**Both ENDS POLICY NOTE**

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# Whither EU Biofuel policy?
## The flaws of a target based approach

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Environment and Development Service

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## I. Introduction

The current debate on biofuels has now been raging for while. Within the European Union, it has increasingly drawn the attention of politicians, civil servants and society at large. The policies of the EU itself have come under particular scrutiny in this regard. With this paper, Both ENDS presents an overview of the considerations, dilemmas and contradictions involved, many of which have so far been insufficiently addressed. We focus on the EU Directive[1] while highlighting a number of concerns raised by experts, especially those from Southern biofuel producing countries[2].

The EU's indicative target of 5.75% biofuel usage in transport fuels by 2010 was supplemented in 2007 by the proposal[1] for a new mandatory target of 10% biofuel use[3] by 2020. In combination with other proposals and Directives[1] for renewable energy, the effective target could be considerably higher than 10%, since no specific targets have been set for other energy sources. Currently, under 2% of the EU's ever-growing transport fuel needs are met by biofuels.

These targets cannot be met within Europe without compromising domestic priorities and European policy is therefore geared towards importing energy crops from developing countries[4]. The artificial demand thus created in Europe is driving large-scale production patterns in the South that marginalise the poor. Some of the negative impacts incentivised by biofuel targets are:

- Food Security: The World Bank has reported a doubling of food prices in the last 3 years and a 40% rise this past year. The poor in developing countries are already facing the dire consequences[4]. The impact of biofuel production on the current (and worsening) food crisis has been widely acknowledged[5]. It occurs via several channels:
  - (i) Directly, by diverting food crops to fuel production.
  - (ii) Via competition for resources (land, water, fertiliser) with food crops.
  - (iii) Biofuels couple food prices to oil prices, exacerbating the upward trend and volatility of food prices. FAO analyses[5] confirm this link.
  - (iv) By sparking financial speculation in grains.
  - (v) Via the destruction of forests, an important food source for the poor.

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[1] EC proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources; this includes the proposal of a binding target to increase the level of renewable energy in the EU energy mix to 20% by 2020. In addition, the Fuel Quality Directive includes a target to reduce GHG emissions from transport by 1% each year between 2011 and 2020.

[2] This paper has benefited from a series of multi-stakeholder consultations and expert meetings held in The Netherlands and in producing countries such in Asia, Africa and South America.

[3] These targets refer to the biofuel fraction of the energy content of the fuel mix; the biofuel volume fraction will be higher.

[4] Both ENDS Policy Note *Agrofuels and land distribution: Towards a rights based approach to food security.*

[5] A recent WB report estimates a 75% contribution of biofuels to the rise in food prices (The Guardian, July 3 2008). See also: *Soaring Food Prices: Facts, Perspectives, Impacts and Actions required;* FAO Report HLC/08/INF/1 (2008); D. Mitchell, *A Note on Rising Food Prices;* World Bank 2008; S. Johnston, *The (Food) Price of Success,* Finance and Development, Vol 44 No. 4, IMF, December 2007.

(vi)Via food price distortion engendered by (EU and US) biofuel subsidies.

- Violation of customary land rights[6] and human rights[7] on many biofuel plantations.
- Value-chain concentration: where local smallholder production exists (especially Palm Oil in Indonesia and Malaysia), producers are usually bonded to the same company that provides inputs and buys produce (and sets the prices)[8].
- Adverse environmental impacts: deforestation; excessive water consumption; monocultures leading to soil nutrient depletion and the loss of biodiversity; water pollution and effluent run-off (from high agrochemical input).
- Neglect of developing country energy self-sufficiency.
- Repositioning of GM (Genetically Modified) crops (which met strong resistance as food) as a 'green' energy commodity in order to gain acceptance.

Crops like Jatropha have been touted for their ability to grow on 'marginal' land and thus not endanger food security. But yields are higher on agricultural land and moreover, the poorest communities live off marginal land anyway. Jatropha cultivation has also led to several land conflicts[6] and the loss of biodiversity.

Climate change mitigation was the main rationale for the introduction of biofuels; they were promoted for their 'carbon neutrality'. This has proven to be a myth. In many cases, biofuels actually result in greater GHG emissions than fossil fuels.

<u>Biofuels and Climate Change</u>

LCA (Life-Cycle Analyses) indicate little or negative climate change effects from biofuels when emissions from land-clearing, processing and fertiliser use are incorporated.

- Recent analyses[9] indicate that land-clearing (for biofuel plantations) could make biofuels much greater net emitters of GHGs (Greenhouse Gases) than the fossil fuels they typically displace. All but two[10] would generate greater GHG emissions for at least half a century, with several doing so for centuries.
- The use of agricultural machinery, refinery and distillation, and transport all result in GHG emissions.
- The large-scale monocultures involved in biomass production require constant nitrogen input due to soil nutrient-depletion. The Nobel Laureate Paul Crutzen and colleagues have shown[11] that the nitrogen inputs used for growing corn and rapeseed lead to nitrous oxide release that contributes more to global warming than the biofuels save, thus making them net GHG-negative on that count alone.

After these various aspects are factored into the LCA, only a few biofuels are left with a positive GHG balance. Bioethanol from Brazilian sugarcane is one of the most GHG-positive biofuels: there's relatively little direct emission from land conversion, nearly all the processing energy is provided by bagasse (agricultural residue), and high soil productivity entails little input. However, LCA are micro-studies and take no account

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[6] *Biofuel Hoax: Jatropha and Land-grab,* Navdanya, India, November 2007.
[7] *Promised Land (Palm Oil and Land Acquisition in Indonesia: Implications for Local Communities and Indigenous Peoples;* Forest People's Program and Sawit Watch.
[8] Oxfam Briefing Note; *Biofuelling Poverty*; November 2007.
[9] Fargione et al; *Land Clearing and the Biofuel Carbon Debt,* Sciencexpress, February 2008.
[10] Sugarcane ethanol and Soy biodiesel from Cerrado (Brazil).
[11] Crutzen et al 2007; *N2O release from agrofuel production negates global warming reduction by replacing fossil fuels;* Atmospheric Chemistry and Physics.

of indirect and macro-effects, which are hard to quantify but could effectively tip the GHG balance in many cases.

In short, the case made for biofuels as a means for combating climate change is extremely weak. The main motivation for deploying bioenergy in the EU appears to be energy security. In the context of volatile oil prices and unpredictable regimes, biofuels are attractive to governments as a means of diversifying energy budgets.[12] Other factors[13] include employment generation within the EU and compensating EU farmers for the reduction in CAP subsidies[14].

In order to reduce GHG emissions within the EU, effective policies are needed to decrease energy consumption, enhance energy efficiency and prioritise research on and incentives for the use of renewable energy. Immediate steps involving more investment in public transport, the adoption of fuel-efficient tyres, smaller engines in passenger cars, controlling speed limits, etc. already afford far greater climate change gains than biofuels can[15]. The direct use of biomass for power and electricity generation (rather than for transport) would considerably improve energy-efficiency.

## II. Solutions: the myth and the reality

Both the negative consequences on poor countries of the EU's unrealisable and potentially disastrous target-based policy and the non-validity (for most biofuels) of the climate change mitigation claim have been well documented. Various member states and factions within the European Parliament have taken diverging positions on this issue. More recently, the European Parliament's Environment Committee voted to scale down[16] the EU's biofuel targets. However, the European Commission (EC) insists[17] that 'this is not the official opinion of the European Parliament'. The most prevalent defence of these targets has to do with 'two important conditions' on their mandatory nature: (i) that biofuels be produced sustainably and (ii) that second-generation biofuels become commercially available. The current scenario is often painted as a transitory phase by policy-makers, one that will be resolved once these conditions are met.

(i) The Limits of Sustainability Certification

The contention that sustainability standards can resolve the situation is essentially flawed. At present, the framework[18] proposed by the EC looks only at two sustainability criteria: GHG balance and the impact on high biodiversity value areas. Crucial issues like food security, land conflicts, labour conditions and water and soil

[12] *Biofuels: making tough choices;* Sustainable Development Opinion; IIED February 2008.
[13] European Commission presentation to the Trilateral Partnership on Market Access for Palm Oil, The Hague, 3 December 2007.
[14] Common Agricultural Policy, the EU's domestic farm subsidy system.
[15] *Biofuel targets are not the answer;* TNI, March 2007.
[16] It supports a target of at least 4% of renewable sources in transport fuels by 2015, out of which at least 20% is met by electricity, hydrogen from renewable sources, biogas or fuel from lignocellulosic biomass or algae.
[17] The EC's energy spokesman warned against attaching too much importance to the Committee's opinion, stressing that five other committees had supported the 10% target.
[18] The EU's draft Directive on Renewable Energy.

degradation are excluded and the EC argues that WTO rules make it impossible to include social criteria.

Apart from the fact that a comprehensive and mandatory framework of sustainability criteria is very far from being developed, we emphasize that criteria and certification are not the solution. **Even the most ideal certification system cannot adequately address indirect and macro-effects.** For example:

- Commodity linkages like
  (i) The rise in palm oil prices due to the increased use of EU rapeseed oil for biodiesel (facilitated by domestic subsidies), triggering further palm oil expansion in South East Asia, and driving deforestation and peatland destruction[19].
  (ii) The rise in soy prices due to US subsidies for encouraging corn-based ethanol production and the consequent shift of US soy farmers to corn cultivation. This in turn amplifies incentives for cutting down Brazilian Amazonian forests and tropical savannas for soy production[20].
- Biofuel cultivation displaces other crops to rainforest frontiers or peatlands. Brazilian sugarcane cultivated for bioethanol, though not grown near forests, does indirectly contribute to deforestation by displacing soy and other crops to forested areas.
- Demographic changes due to the influx of migratory labour, and ensuing conflicts.
- The impact on food/commodity prices and subsequently on land prices.
- Infrastructure construction (large-scale canal networks, dams, roads) directed at export that interferes with local needs and creates further emissions.
- In many countries, certification as a tool cannot be relied upon due to weak governance and law enforcement. Complex procedures and high costs of certification also often put small producers at a comparative disadvantage. Moreover, there is considerable political opposition from civil society in many producer countries to the very concept of certification of commodities from large-scale monocultures[21]. Others view criteria as an imposition or accuse the EU of 'green protectionism'.[22]

EU policy-makers argue that targets make the implementation of sustainability criteria possible. A comprehensive set of sustainability criteria is indeed essential. **However, within the larger context of EU biofuel policy – of targets (incentivising unsustainable land-use), domestic protectionism (undermining developing country competitiveness and engendering adverse macro-effects) and finally criteria (that then seek to control the damage done by the former two)**, this argument hardly holds water.

(ii) Second generation biofuels

Second generation biofuels will be increasingly based on GM plants. Claims on the relative climate benefits of second generation biofuels have yet to be proven via LCA. The claim that they will not interfere with food production is hardly realistic. Lignocellulosic ethanol is a classic second generation biofuel derived from the cellulosic biomass of woody material, trees and grasses - these occupy land as well.

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[19] *Biofuels and Commodity Markets: Palm Oil Focus*, P. Thoenes, FAO, 2007.
[20] Scharleman and Laurance; *How Green are Biofuels?;* Environmental Science, January 2008.
[21] *Paving the way for Agrofuels: EU policy, sustainability criteria and climate calculations;* TNI Discussion Paper 2007.
[22] Green protectonism: using environmental concerns as an excuse to perpetuate old protectionist strategies that prevent developing countries from profiting from the biofuel trade.

Their yield will be higher, since entire plants will be used, instead of merely their starch or sugar content. However, this very fact raises concerns about the removal of organic matter (stems, leaves, etc.) that is normally returned to the soil. Organic matter is crucial for soil fertility and the regulation of water and nutrient content, especially in the face of climate change and increasing drought in poor countries. Its removal has serious negative consequences for food production.

Another consequence of the second generation is genetic modification at an unprecedented level of intrusiveness. The GM industry is looking to engineer trees to produce less lignin, since lignin blocks access to the cellulose needed for cellulosic ethanol. But lignin also provides the rigidity necessary for trees to stand and protects them from pest attack[23]. Large-scale cross-pollination with natural trees not bred to cope with reduced lignin could lead to disastrously weakened forests unable to cope with increasingly extreme weather. This is all in violation of the widely accepted precautionary principle.

The EU's target-based policy is incompatible with sustainable biofuel production. **Neither sustainability criteria nor the second generation of biofuels can be a panacea for the negative impacts engendered by EU targets and domestic protectionism.** Furthermore, second generation biofuels bring with them a host of new concerns.

Biofuel production can, however, be made to work for sustainable development. Targets should be replaced by new incentives and criteria, formulated with the participation of all stakeholders, in order to enable this. In the next section, we discuss some of these issues.

## III. Biofuels for sustainable development

(i) For domestic markets

- Biomass/biofuels are more efficiently used near the source of production – transporting them over long distances creates significant extra emissions. Local use of biofuels can reduce the energy-dependency of poor countries. Furthermore, processing biomass into liquid fuel is energy intensive and creates additional emissions. Direct local use of biomass for heat or electricity generation is far more efficient, especially in areas without piped supplies of gas or oil (off-grid).
- Biofuel production needs to be transformed to benefit local poor communities and smallholders rather than concentrating resources among a small elite of landowners and companies. Value-chain participation is crucial for this. Smallholders cooperatives in Brazil have, for example, been able to participate effectively in bioethanol chains. The EU should engage in research and consultation on how to best facilitate support for local communities to engage in small-scale biofuel value chains, including access to appropriate technology, infrastructure[24] and training.
- Fiscal reform is needed in developing countries, where tax structures incentivise the use of imported oil over domestically produced biofuel.

[23] R. Maynard and P. Thomas; *The next genetic revolution?* The Ecologist, March 2007.
[24] Locally relevant infrastructure, as opposed to infrastructure geared towards export.

(ii) For export

LCA shows that biofuel produced from feedstock grown in tropical regions offers significantly better carbon savings and cost efficiency than that grown in Europe[25]. Though poor countries' domestic energy needs must be prioritised, biofuel export could in many cases also work for poverty alleviation and sustainable development **if food and land tenure security and value-chain participation are assured.** However, the EU protects its own biofuel industry via incentives, subsidies, tariffs and technical rules[8].

- Apart from the indirect effects they engender on global commodity prices and deforestation, the EU's biofuel subsidies are in many ways a new face of its entrenched agricultural protectionism (CAP)[14]. They generate unfair competition that exacerbates the scramble for markets by Southern producers and encourages unsustainable land-use.
- The application of tariff escalation[26] by the EU, US, Canada and Japan on biofuels[27] produced in the South is a significant obstacle to making biofuel export work for sustainable development. It undermines the viability of value adding industries in the South, favouring the import of raw material to feed Northern industries. Tariff escalation also encourages maximal land-use for minimal economic benefit in the South.
- When entering European markets, sustainable biofuels produced by LDCs and other poor countries should be granted the same treatment as domestic sustainable biofuels. Sustainability criteria should apply to both.
- Many poor countries with significant advantages for sustainable biofuel production and trade need to build and protect their infant biofuel industries. The trading system must recognise these differences (SDT)[28] and allow sufficient policy space to enable this.

## Recommendations

We recommend that the following steps be taken in tandem:

1) That the EU withdraw its targets for biofuel use.
2) That the EU engage in research and consultation with all stakeholders, especially Southern CSOs, smallholders representatives and other affected groups and Southern governments, in order to design new incentives and criteria for *sustainable* biofuel production and trade that are in line with national food and energy needs and poverty reduction programmes.
3) That the EU make urgent policy interventions at home to reduce GHG emissions via reduced consumption, energy efficiency, subsidy shifts (from fossil fuels to renewables) and investment in renewables.
4) That the EU (a) phase out its own protectionist measures and ensure that biofuels produced sustainably in the South are given the same treatment as domestic ones (b) support poor countries in their bid for SDT[28] under the

[25] *Bioenergy, Food Security and Sustainability – Towards an International Framework;* FAO document HLC/08/INF/3 (2008).
[26] Import tariffs increase with the degree of processing of the product
[27] A. Dufey, *Biofuels production, trade and sustainable development: emerging issues,* Sustainable Markets Discussion Paper Number 2, IIED, November 2006.
[28] Special and Differential Treatment.

WTO in order to ensure the viability of their infant (sustainable biofuel) industries.

5) That the EU commission detailed research on the impact of second generation biofuels on natural ecosystems, actively involving scientists and CSOs.

Both ENDS Environment and Development Service works with Southern partners to address pressing concerns regarding biofuels, e.g. on issues of land rights, livelihoods and domestic food and energy needs. Both ENDS, IUCN-NL and Cordaid in close partnership with Southern partners and with support from the Dutch environment ministry (VROM), are conducting a study into the macro-effects of energy crop production. Both ENDS hosts the secretariat of the Dutch NGO Palm Oil coalition and the Dutch Soy Coalition. We collaborate with the Universities of Amsterdam and Wageningen, IUCN-NL, ETC, Cordaid, Mekong Ecology and CSOs and scientific institutions in the South to gain better understanding of the trends, effects and policy options concerning biofuel production and consumption.

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