus.⁷¹ As described in Chapter 2 and Appendix IV, GBEP is currently developing a

⁶⁶ FAO (2008).

⁶⁷ GBEP (2009).

⁶⁸ See Appendix III.

⁶⁹ GBEP (2009).

⁷⁰ Searchinger et al. (2008) and Renewable Fuels Agency (2008).

⁷¹ GBEP (2009).

harmonized methodology for assessing greenhouse gas balances pertaining to indirect land use change in order to synchronize the various existing methodologies.⁷²

Effects of direct or indirect land use change focus usually on the net changes in carbon stock, which could be changes in living biomass, dead organic matter, soils, or in products.⁷³ Current greenhouse gas life-cycle analyses fail to take account of avoided land use from co-products.⁷⁴ Furthermore, socio-economic effects and other environmental effects pertaining to for example biodiversity and the quantity and quality of water resources are not included in the analyses. Especially social and human rights effects require qualitative analysis of baseline and changed situations, and are, therefore, more difficult to assess than effects on GHG emissions.

In order to provide a complete picture of the sustainability of biofuel production and use, it is crucial to include all these effects in analyses when formulating policies. The Sustainable Biofuel Consensus reached by a group of biofuel experts, who met in Bellagio in Italy in April 2008, addressing indirect implications, explicitly requires:

- continued 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.⁷⁵

Broader ways should be considered to reduce the impacts of biofuel production on direct and indirect land use change. For instance, the use of co-products of biofuel crops and the development of second-generation technologies as well as the use of marginal or idle land and intensified land use leading to higher yields could be considered as well.⁷⁶ Likewise, the Working Group of RSPO has highlighted ways to reduce the need for new plantings. Significant yield-gains and technological advances will be essential for the sustainable production of biofuel feedstock in order to minimize rapid land-use-change in areas already under cultivation and the conversion of land not currently in crop production, such as wetland, grassland or forest land. This will reduce the demand for new plantings.⁷⁷

As the agricultural commodity markets are complex and effects rising from indirect land use change are often uncertain or not attributable, modeling and measuring the indirect effects is not an easy task. Nonetheless, especially in the light of the precautionary principle, it is imperative that these indirect effects are not ignored, but be included in efforts to regulate and to measure in order to reduce GHG emissions from biofuel development.⁷⁸ Scientific uncertainty should not preclude preventative measures to protect the environment and social surroundings. The ultimate goal is sustainable production and use of biofuels, including low carbon emissions.

In the light of the current scientific debate on methodologies to assess GHG emissions from ILUC, it is most likely that policies and standards will not include specific criteria relating to ILUC for the

⁷² GBEP (2009).

⁷³ GBEP (2009).

⁷⁴ Renewable Fuels Agency (2008).

⁷⁵ Rockefeller Foundation (2008).

⁷⁶ CE Delft (2008b).

⁷⁷ RSPO (2009b).

⁷⁸ See Appendix III.

forthcoming years. As explained above, it will probably take another five years before USA policies will cover ILUC, while it is uncertain whether the report to be submitted by the European Commission by late 2010 will lead to the inclusion of a criterion on ILUC within the RED.

3.3 Conclusions

Regardless of whether these priority issues will be covered by standards and policies, they will receive increasing attention in the future. Wetlands and the people depending on them are increasingly under pressure and biofuels production directly or indirectly contributes to this. As a consequence, the various governing or economic actors in the biofuel production chains will likely receive more criticism from civil society organizations, consumers and various political institutions.

The responsibility regarding the various issues discussed is likely to be attributed at different levels. Most are considered as direct responsibility of the company engaged in the activity of producing or processing feedstock. Increasingly the issues at production level are considered to be within the sphere of influence of all actors in a specific supply chain. Traders or retailers are held responsible for the issues of their suppliers. Any scandal on production level can result in a campaign directed specifically at the economic actors processing, trading, or distributing these products.

Issues can also be considered the responsibility of a whole sector. Issues such as Indirect Land Use Change (ILUC) are in general not linked to the activities of one specific company, but to the entire biofuel sector (except for activities in controversial sectors such as palm oil, in which the ILUC argument can be easily used against any company sourcing palm oil for biofuels). If in a certain river basin the sugarcane sector is responsible for excessive water use, it is likely that the whole sugarcane sector is held responsible, and not only one or two companies. Still, the well-known companies and brands are the most likely victims of these sector-wide campaigns, as they are 'easy' targets, even if their contribution to the issue is rather limited with regards to other players.

The third level of attribution is the level of provincial, national or supra-national governmental institutions. This is obvious in cases of direct governmental involvement in activities infrastructural projects. These institutions are also held responsible for the regulatory framework. Especially, issues like ILUC and GHG emissions are expected to be dealt with at this level. Most campaigning activities regarding these issues are directed at governmental institutions, like the EU or US government, rather than individual companies. Governments are either held responsible for unsustainable land use planning or corruption practices concerning plantation concessions.

Table 4: riority issues per level

Issue	Level	Company	Sector	Government
GHG emissions		X (eg. peatland conversion)	X	X
Biodiversity loss		X	X	
Bad water and soil management practices		X	X	
Infrastructure		X (if private)		X

Issue	Level	Company	Sector	Government
development		investments are involved)		
Land rights, indigenous people rights, labor and human rights		X	X	X
Socio-economic development and fair prices		X	X	
Competition with food, feed and local uses		X	X	
Use of marginal and degraded lands		X		X
Indirect land use change		X (eg. palm oil sector)	X	X

Source: Aidenvironment

Although responsibility can be attributed to various levels or actors, the individual economic operators are and will be considered as primary responsible actors regarding most issues in the biofuel supply chain. They will receive the blame for most scandals and mismanagement. The growing networks of NGOs at international and local level will become more vigilant in identifying bad practices and setting up targeted campaigns at specific companies. The well-known companies and brands are the most likely victims, even for the bad practices identified upstream in their supply chains.

The hot issues in the near future are likely to be: GHG emissions, biodiversity loss, land rights and human rights, and competition with food. The implementation of the concept of marginal lands and excessive water use will probably receive more attention at mid-term. Yet, it is unclear how the ILUC issue will be attributed to economic operators, as for the moment it is a very complicated issue. On the other hand, within certain sectors such as palm oil and soybean, the ILUC issues will be more easily included in public campaigns against specific economic actors.

4. Conclusions and Recommendations

Rising global biofuel production can increase pressure on wetlands. Wetlands are at risk of conversion and degradation, either by production activities or related infrastructure development. Large-scale irrigation can deplete water resources that feed into wetlands. Water quality can be negatively affected if topsoil, fertilizers and pesticide residues pollute waterways. The GHG emission debt of the conversion of carbon rich soils of wetlands is enormous. The ILUC effects of using vegetable oils or sugarcane for biofuels can particularly affect wetlands. Either directly or indirectly biofuel production could harm the rights and livelihood opportunities of people depending on these wetlands.

Various policies and standards have recently been developed or are under development in response to the possible negative socio-economic, environmental and climate effects of biofuel production. These include national, regional and international, certification, voluntary and mandatory standards and policies, as well as government-initiated and multi-stakeholder platforms, and general and feedstock specific ones. The overview of the contents of current or future standards and policies in Chapter 2 has indicated that many contain omissions or gaps. Most of these omissions are the direct consequence of the highly political arena in which standards or policies are being negotiated and the interests of the stakeholders involved, although time pressure is sometimes also the reason. It is too early to state whether from a sustainability perspective, one standard will encompass all important aspects. Most likely, the policies and standards will be complementary.

The impact of these standards and policies is still uncertain. However, the multitude of initiatives that are particularly related to biofuels show that sustainability is high on the agenda. This is understandable from the perspective that climate change mitigation is one of the key motivations behind the promotion of biofuels. The step from climate change related matters to other sustainability issues is not a large one. As a consequence, biofuels will likely receive more attention on sustainability issues than other agro-commodities.

Civil society organizations have been and will be very active on the topic of biofuels. The biofuel discussions provide them with an opportunity to raise attention to general agro-commodity related issues, such as land rights, food security, labor practices, deforestation and biodiversity loss. In their efforts to push companies to become more sustainable, they increasingly use the broad networks they have in the field. Today, any scandal at the production level can be traced to the producers, traders, retailers or consumer dealing with that product or producer. Many stakeholders perceive the entire supply chain as the sphere of influence of the economic operator. An example is Reporter Brazil, which investigates Brazilian production sites on bad labor and environmental destructive practices. Once a bad practice is identified, they follow the products from the production site into the supply chain until the traders and retailers have been identified of these products or producers. Subsequently, they demand these actors to take responsibility for these bad practices. The North-South networks within the NGO community will become more vigilant in identifying and raising media attention on bad practices. It is expected that in the near future, these *commodity watches* or *early warning systems* will become more effective and active in more countries.

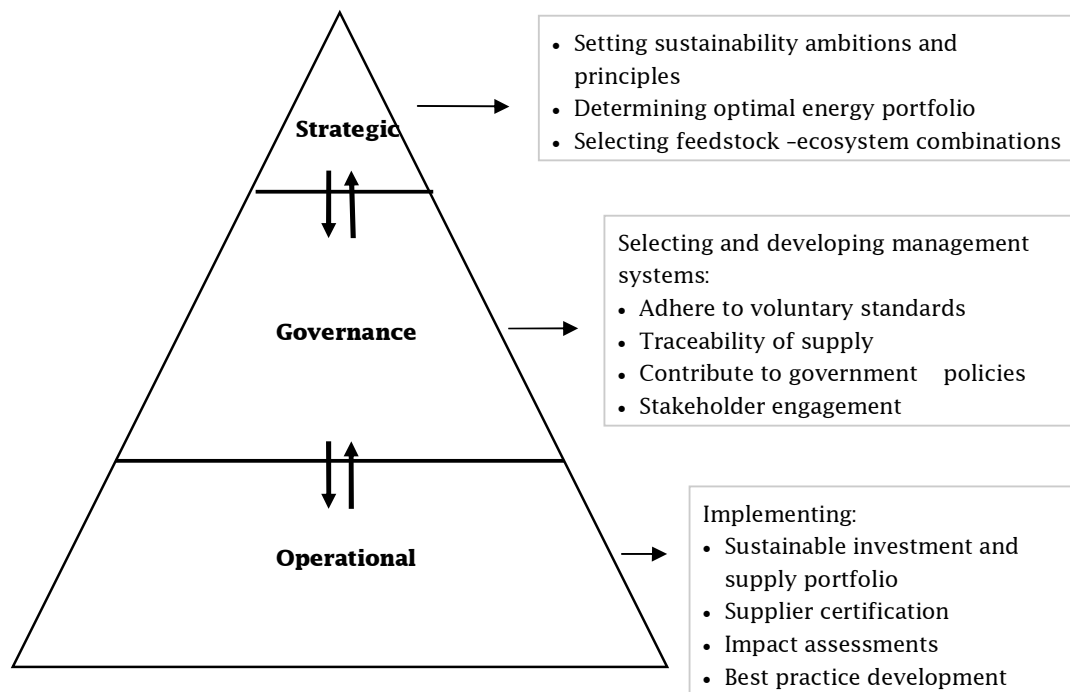
On the other hand, biofuel production is an opportunity for economic development, even in and around wetland areas. Planting, maintenance and harvesting can provide employment and income opportunities to local populations. Processing of crops can add value to the local economy. Biofuel production also offers the opportunity to rehabilitate degraded lands; this could be done in such a way that it provides substantial socio-economic and ecological advantages. To mitigate the socio-

economic, environmental and climate risks of biofuel production and to valorize the development potential, it is recommended for any economic operator in biofuels to develop a pro-active attitude. This includes the development of its own sustainability policy concerning biofuel production, processing, sourcing and consumption.

The bottom line of this sustainability policy should be the obligation to follow mandatory policies and standards. As this quick-scan shows, this will not be enough to mitigate reputation risks. Risks to be associated with unsustainable sourcing remain high due to the gaps in these policies and standards and poor law enforcement in various countries. Therefore, it is recommended to adhere to one or more voluntary standards. If these standards will live up their promise, they provide the legitimate tools to reduce management risks, such as inadequate supply management and insufficient traceability of supply. It is expected that the best practices of these voluntary standards will increasingly be integrated in mandatory policies and standards.

However, these voluntary standards do not constitute a guarantee to be free of any reputational risk, or to become a campaign target. The standards also contain gaps, as indicated above. Besides, their operational functioning still has to prove their credibility and legitimacy. Any scandal concerning the verification system of for example the RSPO could affect all members. Therefore, a pro-active approach should go further than respecting legal requirements and adhering to voluntary standards. The various building blocks of a pro-active sustainability strategy are shown in Figure 4.

Figure 4: Building Blocks for a sustainability strategy in biofuel operations.



Source: Aidenvironment.

At the strategic level this should include the development of the companies own sustainable ambitions and principles, the targets in terms of energy portfolio and strategic choices on

feedstock-ecosystem combinations. At the governance level this should include the contribution and adherence to policy and standards development, the organization of traceability in its supply chains and stakeholder engagement. At the operational level, it should imply an active attitude in creating portfolios of sustainable investments and sourcing opportunities. It should include the exploration and promotion of best practices in agricultural management practices. Particular attention could be given to the relation between biofuel feedstock production, socio-economic development and the conservation or rehabilitation of wetlands ecosystems.

Only such a comprehensive approach towards sustainability can secure sustainable sourcing and provide a competitive edge in managing sustainability risks and in brand building.

Appendices

Appendix I: Abbreviations

ARB	Air Resources Board (USA)
ANP	National Agriculture, Gas and Biofuel Industry (Brazil)
BSI	Better Sugarcane Initiative
CITES	Convention on International Trade of Endangered Species in Wild Fauna and Flora
CBD	Convention on Biological Diversity
CEN	European Committee for Standardization
EISA	Energy Independence and Security Act (USA)
EPA	Environmental Protection Agency (USA)
EU	European Union
GBEP	Global Bio Energy Partnership
GHG	Green House Gases
HCVA	High Conservation Value Areas
ILO	International Labor Organization
ILUC	Indirect Land Use Change
INMETRO	National Institute of Metrology, Regulation and Industrial Quality (Brazil)
ISEAL	International Social and Economic Accreditation and Labeling Alliance
ISO	International Organization for Standardization
LCA	Life Cycle Analysis
LCFS	Low Carbon Fuel Standard (USA)
LULUCF	Good Guidance Practice for Land Use, Land Use Change and Forestry (UNFCCC)
NAMA	Nationally Appropriate Mitigation Actions
OECD	Organization for Economic Cooperation and Development
PNMC	National Climate Change Plan (Brazil)
PNPB	National Programme for the Production and Use of Biodiesel (Brazil)
RED	Renewable Energy Directive
REDD	Reducing Emissions from Deforestation and Forest Degradation
RFS	Renewable Fuel Standard (USA)
RSB	Roundtable on Sustainable Biofuels
RSPO	Roundtable on Sustainable Palm Oil
RTRS	Roundtable on Responsible Soy
UDHR	Universal Declaration of Human Rights
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organization

Appendix II: Wetlands and HCVAs

Wetlands are potential High Conservation Value (HCV) habitats. High Conservation Value Areas (HCVAs) are critical areas in a landscape which need to be appropriately managed in order to maintain or enhance HCVs. There are six main types of HCVAs, based on the definition originally developed by the Forest Stewardship Council for certification of forest ecosystems, but now increasingly expanded to apply to assessments of other ecosystems.⁷⁹

HCV1	Areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g. endemism, endangered species, refugia).
HCV2.	Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.
HCV3	Areas that are in or contain rare, threatened or endangered ecosystems.
HCV4	Areas that provide basic ecosystem services in critical situations (e.g. watershed protection, erosion control).
HCV5	Areas fundamental to meeting basic needs of local communities (e.g. subsistence, health).
HCV6	Areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities)

⁷⁹ RSB (2009).

Appendix III: Principles

Precautionary principle

The pre-cautionary principle is an important basis for policies and standards relating to biofuel use and production. The principle means that good intentions do not have unintended consequences. Moreover, the principle implies that there is a responsibility to intervene and protect stakeholders and the broader environment from exposure to serious and irreparable harm where scientific investigation discovers a plausible risk in the course of having screened for other suspected causes. The underlying idea is that in such circumstances, lack of absolute proof or hard and fast information should not prevent necessary action from being taken. In such cases, the level of proof is closer to a 'balance of probabilities' than to a standard of 'beyond all reasonable doubt'.⁸⁰

The Convention on Biological Diversity (CBD) endorses a precautionary approach in its pre-ambles similar to principle 15 of the 1992 RIO Declaration. It states that: 'Where there is a threat of significant reduction or loss of biodiversity, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to avoid or minimize the threat'. In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities.

The precautionary principle is the basis of many standards and pieces of legislation, including the UNFCCC and many human rights treaties. In the context of biofuel policy, the principle means that not only direct effects of biofuel production and use should be considered, but also the indirect and unintended effects. It emphasizes that scientific uncertainty should not preclude preventative measures to protect the environment and social surroundings.⁸¹

Principles of causality and attribution

The principle of causality describes the relation between actions or events and effects. The more events occurring in the chain, the more difficult it will be to establish causality. In reality, we often see several actions or events leading to the same effect, or even a mutual dependence or influence of cause and effect. This is even more the case, when analyzing global patterns of cause and effect.

In the context of biofuel production and use, potentially large indirect impacts can result from off-farm, macro-economic interactions amongst food, fodder, fuel and fiber markets, especially relating to the conservation of natural areas, food security and carbon storage (emissions). Is the conversion of wetlands in Indonesia an indirect consequence of the establishment of plantations for palm oil or of the deforestation of the area for the timber industry? Or is it perhaps the result of mutual factors, which play an interacting role in this?

The principle of attribution emphasizes that only in the case of a consequence controlled by one intervention, the measurement of the outcome is sufficient to attribute its change to its controlling intervention. However, if sufficient scientific evidence is available, effects could be attributed to more than one intervention, and the actors of these interventions could be held accountable. The debate on the indirect effects of biofuels currently concentrates on the lack of causality and, hence, possible attribution.

⁸⁰ Kamminga (1996).

⁸¹ See also as proposed in RSPO (2009).

Appendix IV: Background Information on Policies and Standards

Better Sugarcane Initiative (BSI)

BSI is a global multi-stakeholder non-profit initiative dedicated to reducing the environmental and social impacts of sugar cane production. Stakeholders include producers, investors, traders, retailers and NGO's. BSI aims to achieve its objectives with a standard that measures these impacts accurately, and with the development of a system to certify that sustainable practices are being adhered to. The standard will eventually be used by third party auditors to test producer sustainability.

The draft standard (version I of April 2009), refers explicitly to the preservation of wetlands as laid down in the Ramsar Convention on Wetlands of International Importance. The version 1 of the standard has received many comments from stakeholders, which are currently being incorporated. The results of pilot studies conducted in Brazil, India, Dominican Republic and Australia will also be included. The revised standard will be discussed at the BSI's Annual General Meeting in India in November 2009, followed by a subsequent consultation period in November and December 2009. The final version of the standard is expected in early 2010, while the certification model will be approved by the AGM in November 2009.

The BSI standard is expected to be compliant with regulatory environments such as the European Union, and it aims to be a practical and useful means for ethanol exporters to the EU of demonstrating compliance with for instance RED.⁸²

BSI is establishing Technical Working Groups (TWGs), which are teams of technical and scientific experts, with global representation. These TWGs will assess 'better management practices' being used by sugar growers across the globe under the categories of environment and agronomy, social and community and milling and co-products. Based on good practice achievements around the world, the TWGs will develop a set of universally-applicable guidelines for consideration by the BSI membership.

The significance of this Initiative lies in the fact that it provides sustainability principles and criteria for sugarcane ethanol production, which constitutes such a large share of biofuel use and production worldwide.

Brazil policy

Brazil has been a pioneer in national regulatory efforts for the bio-energy sector with a large emphasis on use of ethanol as a transport fuel. Biodiesel policies are, however, in its infancy. Current bio-energy policies are guided by the Federal Government's Agro-energy Policy Guidelines and linked to this, an Agro-energy Plan 2006-2011, which is to ensure competitiveness of Brazilian agribusiness and support specific public policies such as social inclusion, regional development and environmental sustainability.⁸³

National Programme for the Production and Use of Biodiesel

The National Programme for the Production and Use of Biodiesel (PNPB) was initiated in 2004. It is an Interministerial Programme of the Federal Government with the objective of implementing, in a technically and economically sustainable fashion, the production and use of biodiesel, focusing on social inclusion and regional development through the creation of employment and income. The programme focuses on sustainable agricultural practices, potential GHG emission reductions, food security, social inclusion of local farmers and regional development. This Program has been

⁸² BSI (2009b).

⁸³ FAO (2008).

designed to provide incentives for the production of biofuels from vegetable oil, such as palm oil, soy oil, and castor oil amongst other oil seeds available in Brazil. Through mandatory targets, the objective of the Program is to achieve the substitution of conventional diesel by 2% by the end of 2007, and by 2013 it should be expected that all diesel consumed in the country will hold a content of 5% biodiesel

Social Fuel Certification scheme

Linked to the PNBP is the Social Fuel Certification scheme or Social Fuel Seal. Biodiesel in Brazil is negotiated in a system of auctions controlled by the regulatory agency, National Agriculture, Gas and Biofuel Industry (ANP). A company must obtain the certification in order to have the opportunity to participate in the auctions of biodiesel purchase administered by the ANP. 80% of the auctions capacity is secured to companies with the certification and 20% is open for everyone. The Social Fuel Seal is intended to assure participation of small-scale farmers in the biodiesel production chain. That is, the Social Fuel Seal is given only to companies that purchase a certain volume of their raw material from family farmers, thus reducing or zeroing taxes they pay.

Iniciativa Brasileira de Verificacao Agropecuaria

In 2006, the Iniciativa Brasileira de Verificacao Agropecuaria was initiated in order to develop a voluntary sustainability assessment framework common for all agricultural crops in Brazil. The initiative aims to create sustainability principles and criteria followed by certification and monitoring measures in the future.

The initiative has an operation level Tripartite Working Group, consisting of representatives of different focus areas (economic, social and environmental), and an executive secretary, which is the responsibility of Friends of the Earth-Brazilian Amazon.

After a first stage of public consultation from December 2008 - March 2009, the second draft of the principles and criteria is currently open for consultation (July - September 2009).

National Climate Change Plan

In December 2008 Brazil's president signed the National Climate Change Plan (PNMC). The plan is based on two major challenges faced by Brazil: the difficult task of significantly reducing emissions from land use change and the requirement of continuously increasing efficiency in the use of the country's natural resources. Following this, the Plan largely focuses on reducing greenhouse gas emissions from deforestation, and contains targets for cutting deforestation, and establishing funding mechanisms and financial incentives to achieve the aim of reducing Amazon deforestation by over half by 2017. The Plan does also contain provisions regarding energy efficiency and renewable energy. It seeks to maintain the high renewable energy mix in Brazil's transport and electricity sectors. In terms of renewable energy, the Plan seeks to increase the share of electricity generated from sugarcane bagasse plants, and exploit it for rural electrification. Electricity produced from cogeneration, mainly from sugarcane bagasse, is to make up 11.4% of the country's electricity supply by 2030. The National Climate Change Plan foresees an increase in the use of biofuels. It encourages industrial users to increase their average annual consumption of ethanol by 11% in the next ten years, and envisages implementing a 5% biodiesel blending requirement from 2010 rather than 2013 as previously planned.

Sustainability certification scheme for sugarcane ethanol

In August 2008, Brazil issued a draft sustainability certification scheme for sugarcane ethanol (Regulamento de Avaliacao da Conformidade). The programme has been developed by INMETRO (National Institute of Metrology, Regulation and Industrial Quality), in partnership with other government departments, private sector, and academy. The programme has a mixed approach:

certification and labeling. The certification process will be based on compliance with minimum standards, including current legislation (labor, environmental). Social and environmental criteria will be gradually adopted. With regard to the labeling process, producers will self declare a set of sustainability standards (in a type of seal) that will allow the consumer to choose the product according to its social and environmental benefits (e.g. GHG life cycle emissions). The programme is not mandatory and is aimed at exports. INMETRO is currently adopting national standards (technical -based on ABNT and ISO, and socio-environmental), but will adapt the programme and incorporate international standards, once they are agreed. After public consultations, the programme will be implemented from 2009 onwards.

Convention on Biological Diversity Decision IX/2

The 1992 Convention on Biological Diversity (CBD) has been ratified by 191 countries, including most EU countries and Brazil, but excluding the USA. In 2008, the Conference of the Parties to the Convention on the Biological Diversity, has called on all parties and governments in consultation with all stakeholders to encourage the sustainable production and use of biofuels with a view to promote benefits and minimize risks to the conservation, sustainable use of biodiversity, socio-economic conditions and food and energy security resulting from the production and use of biofuels. It also asks the parties to develop and apply sound policy frameworks for the sustainable production and use of biofuels, and to monitor practices. Special attention is paid to research and sharing experiences also taking into account the full life cycle of biofuels as compared to other fuel types and the need to ensure that the management objectives of protected areas (including wetlands) are met.

The decision CBD IX/2 relates and refers to Recommendation XII/7 of the CBD Subsidiary Body on Scientific, Technical and Technological Advice (2007), which requests the Conference of Parties to discuss, amongst others, the beneficial effects of biofuel production and use (the reduction of greenhouse gas emissions), as well as the negative effects on biodiversity and human well-being. As adverse effects, the recommendation refers to the loss, fragmentation and degradation of valuable habitats such as wetlands and peatlands and other carbon sinks, their biodiversity components and the loss of essential ecosystem services and leading to increases in greenhouse gas emissions due to these changes. Competition for land managed for the production of alternative crops, including land managed by indigenous and local communities and small-holder farmers, competition for the commodity prices potentially leading to food insecurity as well as increased water consumption, increased water pollution and eutrophication, and soil degradation and erosion are also named as negative effects.

Following the Decision IX/2, the secretariat of the CBD requested parties and other governments, indigenous and local communities, and relevant stakeholders, for submission of information and experiences on the development and application of tools relevant to the sustainable production and use of biofuels (August 2008). It also asked for relevant information, based on research or monitoring, about the positive and negative impacts of the production and use of biofuels on biodiversity and related socio-economic aspects, including those related to indigenous and local communities.

Submissions have been presented to the secretariat by late March 2009. The information will be compiled and considered by the CBD Subsidiary Body on Scientific, Technical and Technological Advice. After the convening of regional workshops on the beneficial and adverse impacts in Brazil, Ghana and Thailand (late 2009), the Subsidiary body will make recommendations to the Conference of the Parties, which will be at the agenda of the tenth meeting of the Conference of Parties in Japan in October 2010.

Despite the fact that the USA has not ratified the CBD, the recommendations and decisions such as CBD IX/2, based on the CBD, have global relevance. The decision is likely to guide national, regional and international policies and standards.

CEN/TC 383 (sustainable biomass)

The European Committee for Standardisation (CEN) is currently developing the CEN 383 standard, which is voluntary unless it is (or specific parts thereof are) called up in legislation. It aims to describe(s) different sustainability themes including those incorporated in the RED and to develop an evaluation method to assess whether biomass products certified in the framework of other standards comply with these themes. This (these) standard(s) also will allow producers, buyers and authorities to check for conformity to the criteria they deem necessary or legally binding for specific (national or local) circumstances.

The CEN Technical Committee (TC) defines standard(s) under which other (existing or new) standards or certification schemes may act. In relation to CEN/TC 383, the TC first defines what is considered sustainable produced biomass in a set of principles and criteria, and where relevant also indicators and verifiers, in accordance with the principles, criteria and indicators in the RED. The TC can also, if relevant, use the work done by other initiatives that have developed such principles and criteria. Compliance with the CEN Standard(s) can be achieved through certification to existing or new standards, which have proven conformity to the principles and criteria of the CEN Standard(s) as the CEN/TC will develop the evaluation methods necessary to prove this conformity.

This means the set shall include definitions, basic requirements, principles, criteria and possibly indicators for sustainability assessment (including a fossil fuel and GHG balance), and ways to assess them in relation to biomass produced, supplied or used.

The EU requires transport fuel companies to report on compliance with these standards as a precondition for subsidies. The TC will elaborate on the European standard for sustainable produced biomass for, as a minimum but not restricted to, energy applications. Firstly, CEN will allow users to check for the sustainability themes as laid down by the European authorities (RED). Included are thus:

- definitions, basic requirements, principles, criteria, indicators and related evaluation methods (verifiers) to assess compliance of biomass products to the RED criteria; and
- evaluation methods to assess the capacity of certification schemes and standards to guarantee the conformity of biomass product to the RED criteria.

In addition, the TC may address possible social, environmental and economic themes, both direct and where relevant indirect, which are additional to the sustainability themes defined in the RED, and elaborate criteria, indicators and methodologies for those. The technical project has been divided in 6 working groups covering terminology, GHG, biodiversity, socio-economic effects, verification and auditing and indirect effects.

Pressure from the European Commission, however, has led to the TC 383 work of CEN being adapted to only include biofuels and as being complementary to the work of the EC in relation to RED (June 2009). As a consequence, the work of the working groups on indirect effects and socio-economic effects has been (temporarily) suspended. A special commission has been established to first focus on implementation questions, for which input has been asked from the remaining working-groups. Because support for the work of the TC is limited amongst the various European countries, it is uncertain whether the standards can and will be finalized in the near future.

In the Netherlands, a new Sustainable Biomass Committee was installed by the Minister of Environment Jacqueline Cramer in 2009. This committee consists of 19 members from industry, science and non-governmental organizations and its president is Mrs Dorette Corbey, until recently a member of the European Parliament. The Sustainable Biomass Committee will advise the Dutch government on questions arising from the sustainability of biomass, especially when this biomass is used as a biofuel in transport, as preparation for legislative and certification developments at the European level (RED and CEN). One of the main issues on which the committee will focus is the question how the volume of sustainable biofuels in the Netherlands (and the European Union) can be raised to a level as required by the new European laws (RED), and how indirect effects can be weighed in order to achieve a maximum of greenhouse gas emission reduction (CEN). Furthermore, the committee will study - amongst others - the question how criteria for liquid biomass can be made applicable to solid biomass. On both items the European Commission is expected to present a proposal in the near future. Also, the committee will discuss ways to improve the transparency of the origin of biomass which is available on the Dutch and the European market, and look at ILUC. The committee will advise the Dutch government in October 2009. At the moment, it is considering and working on definitions of indirect effects (also including peatland and wetlands).

The Global Bio Energy Partnership (GBEP)

The Global Bio Energy Partnership (GBEP) was launched at the 14th session of the UN Commission on Sustainable Development in May 2006. It is an international initiative established to implement the commitments taken by the G8+5 countries in the 2005 Gleneagles Plan of Action. The partnership consists of governments, intergovernmental organizations and umbrella industry organizations. It promotes and coordinates global high-level policy dialogue on bio-energy. Its significance lies in the fact that it is a global platform, which promotes dialogue on bio-energy policies, facilitates international cooperation and supports national and regional bio-energy policies. It has a stimulating and harmonizing function.⁸⁴

GBEP works on the development of criteria and indicators for sustainable biomass, which include the indirect effects. The Task Force on Sustainability is in the process of selecting and describing sustainability criteria and indicators, divided over environmental, social and economic and energy security baskets. Land use change, including indirect effects, is proposed to be included in the environmental basket. A final report containing the agreed criteria and indicators, together with recommendations on their use would be published by May 2010 for submission to the 2010 G8 Summit in Canada.

GBEP is currently stimulating the development and use of harmonized methodology for assessing greenhouse gas balances that could be applied to the life-cycle analysis of bio-energy production and use as compared to the full life-cycle of its fossil equivalent. The task-force which has been formed to work on this, has submitted a report called 'version zero' containing a methodological checklist framework in June 2009. It provides a reference of pertinent questions for countries and institutions to compare the various existing methodologies dedicated to assessing GHG emissions in bio-energy systems in a transparent way. Thus, it is not an emission model, but a template for LCA that can be applied to a wide range of bio-energy systems. The framework, which can be applied by governments, manufacturers, producers and traders of products as well as civil society organizations, will be further developed and adapted to recommendations and experiences from users.

⁸⁴ GBEP (2008).

International Organization for Standardization (ISO)

National standardization bodies, as representatives of their countries, take part in the International Organization for Standardization (ISO). As a global standardization body, the standards, based on a wide consensus, are regarded as authoritative. When a standard has been adopted, this replaces the national or regional standard, although the application of the ISO standard is not mandatory in case the country voted against it. When adopted the ISO standard might replace for example the NTA 8080, CEN 383 and other national certification standards.

A new ISO Project Committee (PC) 'Sustainability criteria for Bio-energy' was recommended at a meeting of bioenergy experts on 8 - 9 June 2009 in Berlin. The ISO/PC is awaiting approval from the ISO/Technical Management Board (TMB). The scope of this ISO/PC will be standardization in the field of sustainability criteria for production, supply chain, and application of bio-energy. This includes terminology and aspects related to the sustainability (for example, environmental, social, and economic) of bio-energy. The PC will build on the work already carried out by CEN. The first meeting of the new ISO/PC will be held in Rio de Janeiro, Brazil, 21 - 23 October 2009. The standard is expected to be finalized in 2013.

NTA 8080

The Netherlands was one of the first countries to introduce a standard for sustainable biomass.⁸⁵ The NTA 8080, based on the reference framework for sustainable biomass developed by the Cramer commission in 2007 consisting of representatives of the private sector, academic institutions and civil society, describes the minimum requirements for sustainable biomass. The requirements can be used for assessment of existing certification schemes, for issuing licenses in the field of biomass, for assessment in the process of financial support. The criteria, which encompass the totality of the energy-chain, includes the subjects of greenhouse gas emissions, important carbon reservoirs, competition with food and non-food usage, biodiversity, the environment (water, soil, air), prosperity, and wellbeing of employees and community (including labor and human rights).

The NTA 8080 is important as it not only currently fills the gap in relevant existing European guidelines (CEN/TC 383 and RED), but also might influence the regulatory developments at the European level.

Ramsar 2008 Resolution X.25

The Convention on Wetlands of International Importance, called the Ramsar Convention, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The primary purposes of the treaty are to list wetlands of international importance and to promote their wise use, with the ultimate goal of preserving the world's wetlands. There are 159 contracting parties to the Convention including Brazil, the USA and many European countries.

In October 2008, the conference of contracting parties to the Convention, adopted the draft resolution X.25 called Wetlands and Biofuels. The resolution urges contracting parties to assess carefully the potential impacts, benefits and trade-offs of proposed biofuel crop production schemes affecting Ramsar sites and other wetlands by conducting environmental impact assessments and strategic environmental assessments. It particularly calls for preservation of the social and environmental values of wetlands by avoiding negative impacts as far as possible. While having global application and directly focusing on wetlands and biofuels, the significance of the resolution might be limited as it concerns a non-binding resolution directed at governments.

⁸⁵ Aidenvironment (2008b)

The Convention's Scientific and Technical Review panel will together with the FAO and civil society organizations assess the global distribution of biofuel production in relation to impacts on wetlands, review existing best management practice guidance for growing biofuel crops and consider the preparation of further guidance for Contracting Parties on addressing biofuel issues in relation to wetlands and water. A Stakeholder Committee will be constituted to represent the key players across the food, water / environment and development sectors and to work with the Ramsar Task lead(s) and Taskforce members. The Committee will organize a Ramsar mini-symposium on wetlands and biofuels with stakeholders presenting the latest knowledge on the interaction of biofuel production/markets/trends with impacts on wetland ecosystem services in 2010. A meta-database with annotated bibliography on wetlands and biofuels will be finalized by June 2010, and a technical report on the identification of impacts and analytical tools as well as a risk assessment based on primary impacts (greenfield development sites, changes in existing land uses) and secondary impacts (eg changes in food security and resultant impacts on wetlands) will be submitted late December 2011.

Renewable Energy Directive (RED)

For renewables to become the "stepping stone" to reaching the dual objective of increased security of supply and reduced greenhouse gas emissions, a change in the way in which the EU promotes renewables was needed. Following a process of public consultation and impact assessments on the scope and details of a legal framework on this topic, the Renewable Energy Directive (RED) came into effect in June 2009 (R 2009/28/EG). The European directive is meant to be consistent with the EU policies of combating climate change, reducing greenhouse gas emissions, achieving sustainable development, ensuring energy security and realizing the Lisbon Strategy.⁸⁶

RED is intended to be used by Member States. The new Directive should be implemented by Member States by December 2010. It provides for mandatory minimum standards and obligations which could be and are complemented by voluntary standards or (certification) schemes at national, regional or international level. RED assesses the complementary voluntary schemes and standards such as NTA 8080, CEN 383 and voluntary Roundtable standards (BSI, RTRS, RSPO) and is therefore authoritative and guiding from the perspective of the European consumption market.

The directive requires an overall binding target of a 20% share of renewable energy sources in energy consumption and a 10% binding minimum target for biofuels in transport to be achieved by each Member State, as well as binding national targets by 2020 in line with the overall EU target of 20%. It also improves the legal framework for promoting renewable electricity, requires national action plans that establish pathways for the development of renewable energy sources including bioenergy, creates cooperation mechanisms to help achieve the targets cost effectively and establishes the sustainability criteria for biofuels. The share of renewable energy from biofuels and bioliquids that account to national targets and limits, must meet the sustainability criteria as laid down in the directive. Similarly, these criteria must be met for eligibility for financial support for the consumption of biofuels and bioliquids. While Member States must demonstrate compliance with the national targets and renewable energy obligations, economic operators within the Member States must demonstrate compliance to sustainability criteria when applying for financial support for the consumption of biofuels and other bioliquids.

During the forthcoming years, RED will be further developed. This includes, amongst others the development of a methodology and guidance for determining GHG balances, which also encompass

⁸⁶ GBEP (2008).

the indirect effects of land use changes, as well as expanding sustainability criteria to other biomass. The European Commission has commissioned various teams to conduct research on those issues.

The Commission shall, by 31 December 2010, submit a report to the European Parliament and to the Council reviewing the impact of indirect land-use change on greenhouse gas emissions and addressing ways to minimize that impact.(Art 19.6) The report shall, if appropriate, be accompanied, by a proposal, based on the best available scientific evidence, containing a concrete methodology for emissions from carbon stock changes caused by indirect land-use changes, ensuring compliance with the Directive.

By 31 December 2012, the Commission shall report to the European Parliament and to the Council on the effectiveness of the system in place for the provision of information on sustainability criteria. It will also report on whether it is feasible and appropriate to introduce mandatory requirements in relation to air, soil or water protection, taking into account the latest scientific evidence and the Community's international obligations. (Art 18.9)

Roundtable on Sustainable Biofuels (RSB)

The Energy Center at the Swiss Federal Institute of Technology in Lausanne (EPFL) is coordinating a multi-stakeholder effort, the Roundtable on Sustainable Biofuels (RSB), to develop international standards for sustainable biofuels production and processing, which will become a meta-standard in this field.⁸⁷ They operate through an extensive consultation process, developing the standards in conjunction with nearly 900 nongovernmental organizations, companies, governments and inter-governmental groups from all over the world.

In November 2009, the RSB published a 'Version One' of its sustainability standard as a complete document that can be used by auditors in the field to assess sustainability performance. Version One includes principles, indicators and definitions of key terms.

While the intent is for the production steps of most biofuels to be certified by other certification systems (for instance, the Roundtable on Sustainable Palm Oil or the Better Sugarcane Initiative) that have been benchmarked against the RSB criteria, the RSB standard will function as a full generic standard, including compliance indicators, for crops which do not have sustainability standards already (for instance corn).

Roundtable on Sustainable Palm Oil (RSPO)

The Roundtable on Sustainable Palm Oil (RSPO) was established in 2004. RSPO's objectives are to promote the use and growth of sustainable palm oil through cooperation within the supply chain and open dialogue with its stakeholders. It was agreed that in order to promote the use of sustainable palm oil it would be necessary to have a mechanism for linking the palm oil being used by RSPO members and other responsible users (including industrial users of palm oil based substances) with the oil palm plantations being managed in accordance with the RSPO criteria. Members of the roundtable include representatives of oil palm growers, palm oil processors and/or traders, consumer goods manufacturers, environmental / nature conservation NGOs, retailers, banks, investors and social development NGOs.

Dialogue among stakeholders has resulted in a set of 8 principles, defined by criteria, indicators, and guidance for national interpretation, and laid down in the (revised) Principles and Criteria for Sustainable Palm Oil production.

⁸⁷ GBEP (2008).

Sustainable palm oil production is delivered through the application of the RSPO Principles and Criteria for Sustainable Palm Oil Production as a certification standard. Certification must be undertaken by a body that conforms to specific accreditation requirements. Rules and requirements have been laid down in the RSPO certification systems document of 2007.

The RSPO Greenhouse Gas Working Group has issued the document 'GHG emissions from palm oil production' for public consultation until the end of September 2009.

Round Table on Responsible Soy (RTRS)

The Round Table on Responsible Soy Association is an international multi-stakeholder initiative that brings together those concerned with the impacts of the soy economy namely producers, industry, trade and finance organizations, civil society and government ministries.

It is working to define what responsibly-grown and processed soy is and to promote the best available practices to mitigate negative impacts throughout the value chain. The RTRS is developing a set of standards for the production and sourcing of responsible soy and a verification mechanism to reinforce these standards. The Principle, Criteria and Verification Mechanism Development Group (DG) is responsible for the coordination of this effort

As an output of their fifth meeting in Argentina in March 2009, the DG came up with the field testing version of the RTRS principles and criteria for responsible soy. A final revision will be made in 2010, after a year of field testing.

UN Framework Convention on Climate Change (UNFCCC) work

The UN Framework Convention on Climate Change guides Member States to take climate-change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, with a view to minimize adverse effects on the economy, on public health and on the quality of the environment of projects or measures undertaken by them to mitigate or adapt to climate change (art. 4).

This convention led to the Kyoto Protocol, which outlines the commitments of individual countries to reduce greenhouse gases. The Kyoto protocol provides a framework for promoting clean technologies such as those for renewable energy. The Clean Development Mechanism is one of the flexible mechanisms within the protocol to assist parties and non-parties in achieving sustainable development and complying with quantified emission limitations and emissions reduction commitments.

A series of UNFCCC meetings are taking place throughout the year, designed to culminate in an ambitious and effective international response to climate change, to be agreed at the United Nations Climate Change Conference (COP 15) in Copenhagen in December 2009. The secretariat received five proposals by Parties for a protocol under the Convention. These proposals were submitted by the governments of Australia, Costa Rica, Japan, Tuvalu and the USA. While the UNFCCC is a binding agreement directed at governments worldwide, the results of UNFCCC meetings are highly dependent on the political will of Party States. Public expectations of effective outcomes of the Copenhagen meeting are, therefore, low.

USA policy

In the USA, a range of policies and strategies are currently being implemented to promote bioenergy at national and state level. The most significant policies include the 2008 Farm Bill, the Energy Independence and Security Act of 2007 and the Renewable Fuel Standard program as well as the California Low Carbon Fuel Standard.

2008 Farm Bill

The 2008 Farm Bill, voted by Congress in May 2008, is the five-year agricultural policy legislation of the United States. One major impact is that it sets tax credits and subsidies for different agricultural industries. The 2008 bill reduced tax-credits for maize-based ethanol and introduced a tax credit for cellulose-based ethanol. Existing import tariffs for foreign biofuels were maintained.⁸⁸

In addition to providing subsidies and credits for American producers, the Farm Bill also created a Voluntary Renewable Biomass Certification Program administered by EPA. To qualify for the Voluntary Certification Requirements under the program, a biomass crop shall be inspected and certified as meeting the standards. Production standards, which must satisfy minimum requirements, provide measurement of a numerical reduction in greenhouse gases, improvement to soil carbon content, and reduction in soil and water pollutants and protection of wildlife habitat. The Farm Bill also regulates wetlands within conservation reserve programmes, thereby minimizing negative sustainability impacts on wetlands.

The Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (EISA) sets the first U.S. mandatory lifecycle GHG reduction thresholds for renewable fuel categories, as compared to those of average petroleum fuels used in 2005. The regulatory purpose of the lifecycle greenhouse gas emissions analysis is to determine whether renewable fuels meet the GHG thresholds for the different categories of renewable fuel.

The EISA amended to 2005 Renewable Fuel Standard (RFS) program, which is implemented by the Environmental Protection Agency (EPA). The standard sets requirements for minimum levels of biofuel use. The 2007 version raised standards significantly: 9.0 billion gallons of biofuels must be blended in 2008, and the target rises to 36 billion gallons in 2022. Starting in 2016, all of the increase in the RFS target must be met with advanced biofuels, defined as cellulosic ethanol and other biofuels derived from feedstock other than corn starch — with explicit carve-outs for cellulosic biofuels and biomass-based diesel.

The Low Carbon Fuel Standard

Of the state-wide policies in place, the Low Carbon Fuel Standard (LCFS), based on the California Assembly Act 2006, is perhaps most important. The standard calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. The LCFS instructed the California Environmental Protection Agency to coordinate activities between the University of California, the California Energy Commission and other state agencies to develop and propose a draft compliance schedule to meet the 2020 target. Furthermore, it directed the Air Resources Board (ARB) to consider initiating a regulatory proceeding to establish and implement the LCFS. In response, ARB identified the LCFS as an early action item with a regulation to be adopted and implemented by 2010. Although implementation is not yet in progress, the California low carbon fuel initiative is unique because it requires that the carbon calculation must consider land use change impacts, and it includes a penalty for emissions from indirect land use changes.

⁸⁸ GBEP (2008).

Appendix V: Recommendations for Wetlands International

1. Contribution to the harmonization of policies and standards.

Many standards and policies set sustainability criteria for the production of biofuels, even though the focus, scope and target group of the standards and policies might vary. In order to ensure alignment of these policies and standards, including their principles, criteria and methodologies, Wetlands International could:

- encourage the development of a harmonized methodology for assessing broader environmental and social impacts of bio-energy feedstocks. (RSB is an appropriate platform for this, while GBEP could be influenced via government representatives);
- encourage standard setting bodies to apply the same definitions for relevant concepts such as HCVA, marginal or idle lands;
- stimulate standard setting bodies to participate in the ISEAL Alliance, which is the global association for social and environmental standards systems. Several standards including the BSI and RSB agreed to strengthen criteria for standard-setting and verification in September 2009.

2. Engagement in the fine-tuning of selected policies and standards.

Wetlands International could contribute to the further improvement of especially those policies and standards, which are still in an (early) development phase and which seem to have a relatively large impact on the adverse impacts of biofuel production on wetlands taking into account factors such as kind of initiative (mandatory, voluntary), geographical application and feedstock specificity of the standard or policy. While more specific suggestions have been provided for per standard / policy in Chapter 4, we see several options for Wetlands International in this respect:

- advise policy makers to set realistic targets in relation to biofuel mandates in order to avoid adverse indirect effects of biofuel production (RED, USA, Brazil);
- contribute to an increased understanding, amongst standard and policy makers, of the potential indirect effects of biofuel production on wetlands, by collecting and publishing examples of indirect land-use change worldwide. This could include indirect effects in relation to infrastructure development as a consequence of biofuel production (all standards and policies);
- urge standard and policymakers to exclude wetlands from biofuel production (GBEP, ISO, CEN);
- encourage development of methodology which is able to measure the GHG emissions in a reliable manner, and which also includes indirect land use change (RED, GBEP, RSB, national policies);
- stimulate the development of methodology that is able to measure the wider environmental and social impacts of indirect land use change (RED, GBEP, RSB);
- advise standard bodies to include sustainability requirements relating to indirect land use change in standards and policies in line with the precautionary principle (RED, RSB, RTRS, RSPO, BSI, UNFCCC, national policies);
- motivate policymakers, on the basis of the precautionary principle, to include or strengthen social and broader environmental issues in sustainability principles and criteria in relation to the (in) direct impacts of biofuel production (RED, national policies);
- advise standard bodies to use the HCVA concept within standards and policies (RED, GBEP, ISO, CEN);
- stimulate the inclusion of participatory environmental and social impact assessments as a strategy to identify potential risks associated with biofuel production (RTRS, RED, RSB);
- stimulate the discussion on reducing the risks of effects of ILUC by employing a land alternatives approach. This entails that the production of feedstock for biofuels could take place on suitable idle and marginal land and make use of co-products that avoid land use change. Furthermore, improved technologies (especially second generation), infrastructure and management practices and good agricultural practices might lead to the intensification of biofuel production and increased yields per hectare;

- participate in special Working Groups or Technical Committees and / or cooperation with other civil society organizations, which have a seat in technical committees of certain standards. (BSI, RSPO, RTRS, RSB);
- ensure that the perspectives of stakeholders from Southern countries are included.

3. Ensuring the implementation of standards and policies.

Regulatory approaches are not the only option for ensuring sustainable practices in biofuel production. They could be complemented by:

- advice to governments from producing and importing countries on the integration of sustainability criteria and procedures (certification) in national legislation;
- encouraging governments to apply good governance rules in relation to identification and issuing of land concessions and lease agreements;
- stimulating investors and governments to make use of participatory, good quality social and environmental impact assessments by independent experts. These impact assessments should focus on all sustainability effects, both direct and indirect ones, and be conducted prior to the establishment of biofuel plantations. While participation of local communities and public in this process is essential, impact assessment reports should be part of the decision making process and developments should be monitored;
- engagement with companies and producers to raise awareness on adherence to policies and standards and enhance capacities to implement them;
- the collection and publication of best practices in relation to the use of standards and policies pertaining to biofuel development and wetlands.

Appendix VI: Interviewees

- Barbara Bramble (National Wildlife Federation, RSB)
- Bas Clabbers (Ministry of Agriculture, Dutch Government)
- Pieter Depous (European Environmental Bureau)
- Alessandro Flamini (GBEP)
- Paul Hodson (DG Energy and Transport, European Commission)
- Nadine McCormick (IUCN)
- Roberto Smeraldi (Amigos da Terra-Amazonia Brasileira, RSB)
- Jan-Kees Vis (Director of Sustainable Agriculture, Unilever)

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- Pita Verwey (Copernicus Institute)
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Appendix VII: References

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