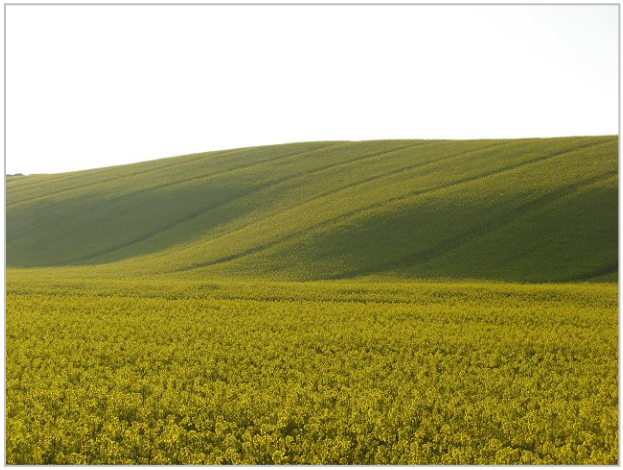
# Agrofuels platform

## *Fuelling knowledge on the social and ecological impacts of agrofuel production*

### Agrofuels: curse or cure?

The environmental and social effects of increased production of agrofuels – liquid fuels produced from agricultural products – are widely debated. Proponents consider agrofuels to be the answer to both rising oil prices and the negative climatic consequences of fossil fuels, but they are opposed by those who warn about the threats that agrofuels pose to food security, biodiversity and poverty reduction.

Although biofuels can be produced from various types of biomass using different techniques, at the moment virtually all commercially produced biofuels are *agrofuels,* i.e. produced from crops grown on agricultural lands.



*Large subsidies for oil seed rape has led to many acres being planted (Source: Wikimedia.org).*

Since the beginning of the 21st century, production of agrofuels from food crops such as sugar cane, corn, wheat, sugar beet and oil palm has increased enormously, largely driven by policies and subsidies to stimulate biofuel use. Many national governments, hoping to become less dependent on the import of expensive fossil fuels, developed policies that directly or indirectly provide incentives to

### Process organisation

The 'Fuelling knowledge on the social and ecological impacts of agrofuel production' process was carried out within the framework of the Development Policy Review Network (DPRN) by the Agrofuels Platform, which is a joint initiative of:

- Both ENDS Foundation
- IUCN Netherlands Committee/Natureandpoverty.net
- Amsterdam Institute for Social Science Research/Governance and Inclusive Development group
- Mekon Ecology
- Alterra
- Law and Governance Group of Wageningen University
- ETC International
- Cordaid
- Leiden University
- Centre for International Cooperation of the VU University, Amsterdam

companies and banks to invest in biofuel production and processing plants.

Some economists believe that the increased production of agrofuels marks the beginning of an agricultural renaissance, with farmers earning higher incomes thanks to increased demand for agricultural crops for energy production. Expectations are high as regards the prospects of using 'marginal' land for energy crops. Other observers believe that the adoption of policies to stimulate biofuel production has kick-started a new scramble for land that will push aside food production, food producers and ecosystems. They expect that private investors will prefer to invest in energy farming on fertile lands – rather than so-called marginal lands – in order to reach break-even points as soon as possible.

Discussions concerning the pros and cons of agrofuel production have long remained limited to a simplistic debate in which they were presented either as a cure or a curse. Recently, there has been a growing consensus that increasing demand for agrofuels is leading to increased pressure on the land, with potential negative consequences for people and the environment. However, the extent to which these effects can and should be controlled through quality standards is a topic of ongoing debate. Any discussion of agrofuels is bound to be charged because it brings together a range of political and business interests in areas as diverse as energy security, the oil industry, agricultural policy, the food industry, poverty and development, climate change, biodiversity and the automobile industry. These discussions are only meaningful when they are based on unbiased information and a proper understanding of the actual effects of agrofuel production.

### The Renewable Energy Directive (RED) and blending targets

The Renewable Energy Directive (RED) of the European Union promotes the blending of biofuels with fossil fuels in the transport sector. The primary aim of the directive is to reduce greenhouse gas (GHG) emissions to combat climate change. According to the RED, the overall target for renewable energy (which includes biomass, biogas, wind, solar, hydro and geothermal energy) across the European Union is 20% in 2020, and the directive presents binding targets for each member state. Within this national target, each member state is obliged to realise at least 10% renewable energy in the transportation sector. As the 10% target for renewable energy in the transport sector is likely to be met primarily through the use of biofuels, we tend to speak of a 10% 'European blending target'.

Obligatory blending targets may be in place at the level of individual member states. The Netherlands is one of the few European countries with legally defined blending targets for the transport sector already in place (*Besluit biobrandstoffen voor het wegverkeer 2007*). On 10 October 2008, due to unresolved uncertainties about sustainability and growing criticism of negative impacts of first generation biofuels, the the biofuels targets for 2009 and 2010 was reduced from 5.75% to 4%.

The RED sets binding sustainability criteria for biofuels. Market parties themselves will have to prove, through independent audits, that their biofuels meet the criteria. Only if the binding sustainability criteria are met will the biofuel count towards the renewable energy target.

## The Agrofuels Platform: Stimulating dialogue

Within the framework of DPRN, a group of Dutch NGOs and research institutes established the Agrofuels Platform to promote a discussion on the social and ecological effects of agrofuel production and the resulting policy dilemma's.

The platform aimed to: (i) provide an overview of the available scientific knowledge; (ii) analyse the perspectives (and associated assumptions and underlying motives) of various stakeholders; and (iii) bring policymakers, NGOs and researchers together to debate the effects of agrofuel production and the appropriate policy responses. Some of the main activities by the Agrofuels Platform are mentioned below.

*Biofuels WIKI*

The Agrofuels Platform made use of a WIKI to share relevant documents with a broader audience – both experts and the general public. The website is coordinated by Nature-andpoverty.net, which is the knowledge network of IUCN National Committee of the Netherlands. It provides access to hundreds of documents on biofuels in general and agrofuels in particular. The documents cover a wide range of topics, from the environmental and social effects of production to criteria setting and policies. There is also a section on policy recommendations made by NGOs. The website is open to anyone interested in the topic.

*Discussion paper*

The Agrofuels Platform wrote a discussion paper providing an overview of the current knowledge regarding social and environmental effects of agrofuel production. In addition the paper provides an overview of the positions of various relevant stakeholders. Policymakers at various ministries in the Netherlands were interviewed in order to obtain information concerning the assumptions on which they base their policies. The paper formed the input for a multi-stakeholder meeting in The Hague on 18 February 2010.


*Seminars*

The platform organised two seminars. Firstly, there was a workshop at the CERES Summer School on 3 July 2009, where researchers presented case study material, discussed approaches and methodologies, and addressed the role of knowledge in policymaking processes. A total of 32 participants attended the workshop, including researchers, practitioners and representatives of the private sector.

Secondly, the platform organised a discussion between scientists, practitioners and policymakers in The Hague on 18 February 2010. The meeting was attended by some top-level scientists and policymakers from the Ministry of Housing, Spatial Planning and the Environment, the Ministry of Foreign Affairs, and people from the Corbey Commission and Agentschap NL (Ministry of Economic Affairs). Among other things the discussions revealed the uncertainties in scientific models, the gaps between different schools of knowledge and the incoherence between ministries. More information on the outcomes of the seminar can be found in the discussion paper.

## Pros and cons of agrofuel production

*The arguments in **favour** of agrofuels:*

- Agrofuels are an alternative for the insecure and exhaustible supply of fossil fuel.
- Agrofuel production can reduce the dependency of developing countries on expensive import of fossil fuels, and improve their trade balance.
- The feedstock used to make agrofuels is renewable – fresh supplies can be produced as needed. In theory, therefore, there is an unlimited and secure supply.
- Certain forms of agrofuels have a positive GHG balance compared to fossil fuels and their use will therefore help to mitigate climate change.
- The production of agrofuels is not restricted to specific countries that can control supply and determine price.
- The production of agrofuels implies economic opportunities for (investments in) the agricultural sector in developed and developing countries, by generating employment and increasing rural incomes.
- Agrofuels can be easily blended with fossil fuel and then be used in existing car and lorry engines (in contrast to electricity or hydrogen for which other cars and engines are needed).
- Agrofuels offer opportunities for a much-needed local energy provision given that 1.6 billion people currently have no access to electricity and 2.4 billion people have no access to modern fuels for cooking and heating.

*The arguments **against** agrofuels:*

- The GHG emission reduction potential of agrofuels strongly depends on whether or not natural vegetation is converted to agricultural land. Conversion of natural areas could lead to a negative balance.
- The production of feedstock for agrofuel competes with food production, both directly (when food crops are used to produce fuels) and indirectly (when land suitable for food production is used to cultivate non-food crops for biofuel production).
- The production of agrofuel feedstock affects food prices, with serious consequences for both poor city dwellers and small-scale farmers, who are often net food consumers.
- The production of agrofuel feedstock can lead to rising land prices and income inequality.
- The production of agrofuel feedstock poses a threat to biodiversity by creating economic incentives to clear forests and using wetlands and peat lands to grow the required feedstock.
- The production and processing of agrofuel feedstock causes competition for scarce water resources.
- There is a risk that people will be displaced from their land to make way for plantations or other large-scale agricultural schemes.

## The unintended effects of biofuel policies

The discussion paper entitled *Burning questions* shows that there is a growing consensus among scientists that policy measures to stimulate biofuel production lead to significant agricultural expansion, with negative effects on biodiversity and food prices.

The authors of the discussion paper reviewed a wide range of academic publications on the pros and cons of agrofuel production, and interviewed several stakeholders in the Netherlands. The study concluded that:

- In theory, the use of agrofuels can lead to a reduction of greenhouse gas (GHG) emissions if they substitute fossil fuels, provided no natural vegetation is converted;
- In practice, blending targets and growing demand for transport fuels are likely to result in additional expansion of agricultural land, with negative effects on communities' access to lands, biodiversity and food prices.

In line with these findings, an increasing number of NGOs and researchers emphasise the risks of implementing blending targets, as they may stimulate unsustainable agrofuel production. However, policymakers in the Netherlands tend to favour such policy instruments, arguing that they provide the opportunity to implement strict sustainability criteria, with potential positive effects on the sustainability of agriculture as a whole.

While most parties acknowledge the potential negative effects of agrofuel production, the responses that NGOs and governments propose differ greatly. NGOs are generally worried and assume that expansion implies 'business-as-usual'. Most of them, implicitly or explicitly, refer to the precautionary principle. Governments tend, however, to emphasise the potential positive effects on economic growth, employment and rural development in producing countries. They stress the opportunities and seem to be willing to take the associated risks.

*Environmental organisations such as Greenpeace warn that biofuel production leads to deforestation (Source: http://www.greenpeace.org).*

## Types of biofuels

A differentiation is needed between first, second and third generation biofuels. The distinction between them is usually made based on three characteristics: the technology used, the use of the edible or non-edible part of the feedstock and the $CO_2$ reduction potential. Here we adhere to the definitions published by IUCN NL (2008).

*Source: Wikimedia.org.*

***First generation biofuels*** are transport fuels produced using conventional technology from feedstock like wheat, corn, sugar, palm oil and sunflower oil, i.e. agricultural products which are also used as food and feed. Countries use different crops. The EU prefers rapeseed, wheat and sugar beet; the USA use mainly corn and soybeans; Brazil's biofuel consumption is largely based on sugar cane and in Southeast Asia it is palm oil. At the moment only first generation biofuels are commercially viable.

*Source: Wikimedia.org.*

***Second generation biofuels*** are produced using more advanced conversion technologies that allow the use of non-edible materials derived from plants (mostly lingo-cellulosic parts, like stalks and straw, but also woodchips). Their $CO_2$ performance tends to be better than that of first generation biofuels because all the source material, and potentially also organic waste material, is used. One concern related to second generation biofuel is decreasing soil fertility after removal of all organic matter from the land, which may affect water regulation and nutrient content negatively. Technological breakthroughs and considerable investments in infrastructure are required to make second generation biofuel production commercially viable. Estimates suggest that the technology will be commercially available in about a decade.

*Source: Wikimedia.org.*

***Third generation biofuels*** generally refer to the production of ethanol from plants that were modified for easier processing (e.g. poplar with lower lignin content), and the production of biodiesel from algae. These techniques are expected to have a better $CO_2$ performance than first and second generation biofuels.

***The term agrofuels*** refers to biofuels for which agricultural lands have been used. The Agrofuels Platform decided to focus its work on agrofuels because, at the moment, virtually all commercially produced biofuels are produced from crops grown on agricultural lands. The term agrofuels includes so-called first-generation biofuels made from oil palm and sugarcane, as well as second generation biofuels made from Jatropha, when grown on agricultural lands.

## Science meets policy

At a multi-stakeholder meeting in The Hague, several scientists, practitioners and policy-makers gathered in February 2010 to discuss the effects of agrofuel production and the related policy options. Regarding the appropriateness of existing policy instruments, the meeting revealed the contrast between the perspectives of NGOs and scientists and those of policymakers. Having said that, there were also points on which there was a consensus.

*Jatropha production (Source: Wikipedia.org).*

Opinions about the appropriateness of blending targets to stimulate biofuel use varied greatly. The proponents argued that legally defined blending targets offer a unique and unprecedented legal opportunity to implement obligatory sustainability criteria for agrofuels. This, in turn, can have positive effects on wider agricultural production. They therefore hope that (elements of) the biofuel regulation will spill over to the wider agricultural sector. Moreover, proponents of the blending targets note that the regulations can be adjusted to create extra incentives for second-generation biofuels.

Those who oppose blending targets argued that they are a poor policy tool, as the sustainability criteria are weak and the risks associated with agricultural expansion are considerable. Some participants argued in favour of abolishing the blending targets all together: 'Why would you want to increase the demand for agricultural products artificially if you know that the use of agrofuels will not contribute to significant GHG emission reductions, and will inevitably lead to extra agricultural expansion, possibly at the expense of biodiversity, food security and smallholder agriculture?' They argued that it is better to invest in the productivity and sustainability of the agricultural sector as a whole, and in various initiatives that are already in place to pursue sustainability of trade chains.

Notwithstanding these different viewpoints, all participants agreed that it is necessary to adjust the current regulations at the European level. The Netherlands should play an active role in improving the Renewable Energy Directive (RED) criteria and guidelines, as they are currently inadequate. The RED sustainability criteria need to include: (i) indirect land-use

*In 2008, Minister Cramer (VROM) opened the first gas station where ethanol blended gas is sold (Source: Wikipedia.org).*

*Palm oil production in West Kalimantan, Indonesia (Source: ran.org).*

changes (ILUC), (ii) $N_2O$ emissions, and (iii) social criteria. In addition, incentives for second/third-generation biofuels should be developed further.

## Follow-up

This DPRN process resulted in several follow-up activities, including a three-year project aimed at improving the sustainability of oil palm production in West Kalimantan, Indonesia.

Based on the discussions held during this DPRN process, several members of the Agrofuels Platform wrote a project proposal to experiment with participatory planning in the context of oil palm expansion in West Kalimantan, Indonesia. This proposal was awarded by the Global Sustainable Biomass Fund. The project is coordinated by Both Ends, and aims to mitigate or prevent negative effects of palm oil for fuel production through a more participatory and transparent spatial planning. The project partners, including several Indonesian NGOs, will actively facilitate a multi-stakeholder process in Sanggau district, West Kalimantan, to reach a mode of land-use planning which incorporates community maps (i.e. detailed maps of local land uses, made by communities, using mobile phones with GPS technology) in the formal land-use planning process at the district level. The project partners will document the lessons and disseminate these for wider use in Indonesia and elsewhere.

In addition, the results of the multi-stakeholder meeting in The Hague were used as input for the discussions on the conditions for a green Dutch bio-based economy at a large international event entitled 'The Great Escape' that IUCN-NL organised in April 2010. The aim was to provide clarity amongst policymakers on the importance of maintaining healthy ecosystems to achieve economic development goals.

### Process output

The 'Fuelling knowledge on the social and ecological impacts of agrofuel production' process included the publication of a discussion paper, setting up an online knowledge community, and a closing multi-stakeholder meeting.

This resulted in the following publications:

- Discussion paper: 'Burning questions – Certainties and uncertainties concerning agrofuels'.
- DPRN process report.
- Online library: as a member of the Agrofuels Platform, NatureandPoverty.net (initiated by IUCN-NL) created a Wiki, with hundreds of documents on agrofuels.

All publications are available on the website: www.agrofuelsplatform.nl

Development Policy Review Network

This infosheet was made by DPRN. With a view to stimulating informed debate and discussion of issues related to the formulation and implementation of development policies, DPRN created opportunities to promote an open exchange and dialogue between scientists, policymakers, development practitioners and the business sector in the Netherlands and Flanders from 2003-2011.