

**Brief**

C | A | S | I | N

# Deforestation Diesel or Energy Elixir? NGOs and Biofuels

April, 2007

Stephanie Lepsoe  
Vancouver, Canada

C | A | S | I | N

Centre for Applied Studies in  
International Negotiations  
C.P. 1340  
Av. de la Paix 7 bis  
1211 Geneva 1  
Switzerland

T +41 22 730 8675/76  
F +41 22 730 8690  
ngocasin@casin.ch  
www.casin.ch

Stephanie Lepsoe, Research Assistant, prepared this report for the Programme on NGOs and Civil Society of the Centre for Applied Studies in International Negotiation.

**The Programme on NGOs and Civil Society**

Worldwide, the role of civil society has been increasing at rapid speed. Non-governmental organizations (NGOs) have become significant and influential players and generate much interest. Created in 1986, the Programme on Non-Governmental Organizations and Civil Society aims at contributing towards a better understanding of NGOs and the solutions of complex and conflictive societal problems involving NGOs.

The opinions expressed in this paper reflect only those of the author and not of the institutions to which he/she is or was affiliated.

Copyright CASIN © April 2007

# Table of Contents

EXECUTIVE SUMMARY .....	3
INTRODUCTION.....	4
<b>Non-Governmental Organisations</b> .....	<b>4</b>
<b>Overview of Renewable Energy and Biofuels</b> .....	<b>5</b>
BIOFUELS: ETHANOL AND BIODIESEL .....	5
ETHANOL.....	5
BIODIESEL.....	5
<b>Why use biomass?</b> .....	<b>6</b>
<b>Challenges</b> .....	<b>6</b>
THE PUSH BEHIND BIOFUELS .....	7
<b>NGOs: Marshalling Opposition</b> .....	<b>7</b>
<b>Table 1:NGOs’ Key Concerns over Biofuels</b> .....	<b>9</b>
<b>Technology and Climate Change</b> .....	<b>11</b>
<b>Social Justice and Human Rights</b> .....	<b>12</b>
HUMAN RIGHTS VIOLATIONS .....	12
FOREIGN OWNERSHIP & CONCENTRATION OF LAND, DISPOSSESSION OF INDIGENOUS PEOPLES.....	12
RURAL LIVELIHOODS.....	13
FOOD VS. FUEL: FOOD SECURITY AND FOOD SOVEREIGNTY .....	13
LESS FOOD AID.....	14
<b>Environment</b> .....	<b>15</b>
BIODIVERSITY LOSS AND GENETICALLY MODIFIED ORGANISMS (GMOs).....	15
DEFORESTATION .....	16
INDONESIA CASE STUDY.....	16
VIRTUAL WATER .....	17
CREDIBLE CERTIFICATION .....	17
THREE KEY NGO PLAYERS AND POSITIONS .....	18
<b>Biofuelwatch</b> .....	<b>18</b>
<b>Sierra Club</b> .....	<b>18</b>
<b>Sawit Watch</b> .....	<b>19</b>
<b>India-Philippines Technology Transfer</b> .....	<b>19</b>
<b>Actions</b> .....	<b>19</b>
2007– OPEN LETTER TO THE EU: ABANDON BIOFUEL TARGETS .....	20
EUROPEAN SPRING COUNCIL .....	21
BIOFUEL POSSIBILITIES .....	21
<b>TABLE 2: NGO RECOMMENDATIONS FOR MAKING BIOFUELS MORE PEOPLE AND ENVIRONMENTALLY FRIENDLY</b> .....	<b>24</b>
CONCLUSION.....	25



## EXECUTIVE SUMMARY

The European Union (EU) has recently set biofuels targets, the US is aiming to cut back gasoline consumption by 20% in 10 years, and the government of the Philippines has passed the "Biofuels Act of 2006". The biofuels rage is just beginning. Proponents capitalize on biofuel's potential to reduce greenhouse gas emissions, raise farm incomes, and increase energy security. As the industry speeds ahead, NGOs are pulling the breaks: the quick fix requires more thought, they declare. Specifically, global leaders and biofuels enthusiasts must devote greater attention to the environmental and social impacts the current biofuel craze is responsible for. NGOs assert that the conditions under which biofuels are produced and consumed must meet certain technical, social, and environmental standards. They are concerned that the rush to harness biofuels as the panacea for the world's ills will not only exacerbate the worst aspects of national and international agricultural, environmental, and energy policies; it will also undermine one of the most critical concerns for which biofuels were hailed as part of the solution: climate change.

Biofuels may be promising. But like many technologies, NGOs contend that they require a framework of life-cycle standards to ensure they promote healthy communities and ecosystems from start to finish. Otherwise, as Andrew Boswell of Biofuelwatch points out, they risk being "friendly fire in the battle against climate change"—effectively undermining our attempt to address global warming and, potentially, exacerbating the situation instead.<sup>1</sup> NGOs also insist that biofuels constitute *one* aspect of a broader sustainable energy strategy where clean, renewable energy such as solar, wind and geothermal take precedence over polluting, non-renewable sources. Fundamentally, rich countries must make a concerted effort to reduce their energy use and increase efficiency of current technologies.

This report is organized in 5 main sections. Section 1 provides an introduction to the biofuels debate by offering an overview of NGOs, renewable energy and biofuels. Section 2 examines the push behind biofuels; as well as major points of concern for NGOs in the areas of technology and climate change, social justice and human rights, and environment. Included in this section is a table categorizing issues into 3 groups: ecological, social, and economic. Section 3 briefly looks at key NGO players, their positions and actions. Section 4 follows, highlighting possibilities for making biofuels a stronger force for building healthier communities and ecosystems, as well as part of a strategy to tackle global warming.

Section 5 wraps it up.

## INTRODUCTION

A number of recent events have catapulted the energy debate into the public arena. Al Gore's "Inconvenient Truth" exploded into the mainstream, highlighting the existence of climate change and its effects across the globe. Several months after, the Stern Report, commissioned by British Prime Minister Tony Blair, calculated the cost of climate change, underscoring the importance of investing in prevention and adaptation strategies. Shortly thereafter in February 2007, Working Group I of the Intergovernmental Panel on Climate Change (IPCC) further confirmed the existence, extent of human causes, cost and effects of climate change for global terrestrial and aquatic ecosystems. Finally, oil prices tripling since early 2002 to over US\$60 a barrel also hit people where they cannot help but notice: their pocketbooks.

Many people argue that climate change is not an environmental problem, but one of energy. From the European Union to the United States and Brazil, many governments are pushing biofuels as a major "green" initiative to meet their growing energy demand while becoming less reliant on foreign-sourced fossil fuels. This combination of climate change and energy security priorities is driving rapid expansion of the biofuels market.

NGOs are taking advantage of growing awareness around global warming and alternative energy to push many ideas for energy reform, social justice, and ecological enhancement into the mainstream. They are championing energy efficiency, as well as green and co-generated energy, power from wind, solar, and ocean tides. Biofuels, too, have their place. However, the negative social, ecological, and economic consequences of ill-conceived biofuel policies and practices have prompted NGOs to raise their voices in protest. Mass deforestation, exclusion and eviction of communities from their land, soaring prices of corn and basic food commodities— all constitute alarming aspects of the biofuel fad. The physical constraints in terms of land and water required to meet targets set by the EU and US are themselves a great cause for concern.

Consequently, from cautious words of restraint to mass street demonstrations, opposition to current biofuel "euphoria" is mounting.

## Non-Governmental Organisations

This report aims to examine how non-governmental organisations (NGOs) are shaping and responding to the biofuels debate. Also termed 'civil society', NGOs tend to have strengths in the following areas: 1) Gaining insight into conditions on the ground "at the grass roots"; 2) Articulating concerns voiced by marginalised or under-represented people; and 3) Calling for action to address issues of importance, often demanding attention from the rest of society and decision makers. Many NGOs are referred to in this report. They represent groups from all corners of the world who largely frame their concerns in terms of energy, technology and climate change, social justice and environment.

## Overview of Renewable Energy and Biofuels

Renewable generally means something that can be renewed/recuperated with or without the interference of people, such as plantations, forests, solar light, wind and water. Renewable energy is not always green. Wind power, solar energy, tidal power, and geothermal energy all have the advantage of not emitting CO<sub>2</sub> into the air when used. The process by which energy is obtained and, in some cases, by-products associated with production, must also be considered in the “green” equation. For example, the extreme toxicity and quality of being radioactive for hundreds of thousands of years prevents nuclear energy from holding any legitimate claim to “green” energy. Biofuels, too, must be evaluated from start to finish of their lifecycle.

### BIOFUELS: ETHANOL AND BIODIESEL

Biofuels are produced from renewable biomass. They constitute the primary renewable alternative energy for transportation fuel, and show promise in substituting fossil fuels and electricity used for heating residential and commercial spaces. Unlike other renewable energy sources such as solar and wind, biomass energy (biofuels) can be easily stored and readily used. It can provide a constant, non-fluctuating supply of electricity and heating.<sup>2</sup>

Biofuels are currently available in two forms: ethanol and biodiesel. Both have the potential to reduce overall greenhouse gas (GHG) emissions.

### ETHANOL

Ethanol can be used as an alternative fuel in vehicles that run off gasoline. Ethanol is an alcohol derived from a plant feedstock containing natural sugars like corn, wheat, sugar beet, or sugar cane, and fermenting it. Often sold as a 5-10% blend with gasoline (gasohol), it will operate in any vehicle without modification. Some cars run on pure ethanol. For example, more than 15% of cars in Brazil are purely ethanol-fired. Many modern gas-powered vehicles can run on 85% ethanol (E85) and 15 % gasoline. Older vehicles can also be slightly modified to accommodate this higher percentage.<sup>3</sup>

European producing countries include Denmark, Sweden, Germany, the United Kingdom, France, Spain and Italy. In North America, Canada has nine ethanol facilities in operation or under construction, while the US has upwards of 120 plants. Ethanol capacity is also being developed in many Asian countries including China, Japan, India, and Indonesia. Currently, Brazil and the US account for approximately 70% of global ethanol production, totaling 44.7 billion litres in 2005.<sup>4</sup>

### BIODIESEL

Biodiesel is produced from recycled vegetable oils, agricultural oils (sunflower, palm, rapeseed, cottonseed, soy, canola, corn, jatropha, flax and mustard) or animal fats (chicken fat, tallow and lard), and is a substitute for diesel fuel. In its uncontaminated form, it is non-toxic and biodegradable. Low-percentage blends of biodiesel can be used in conventional engines without modification, or used directly as fuel in modified engines. The EU is the lead global biodiesel producer, churning out 3.6 billion litres in 2005, or 1.5% of the European diesel market.<sup>5</sup>

## Why use biomass?

According to the Canadian-based NGO Pembina Institute, when energy sources from biomass are burned or processed, they release less mercury, sulphur, and heavy metals into the air, land, and water because they contain fewer pollutants than fossil fuels. Biofuels also give off fewer emissions of carbon dioxide, carbon monoxide, sulphur oxide, air toxics and particulates than fossil fuels.

Bioenergy has also been called “carbon-neutral” in the short term (as opposed to oil that is carbon-neutral over millions of years): bioenergy combustion emits carbon dioxide, but photosynthesis captures (or sequesters) an equivalent quantity of the gas during the production of the biomass resource.

## Challenges

Biofuels also have their challenges. First, the energy required to produce biofuels is significant. This includes energy required to grow, harvest and transport crops to a processing plant, then the energy needed to produce more energy from biofuels. The lowest energy requirements come from waste or residue resources, while agricultural crops have the highest energy needs. Second, sustainability requires that a bioenergy source cannot be depleted faster than it is produced. Land available for forests and farming, along with the photosynthetic process that makes biomass in plants and trees are other limitations of biofuels. In the absence of increased efficiency, it is estimated that the present amount of farmland must double for each of the world’s vehicles to be powered with biofuels. As a result, alternative energy advocates suggest that bioenergy be developed in tandem with other renewable energy sources.<sup>6</sup>

NGOs argue that maximum social, environmental, and economic gains are to be had not simply from replacing petroleum fuels with renewables, but ensuring that fuels with the lowest life-cycle GHG emissions are used. For instance, NGOs question the push behind, and government support for starch ethanol, which has higher GHG emissions than cellulose ethanol and biodiesel. NGOs also point out that the social and environmental impacts of renewable fuels are different depending on the forestry and agricultural practices employed to produce the feedstocks, and the way in which co-products of the fuel production process are used. NGOs maintain that government policies should support fuels with the lowest life-cycle environmental impacts, and processes to ensure credible certification regarding labour and production practices.

## THE PUSH BEHIND BIOFUELS

The EU Biofuels Directive has set a target for 20% of all energy to be sourced from renewables by 2010. The UK has set a 5% biofuel target<sup>7</sup>, but Ireland is keen to meet the European goal of 5.75% for its transport fuel by 2009, a year in advance.<sup>8</sup>

The push for biofuels is heating up in the US, too, where Congress required a 4 billion gallon total for national biofuel consumption in 2006, responding to calls in the Senate “to replace hydrocarbons with carbohydrates.”<sup>9</sup> Meanwhile, Australian oil companies aimed to use between 89 and 124 million liters of ethanol and biodiesel in 2006.<sup>10</sup> They missed their target, but they continue to forge ahead, upping biofuel use.

What are the forces propelling biofuels forward? Oxford’s *Analytica* highlights three primary factors pushing the industry: secure supply, climate change targets, and new export markets.

Rising global oil demand has led to heightened competition over existing supplies. Many countries see biofuels as a low-risk energy supply source, able to be grown and processed domestically. In the US, energy independence is a powerful justification for subsidies supporting the ethanol industry in the country’s agricultural heartland. In addition, countries reliant on foreign petroleum products see domestic biofuel production as a way to minimize increasing oil import bills.

With respect to meeting climate change targets, because biofuels burn cleaner than traditional fuels, they are viewed by politicians as a means to “green” transportation. Proponents also advance that CO<sub>2</sub> emissions from burning biofuels are off-set by the CO<sub>2</sub> consumed during their growth. Finally, as the biofuel hype explodes, many countries see opportunities to meet the demand created by these new markets.

Proponents argue that biofuels can generate new income for farmers who can harvest crops such as switchgrass for bio-fuel, or generate heat and power from manure processed in anaerobic digesters. France aims to become Europe’s leading biofuels maker by 2010,<sup>11</sup> while the US races to produce 7.5 billion gallons by 2012.<sup>12</sup>

NGOs are taking a more cautious approach, however, raising alarm as the environmental costs and social injustice of the industry become increasingly apparent. Civil society organisations affirm that unregulated biofuel markets have led to mass violations of human rights and environmental destruction. They further contend that biofuels are not necessarily “clean and renewable”, and that energy should not come at the expense of forests that support biodiversity, rural livelihoods, and land claims of Indigenous peoples. Their concerns fall into three main categories: technology and climate change, social justice and human rights, and ecological impacts. For these reasons, Montevideo-based World Rainforest Movement (WRM), refers to biofuels as “a serious threat masked in green”.<sup>13</sup>

### NGOs: Marshalling Opposition

NGOs are leading the growing movement opposing the wide-spread, unregulated, and what they contend is dangerously ill-conceived global biofuels boom. Table 1 below summarises key concerns of NGOs, divided into the three categories of ecological, social, and economic. Some

issues overlap multiple domains, such as the use of genetically modified organisms (GMOs) and further widening of the North-South divide. Concerns presented here are discussed in greater detail below.

**Table 1:NGOs' Key Concerns over Biofuels**

<i><b>Ecological</b></i>	<i><b>Social</b></i>	<i><b>Economic</b></i>
<i>Deforestation is a major cause of CO<sub>2</sub> emissions, but biodiesel from South East Asian palm oil can cause between 2-8 times as much CO<sub>2</sub> emissions from damage to peat as the CO<sub>2</sub> emissions from the regular diesel it replaces.</i>	<i>Genetically modified organisms (GMOs) raise issues relating to human health, ecological contamination, and intellectual property rights.</i>	<i>Concentration of land ownership by a few, often foreign companies undermines rural livelihoods and jeopardizes food security and sovereignty.</i>
<i>More fossil energy is used to produce the energy equivalent in biofuel.</i>	<i>Human rights violations.</i>	<i>Concentration of wealth and decision-making power outside of national economies</i>
<i>Carbon-neutrality is questioned if forests are burned to grow soya/oil palm.</i>	<i>Forced displacement of people from land.</i>	<i>Food prices increase beyond what poor people can afford.</i>
<i>Carbon balance of some biofuel crops may actually be negative when taking the complete process into account.</i>	<i>Illness and death from intensive agro-chemical use.</i>	<i>Food vs. fuel battle.</i>
<i>Forest fires and draining ecologically important peatlands.</i>	<i>Abuse of indigenous communities and culture.</i>	<i>Overall negative impact on southern economies.</i>
<i>Conversion of vast expanses of biodiversity-rich rainforest and sensitive ecosystems into biodiversity-poor, monocrops.</i>	<i>Abysmal labour practices. Slave labour and low wages.</i>	<i>Subsidies distort rational energy choices.</i>
<i>Physical constraints of land and water.</i>	<i>Violent land conflicts.</i>	
<i>Serious impacts on water, soil, and regional climate patterns</i>	<i>Increased power of transnational GMO seed and agro-chemical companies (e.g. Monsanto, Cargill Pioneer, Dupont, Syngenta and Bunge)</i>	

<i>Environmentally-destructive large infrastructure projects connected with biofuels. Industry refuses to honour environmental regulations when enforcement is not strict.</i>		
<i>Use of energy-intense synthetic chemicals and fertilizers.</i>		

## Technology and Climate Change

Chief among the environmental concerns is that, using current processing technology, more fossil energy is used to produce the energy equivalent in biofuel. For example, Friends of the Earth (FoE) France notes that while biofuel GHG emissions are slightly below those of ordinary fuels, biofuels still consume more energy than they produce.<sup>14</sup> When compared with fossil fuels, most crops currently used for biofuels result in only minor GHG savings. For some crops, the carbon balance may even be negative when the complete lifecycle is considered. As a consequence, NGOs argue that biofuels will only reduce GHGs when industry and governments have a greater understanding of emissions produced throughout the product chain– from land conversion to manufacturing, refining and end use. NGOs insist that further research is required before the EU, US, and other countries can set reasonable standards.

Biodiesel from South East Asian palm oil poses a grave concern because of destruction to carbon-rich peat bogs. This biodiesel is anticipated to emit between two and eight times as much CO<sub>2</sub> from damage to peat, as from combustion of regular diesel it replaces.<sup>15</sup> Added to this is the deforestation itself, a significant source of CO<sub>2</sub> emissions. (See Indonesia case study p.12)

NGOs point out that carbon-neutrality is questionable if forests are burned to grow soya and oil palm.<sup>16</sup> Launching criticism at the EU Plan, a consortium of NGOs argue that biofuel is the most undesirable alternative energy form the EU should be setting a target for, as they consume limited resources like fresh water and productive land.

UK-based Large Scale Biofuel Action Group calls it “irresponsible” for Europe to lower its own emissions by “sourcing biofuels from countries where rainforests, peatlands, and the livelihoods of communities are being destroyed in the process. If biofuel targets were met at any cost, this could mean a death sentence for the Amazon and other rainforests and push global warming completely beyond our control”.<sup>17</sup>

The use of energy-intense chemicals and fertilizers in biofuel cultivation, and resultant deleterious health-impacts from intensive agro-chemical use further add to NGO anxiety. The prevailing concern among NGOs is that Europe and North America are aiming too low to stabilise GHGs and avoid the worst of climate change.<sup>18</sup> This is the crux of the matter: biofuel fever focuses exclusively on the supply-side, rather than demand-side solutions addressing fundamental lifestyle changes that require lowering CO<sub>2</sub>. Ultimately, any sustainable energy plan must prioritise decreasing energy use, then increasing efficiency.

## Social Justice and Human Rights

### HUMAN RIGHTS VIOLATIONS

From the social justice perspective, NGOs are acutely concerned about many of the same issues that have characterized agricultural-export practices since colonization.<sup>19</sup> There have been reports of grievous human rights violations from sugar cane, soy, and palm oil plantations in Brazil, Paraguay, Colombia, Argentina, and South-East Asia. Abuses include violent land conflicts, slavery, extremely poor working conditions and wages, serious illness and death from intensive agrochemical use and deforestation. Forced displacement and abuse of indigenous communities and culture is another key area of concern.<sup>20</sup>

Maisa Mendonça, Director of the São Paulo-based NGO Rede Social, asserts that problems associated with the cultivation of sugarcane in present-day Brazil mimic problems from hundreds of years past; sugarcane fieldworkers continue to perform some of the cruelest labour in the world. Mendonça contends that the industry's reliance on labour exploitation and massive slave labour, as well as its refusal to implement environmental regulations allow Brazil to boast the lowest cost of biofuels production in the world: US\$165 per tonne in São Paulo compared with US\$700 in Europe.<sup>21</sup>

### FOREIGN OWNERSHIP & CONCENTRATION OF LAND, DISPOSSESSION OF INDIGENOUS PEOPLES

In addition to the above factors, the concentration of land ownership—and resultant wealth and decision-making power—by a few, often foreign companies, also serves to dispossess people from their lands, erode rural livelihoods and jeopardize food security.

Darío Mejía of the Organisation of Indigenous Nationalities of Colombia speaks of his own country where President Alvaro Uribe intends to increase palm cultivation to one million hectares by 2010, up from 118,000 in 2003: “This type of megaproject increases concentration of land in a few hands and favors the continuance of territorial dispossession suffered by indigenous communities during every period since the Spanish conquest.”<sup>22</sup>

Tatiana Roa of Bogotá-based Censat-Agua Viva describes what she sees as the furtive, insidious purchase of land by large companies, resulting in Indian and campesino communities being driven from their lands. She recalls the forests transformed into plantations, “ancestral cultures transformed into palm-growing proletariats. These are the voices that ask for an end to the destruction proposed by the defenders of biodiesel.”<sup>23</sup>

Brazil alone has 311,000 kms<sup>2</sup> in soy and sugar cane cultivation, largely for biofuel production. This is the equivalent area of the Netherlands, Belgium, and the UK combined. Like soybeans in Brazil, sugarcane is following the pattern of foreign investment, and concentration of land and wealth. Nearly all current production of soybeans in the country is controlled by a few multinational agribusinesses.<sup>24</sup> NGOs point to Cargill, Brazil's biggest soybean exporter and second-biggest processor. It is also the largest sugar operator, both with respect to Brazilian sugar production and export, and the world sugar trade.

The Forum of Resistance to Agribusinesses, a consortium of NGOs throughout South America contend that a handful of Brazilians will grow wealthy from expansion of the ethanol industry, but most people will not gain from a surge in ethanol exports. Along with Rede Social and the Organisation of Indigenous Nationalities of Colombia, the Forum takes issue with continuation of colonial patterns. The Forum argues: "The era of biofuels will reproduce and legitimize the logic of the occupation of rural areas by multinational agribusiness, and perpetuate the colonial project to subvert ecosystems and people to the service of the production and maintenance of a lifestyle in other societies."<sup>25</sup>

Commenting on the March 9<sup>th</sup> biofuels agreement between Brazil and the US, Suzanne Hunt of the Worldwatch Institute emphasized the importance of "ensuring that the potential development benefits are realized and that environmental harms are avoided". She also stressed the importance of ensuring that development of the industry spreads "the economic benefits as widely as possible, rather than replicating the disastrous concentration of wealth that has marked the petroleum industry in countries such as Nigeria and Saudi Arabia."<sup>26</sup>

### RURAL LIVELIHOODS

Many NGOs are concerned with the growing pattern across Brazil, where conversion of more land to sugarcane monoculture, and greater concentration of control over the industry exacerbate rural poverty.<sup>27</sup> "Rural poverty has always been intrinsically related to the economy of sugarcane. Even in the 1970s, when Pernambuco was the largest national producer of sugarcane, the levels of poverty were amongst the highest in the world," recalls Marluce Melo of Brazil's Pastoral Land Commission (CPT).<sup>28</sup>

In the US, NGOs contend that the potential for biofuels to revive rural economies will be lost so long as rural development priorities are not considered in local, state, and federal programs and policies that shape the scale, ownership, and structure of the industry.

### FOOD VS. FUEL: FOOD SECURITY AND FOOD SOVEREIGNTY

In September 2006, Lester Brown of the Washington-based nonprofit Earth Policy Institute suggested that the grain required to produce enough ethanol to fill a 25-gallon SUV tank "would feed one person for a full year. If the United States converted its entire grain harvest into ethanol, it would satisfy less than 16 percent of its automotive needs." In his opinion piece in the Washington Post, Brown described the "epic competition" between "the world's 800 million automobile owners, who want to maintain their mobility, and the world's two billion poorest people, who simply want to survive."<sup>29</sup>

There is broad concern that the market for biofuels takes precedence over people's livelihoods, where the price of food crops rise as fuel producers are willing to pay more for crops as fuel, than people are willing to pay for food. The battle over use of agricultural land to grow food or fuel does not bode well for the world's estimated 1.2 billion people, over a fifth of humanity who survive on less than a dollar a day and suffer from hunger. The food vs. fuel debate openly questions the Millennium Development Goals (2000) where world leaders pledged to halve the proportion of people living in extreme poverty by 2015. A 2003 estimate suggests that 824 million people living

in the global South were affected by chronic hunger, predominantly in southern Asia and sub-Saharan Africa.

NGOs argue that biofuel producing countries need to incorporate food sovereignty into their development policy, prioritizing the land to cultivate food for residents of the country. Food sovereignty includes both the obligation of governments to ensure that their populations have access to nutritious foods in adequate quantities, and the right of people and countries to define their own agrarian policies, and produce foods destined to feed their populations before producing for export.

NGOs assert that food sovereignty requires a comprehensive agrarian reform to ensure family farmers can remain on their land, producing and distributing healthy food to local populations. In the case of Brazil, NGOs contend that the Brazilian ethanol industry poses a direct challenge to food sovereignty and agrarian reform.

In Mexico, tortilla prices tripled to 15 pesos (US\$1.36) a kg when corn prices shot up in January 2007, due to increased demand for ethanol production. President Felipe Calderon stepped in to cap prices. Mexico's "tortilla protests" may be the tip of the iceberg warn NGOs who are concerned about the implications of biofuels for food security. Because corn provides the feedstock for much agricultural production, prices are also rising for other basic commodities like meat, milk and eggs.<sup>30</sup>

NGOs posit that a rocketing demand for biofuels is putting pressure on producers in the South to convert agricultural land over to biomass for fuel production. By reducing land for food production and setting targets requiring high amounts of crops used as essential food staples, NGOs contend that the EU and US are partly to blame for food shortages, and undermining local and international food security and sovereignty. They assert that biofuel demand has been responsible for a 20 year low in world cereal reserves, as well as an increase in the world grain deficit.<sup>31</sup> NGOs also worry that providing economic incentives such as subsidies to biofuels will worsen many problems, including lowering food production, by distorting markets.

## LESS FOOD AID

How will demand for biofuels affect food aid? NGOs speculate that if US farmers receive a good income from selling grain for ethanol production, Americans may reconsider their current practice of donating 99 % of food aid contributions in goods, rather than cash. This could potentially benefit producers in the South who would no longer compete with distorted prices from foreign grain dumped in their markets. However, relief NGOs who have often received food aid may be struggling to keep their commitments.

## Environment

From biodiversity loss to deforestation, NGOs challenge the “green” image projected by biofuel supporters. Their conclusion? Under current practices, biofuels are decidedly *not* green.

### BIODIVERSITY LOSS AND GENETICALLY MODIFIED ORGANISMS (GMOs)

Of great concern to NGOs is the conversion of vast expanses of biodiversity-rich rainforest and sensitive ecosystems into biodiversity-poor, monocrops like palm oil or soya. Many of these crops are genetically modified organisms (GMOs), raising a new slew of issues relating to human health, ecological contamination, and intellectual property rights. NGOs charge that by adding a serious driver of biodiversity loss, biofuels incentives ignore the 2010 Target agreed on at the World Summit for Sustainable Development in Johannesburg, and contradict the pro-poor agreements of the Millennium Development Goals.

*“Europe must act now or biofuels could spell disaster for biodiversity worldwide.”*

-Ariel Brunner, Policy Officer at BirdLife International.

BirdLife International contends Europe is already witnessing negative effects of biofuel production on wildlife. It cites Germany’s red kite and France’s little bustard are two examples of species threatened by the unmanaged conversion of land for biofuels production. It is interesting to note a rare point of consensus emerging between some people in the oil industry and NGOs. According to the BBC, “Some oil

representatives have told the government that they cannot meet the UK target of 5% biofuel ... by 2010 while also protecting wildlife.”<sup>32</sup>

The European Federation for Transport and Environment (T&E), Europe’s primary environmental organisation campaigning on sustainable transport, argues that the number one priority must be improving energy efficiency of vehicles. It adds, “If biofuels are to be part of the energy solution, the EU must ensure that those produced by clearing rainforests and protected habitats will never be sold in Europe.”<sup>33</sup> Losing agricultural ‘set-aside’ land is an immediate danger to European farmers. Set-asides were not intended as an environmental measure, but the practice of removing a portion of farmland from production has benefited wildlife and farmland biodiversity.<sup>34</sup>

*“Plantation forests are a tremendous disaster for biodiversity and local people.”*

-Miguel Lovera, Global Forest Coalition.

In Europe, GreenPeace and Friends of the Earth France both argue against biofuels. They affirm that the damage resulting from large-scale, intensive farming required to make biofuels financially feasible outweigh the benefits of clean-burning. Intense farming of this magnitude might be used to justify using genetically modified crops (GMO), and maintaining or increasing the use of petrol-based inputs such as fertilizers and pesticides.<sup>35</sup>

Many of the GM crops that met fierce resistance to their use of food, particularly in Europe, are now used for biofuels. NGOs see the biotechnology industry promoting biofuels as a means to secure new markets for its products such as maize, oilseed, and soya. NGOs point out that none of the concerns over biofuels have been addressed, and new ones are emerging as the industry prepares to employ GM to increase biofuel yields by extracting, altering, or breaking down plant lignins and cellulose.

## DEFORESTATION

*"The concentration of land ownership, resources and income, the destruction of forests, the contamination of the air, soil and waters, and the expulsion of rural populations from their lands are some of the scars that this model of production has been leaving on the territory, throughout our history."*

-Sergio Schlesinger, making reference to the "the monoculture regime" of biofuels in his report *Agribusiness and biofuels, an explosive mixture: Impacts of monoculture expansion on bioenergy production in Brazil*. Amigos da Terra/Friends of the Earth, Brazil.  
[www.natbrasil.org.br](http://www.natbrasil.org.br)  
[www.natbrasil.org.br](http://www.natbrasil.org.br)

*"Biofuels are rapidly becoming the main cause of deforestation in countries like Indonesia, Malaysia and Brazil,"* reported Simone Lovera, managing coordinator of the Global Forest Coalition, an environmental NGO based in Asunción, Paraguay.

*"We call it 'deforestation diesel'."*<sup>36</sup>

FoodFirst based in Oakland, California, reports that the monoculture of sugarcane has led to widespread environmental devastation in Brazil. The organisation concludes that only 2.5 percent of the original forest remains in the sugarcane region of Pernambuco State, and that meeting future global demand would require Brazil to clear an additional 148 million acres of forest.<sup>37</sup>

Enormous tracts of forest in Malaysia, Indonesia, Thailand, Brazil, Colombia, Argentina and many other Latin American countries have been cleared to grow oil palms.<sup>38</sup>

Oil palm has surpassed bananas as the world's number one fruit crop. Because of its low cost, palm oil is posed to become biodiesel's primary feedstock.

## INDONESIA CASE STUDY

Biofuelwatch, Watch Indonesia, and Save the Rainforest present the case of Indonesia to highlight some of the most devastating effects resulting from a push to use palm for vegetable oil, industrial products, soaps, shampoos—and now fuel. Sixty percent of all tropical peat is found in this country alone. This peat contains some 50 billion tonnes of carbon, the equivalent of 7-8 years of global fossil fuel emissions. However, oil palm and timber plantations are draining the peatlands, as well as forcing local communities and small landholders into peat regions and rainforests. Unless the peat is re-flooded and restored, drained peat releases its stored carbon into the atmosphere, further contributing to global warming. Deliberate fires set by plantation owners compound the problem. For example, the 2006 fire season was one of the worst ever recorded. Wetlands International links the rapid biofuels expansion to wide-spread destruction,

and cautions that for every one tonne of palm oil grown on peat, approximately 20 tonnes of carbon dioxide is released from that peat.<sup>39</sup>

While the multi-billion-euro European carbon market does not allow reforestation projects to count as carbon credits, many private companies are offering credits for tree planting projects. NGOs note that small landowners see only a tiny fraction of this investment. Studies suggest that plantation forests also contain much less carbon—sometimes as low as 45 percent of that stored in their natural forest equivalents. The immense volume of carbon stored in existing forests has yet to be accounted for, say NGOs.<sup>40</sup>

In addition to the above, NGOs are keeping an eye on environmentally destructive large infrastructure projects connected with biofuels, as well as soil depletion from over-cropping.

### VIRTUAL WATER

NGOs are concerned that monoculture crops such as soy, sugar cane and eucalyptus grown for biodiesel and export are draining countries like Brazil of its most precious resource: fresh water. Brazilian-based NGOs charge that along with cheap labour, availability of ample fresh water has helped to drive agribusiness in their country.<sup>41</sup>

NGOs point out that through exporting soy and sugar cane, Brazil is essentially exporting much of its water required to grow the crops. For example, China's importation of 18 million tonnes of soy (from Brazil and other countries) in 2004 required the producing countries to use approximately 45 km<sup>3</sup> of fresh water in their plantations. This is the equivalent of 450 years of rainfall over the city of Zurich, Switzerland. Large-scale agriculture has been linked to the disappearance of many small rivers and springs, as well as contamination of ground water and surface water.

Eucalyptus is an example of a feedstock crop that is attractive because new trees takes less than 6 years to grow, but it is extremely water-intensive. Pressure to meet a burgeoning global biofuels demand are expected to exacerbate the situation, increasing the export of virtual water and decreasing the quality and quantity of water remaining in Brazil.

The United States and Brazil have recently been joined by China as the top biofuels producers. NGOs draw on projections from scientists and economists, who surmise that both China and India do not have sufficient water to boost grain production, whether for people, animals, or fuel.<sup>42</sup>

### CREDIBLE CERTIFICATION

While some NGOs are concerned that there is no credible certification process for biofuels, others argue that certification on its own will not prevent the social and environmental problems associated with the industry. This is especially the case for countries with poor human rights records or weak enforcement of environmental and labour legislation. NGOs point to difficulties with the current attempts at certification such as the Round Table on Responsible Soy and Round Table on Sustainable Palm Oil, initiatives lacking buy-in from both industry and civil society alike. NGOs in support of certification argue that any credible certification process must fully involve affected parties in producer countries and result in strong, involuntary standards that sustain

long-term ecological and human health.

NGOs are in accord: Setting targets for biofuels before fully addressing the problems they can cause should be strongly rejected.

## **THREE KEY NGO PLAYERS AND POSITIONS**

### **Biofuelwatch**

UK-based Biofuelwatch is a volunteer-driven group concerned about the environment and climate change. It neither receives funds from, nor represents any industry group. Through working in partnership with hundreds of NGOs worldwide, encouraging information sharing and letter writing campaigns, it endeavours to expose the issues related to biofuel production, use, and sustainability. Biofuelwatch provides a wealth of information regarding current campaigns, press releases, short videos and radio interviews relating to the global biofuels market. A major focus is campaigning for regulation to ensure the EU only sells sustainably-sourced biofuels.<sup>43</sup> The organisation defines sustainable biofuels as those demonstrating no “adverse effects on old growth forests, wetlands and grasslands, greenhouse gas emissions, biodiversity, soils, water, food security and human rights”.

### **Sierra Club**

The Sierra Club points out that multiple criteria must be taken into account for each type of biofuel: the source of raw materials, the related impact of extensive extraction and use on air, water, and land; the consequences of unsustainable agriculture encompassing chemical fertilizers and pest control; the stress on ecosystems from using exotic or invasive plant species; and the process of manufacturing fuel, energy inputs included. It also asserts that the final energy “benefit of all biofuels is highly variable, and the potential for competition between farming for food and for energy products must also be considered.”<sup>44</sup>

The Sierra Club, support the use of biofuels only under certain conditions. As with its stance on agriculture in general, it advocates limited or no chemical inputs, sound soil conservation practices, crop rotation to augment yield where possible, running processing plants on renewable energy, and local distribution of fuel supplies. It advances replacing vast quantities of fossil fuels, mainly natural gas, coal, and diesel with sustainably produced biomass in the process of refining biofuels. Imported biofuels must be subject to an international certification process aimed at preventing endangered ecosystems such as rainforests and native grasslands from being converted to biofuel crops.

In its “2006 Energy Resources Policy,” the Sierra Club outlines its position on various energy sources. It lists them under the headings of “preferable”, “generally acceptable”, “transitional”, and “opposed.” Topping the “preferable” list are wind, solar, combined heat and power, and geothermal. Biodiesel and cellulosic ethanol are “generally acceptable”, while ethanol from starch and sugar is considered “transitional”. It notes that the leading biofuel in the US today, corn-based ethanol, is highly subsidized and depends on “environmentally destructive and

unsustainable practices to provide its feedstock and dispose of waste streams.” It continues: “The net energy and CO<sub>2</sub> impacts of current ethanol fuels are difficult to assess....There are serious concerns about land use, water consumption and toxic emissions regardless of feedstock which must be resolved if ethanol is to be a part of a sustainable future.”<sup>45</sup>

### **Sawit Watch**

Sawit Watch is an Indonesian network of NGOs opposed to plantations of oil palm, a species known as "sawit" in Indonesia. Formed in 1998, Sawit Watch works to: 1) Support the struggle of local and indigenous peoples against large-scale oil palm plantation companies; 2) Campaign against the World Bank/International Monetary Fund's Sectoral Adjustment Loan for liberalizing oil palm plantations; and 3) Raise awareness at the local, national and international levels on the social and environmental impacts of oil palm plantations.<sup>46</sup>

### **India-Philippines Technology Transfer**

In addition to advocacy work, NGOs are also involved with research and development of biofuels. In January 2007, Philippine President Gloria Macapagal-Arroyo was visited by the Indian-based NGO International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). The organisation presented sweet sorghum as an alternative source of biofuel in the Philippines, citing trials in the country that suggested it would be a viable, water-use efficient feedstock for ethanol production. The President has reportedly pledged to promote sweet sorghum in her country's nascent biofuels industry.<sup>47</sup>

### **Actions**

#### **2006--NAIROBI, KENYA: 12TH CONFERENCE OF THE PARTIES OF THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE**

The Gaia Foundation, Global Forest Coalition, Global Justice Ecology Project, Large Scale Biofuels Action Group, the STOP GE Trees Campaign and World Rainforest Movement held a press conference. The groups explained why biofuel schemes will not solve climate change. Specifically, they addressed the environmentally and socially destructive impacts of large-scale biofuel production, carbon sink plantations, and genetically engineered trees and crops.<sup>48</sup>

*Biofuels: A Disaster in the Making* was another NGO statement at this event. Signed by over 100 civil society groups, indigenous peoples organisations, and farmer's movements, it called for the immediate suspension of “all subsidies and other forms of inequitable support for the import and export of biofuels.”<sup>49</sup> Signatories included the International Alliance of Indigenous and Tribal People of the Tropical Forest, Ethnic Minority and Indigenous Rights Organisation of Africa, Simba Maasai Outreach Organisation (Kenya), Acción Ecológica (Ecuador), Sarhad Conservation Network (Pakistan), and Climate Change Action Network (Australia). Friends of the Earth chapters from Latin America and the Caribbean, Argentina, Uruguay, Malaysia, Indonesia, Australia, Papua New Guinea, Ghana, Tunisia, Nepal, Palestine, Finland, Slovakia, and Hungary were also among the signatories.

## 2007-- OPEN LETTER TO THE EU: ABANDON BIOFUEL TARGETS

In January 2007, over 224 NGOs submitted an open letter to the EU calling for biofuel targets to be abandoned. Environmental, human rights, religious, peace and justice, consumer rights, organisations from across the globe warned of the target's destructive impact on local communities, rainforests, food security, the global climate, and biodiversity.<sup>50</sup> They also called on Member States to "halt all other incentives for biofuel production" that could worsen these problems. "Instead, the focus should be on drastic reduction of energy use and support for genuinely sustainable renewables," they contended.

NGOs expressed their "extreme concern" that by implementing European biofuels targets, "the EU will risk breaching its international commitments to reduce greenhouse gas emissions and protect biodiversity and human rights; because...the proposed targets will amongst other things promote crops with poor greenhouse gas balances, trigger deforestation and loss of biodiversity and exacerbate local land use conflicts."

They maintained that the EU cannot solve its emissions problems by making the environmental, social and human rights situation in their own or other countries worse.<sup>51</sup> NGOs also voiced concern over big business increasing their agricultural monopoly and using slave labour on sugar cane plantations in Brazil. In addition, mass deforestation in South America, along with draining Indonesia's peatlands for timber and oil palm plantations prominently featured on the list of concerns.<sup>52</sup>

Other civil society organisations from the South voiced their serious concern over the EU biofuel plans. Alert Against the Green Desert Network, Latin American Network against Monoculture Tree Plantations, Network for a GM free Latin America, OilWatch South America and World Rainforest Movement signed a statement *We want Food Sovereignty Not Biofuels*.<sup>53</sup>

Meanwhile, Sawit Watch released its Open letter to the European Parliament, the European Commission, the governments and citizens of the European Union. In its letter "*Palm oil for biofuels increases social conflicts and undermines land reform in Indonesia*", Sawit Watch raises concerns over the rapid rate of oil palm expansion-- 400,000 ha annually--to meet European demand. It argued that oil palm plantations are the primary impetus behind "deforestation, forests fires, land and water pollution, and are being imposed on local communities and indigenous peoples without concern for their rights, livelihoods or welfare, and managed with insufficient concern for the rights and welfare of plantations workers and smallholders." Furthermore, the organisation stated that using biofuels to address global warming "makes no sense (because) emissions from deforestation, peat drainage and fires release vast amounts of greenhouse gases and fuel global warming further".<sup>54</sup>

## EUROPEAN SPRING COUNCIL

The Spring Summit of the European Council in Berlin was devoted to energy and climate change. European leaders were expected to close a deal and agree on the Commission's energy policy proposal. Three NGOs, BirdLife International, the European Environmental Bureau (EEB), and the European Federation for Transport & Environment (T&E) appealed to the heads of state to reject a proposed mandatory biofuel target. Opined Jos Dings of T&E, "Europe's approach to alternative fuel sources like biofuels has been to promote them regardless of whether or not they're good for the environment."<sup>55</sup>

The trio questioned the ability of land to grow enough biomass for fuel to meet European targets. They referred to a Commission-sponsored study, which concluded that meeting the EU's target of substituting 5.75% of fossil fuels with biofuels would require 14-27% of EU agricultural land. Meeting the biodiesel target would consume 192% of 2005 EU oilseed production, or 14% of the projected world production in 2012. Because domestically-produced biofuels cannot meet this target, the EU will have to import much of its biofuel and feedstocks.<sup>56</sup>

Additionally, these NGOs challenge the 'carbon neutrality' of biofuels, noting that production often creates considerable GHG emissions. Given the use of fossil fuel-based fertilizers and fossil fuel-driven processing, biofuels could potentially cause greater emissions than conventional fuel. As a consequence, good crop management and minimising use of fossil fuels in processing and transport are critical.

The statement urged leaders to scrap the biofuel target and instead, opt for the lifecycle GHG approach proposed by the Commission in its January review of the Fuel Quality Directive. These NGOs believe that if the policy were properly designed, it would "ensure that only the cleanest biofuels are promoted and the fossil fuel production process also cleans up its act. This approach requires fuel suppliers actually to improve their climate performance, rather than just blending in a product with uncertain environmental consequences."<sup>57</sup>

At a minimum, BirdLife International encouraged political leaders to support mandatory certification of biofuels. Certification would encompass GHG balance, as well as the industry's other environmental impacts including biodiversity and freshwater supplies."<sup>58</sup>

## BIOFUEL POSSIBILITIES

How can biofuels lead to healthier communities and ecosystems, as well as be part of an international strategy to tackle global warming?

The European Environmental Bureau, BirdLife International and Transport and Environment (T&E) believe that biofuels can help to achieve this vision. In their conference *A sustainable path for biofuels in the EU* (June 2006) the three organisations called on the European Commission to adopt sustainability safeguards in the Biofuels Directive. "Without safeguards, GHG savings will

be negligible, biodiversity will be harmed, and ultimately the public could reject biofuels if they are not seen to be a credible environmental alternative to fossil fuels.”<sup>59</sup>

The three NGOs say Europe must have a certification system to ensure that only biofuels produced sustainably with substantive greenhouse gas benefits qualify for public support and count towards public targets, like the EU goal of replacing 5.75% of transport fuels with biofuels by 2010. <sup>60</sup>

Similarly, the Energy Working Group of the Brazilian Forum of NGOs and Social Movements for the Environment and Development suggests, “The production of biofuels from plants cultivated by family agriculture, without the use of agrotoxics and in a regime of crop rotation, has an enormous potential to improve the quality of life of its population.”<sup>61</sup> They point to biofuel cooperatives as a “promising new initiative, involving small-scale farmers that plant for energetic and subsistence purposes”. For instance, the first biodiesel cooperative in Brazil was launched in 2005 by the Movimento dos Pequenos Agricultores (Small Farmers) and by the Movimento dos Trabalhadores Rurais Sem Terra (Movement of Rural Workers Without Land), in Palmeira das Missões, Rio Grande do Sul. Known as “Cooperbio”, this cooperative involves approximately 25,000 families of 62 municipalities in the state’s Northwest region. Priority is given to the use of castor bean, sunflower, jatropha, and other species cultivated in a diversified system. These species generate more oil than soy.

Some NGOs argue that crops such as soy, sugar cane and eucalyptus could be produced for biofuel, provided this is done so in an agriecological way. Agroecology relies on diversity of species, and does not require chemical inputs. However, these new sources of energy can only be classified as clean, renewable or sustainable if new production and consumption patterns are embraced. Moreover, from production to commercialization, NGOs reaffirm the pivotal role of family agriculture if biofuels are to support rural livelihoods.

According to the Global Forest Coalition, Costa Rica has nearly eliminated deforestation by making it illegal to convert forest into farmland. Paraguay introduced similar laws in 2004, using satellite images to survey its forests, dispatching forestry officials and police to enforce violations of the law. As a result, it appears that, “Deforestation has been reduced by 85 % in less than two years in the eastern part of the country... Governments are beginning to realise that their natural forests have enormous value left standing,” Lovera said. “A moratorium or ban on deforestation is the only way to stop this.” <sup>62</sup>

NGOs also point to other bio-based products like biomass-- especially waste products-- that show great promise. For example, many residues can provide raw material for biodiesel. Cattle lard in Brazil is one such suitable substance currently purchased by Petrobras for biodiesel production. In 2005, 23 million cattle were slaughtered, a potential for almost 350 million liters of fuel. However, producers feel that the price and transport logistics of bringing the oil to refineries is a current obstacle. NGOs suggest that in such cases, local production and consumption strategies would be necessary.

Some Brazilian cities are implementing initiatives to incorporate used household oil into biofuels, a practice that has various environmental payoffs. For example, kitchen oil residues can increase the cost of sewage treatment by up to 45%. NGOs recognise that these practices by themselves cannot satisfy the future demand for biofuels, but they insist that exploring small-scale possibilities like these contribute to a larger strategy.

Biomass associated with waste products is also receiving attention in the US, where calculations suggest that the quantity of biofuels produced from residues of grasses, trees, crops and forests could meet a substantial portion of domestic fuel demand. NGOs suggest that in the case of woody biomass from trees, it is necessary to develop wood supply assessment tools and certification systems to guarantee sustainable forest management practices.

NGOs agree that targets must focus on reducing energy, then increasing efficiency. Civil society organisations point out that now is the “critical juncture”—when the industry is developing its conversion technologies, infrastructure and ownership—where policies and incentives must prioritize rural development and environmental considerations.

US-based civil society organisations with an interest in rural development assert that policies can do the following:

- Protect the resource base by maintaining soil productivity, water quality, and other essential ecosystem services.
- Encourage farmer and/or community-owned ethanol processing facilities to become operational and profitable. Tax revenues paid by such businesses would exceed the cost of initial support.
- Provide start-up capital for farmers and rural communities lacking sufficient capital for biomass refineries. A revolving loan fund could create the opportunity for more rural residents to participate in biofuels development.
- Offer education and technical assistance to rural communities lacking resources or the knowledge required to construct and operate a biorefinery.
- Ensure the sustainability of biomass feedstocks through independent certification.

Table 2 outlines the general critiques and recommendations from NGOs.

<b>TABLE 2: NGO RECOMMENDATIONS FOR MAKING BIOFUELS MORE PEOPLE AND ENVIRONMENTALLY FRIENDLY</b>	
<b>In place of X (Current situation)</b>	<b>NGOs recommend....</b>
Fuel for the rich	Food for the poor
Policies promoting ethanol and biodiesel biofuels	Policies promoting <ul style="list-style-type: none"> <li>• lower energy usage</li> <li>• increased efficiency of current technologies</li> <li>• alternative energy sources with lower GHG emission such as solar, wind, and geothermal.</li> </ul> (This is mainly a critique from Northern-based NGOs)
Policies promoting biofuels at any cost	Policies prioritizing human and ecosystem health, and environmental justice.
Large scale agribusiness	Family farms and cooperatives
An unregulated market	Credible certification
Inefficient crops (e.g. corn or wheat grown in Canada/ US)	More efficient crops (eg. sugarcane grown in Brazil)
Burning forests or replacing forests with plantation forests for biofuels	Leave forests for biodiversity, habitat, and livelihood values; use other feed-stocks that have a faster renewal rate
Monoculture, driven by multinational agribusiness	Multi-cropping/ species diversity, driven by locally-owned cooperatives and family farms, and production facilities
Genetically modified (GM) crops	High-yielding, often native, non-GM crops that are well suited to their environments (eg. switchgrass)
Subsidies for large scale production	Subsidies for better research (eg. more efficient cellulose conversion and waste usage)
Agrochemicals that are toxic for human and non-human species	Organic, agricultural farming practices
Raw food products (eg. corn, wheat, sugarcane)	Waste products (e.g. used vegetable oil, agricultural, municipal, and forestry wastes)
Northern/Western countries burdening the global South with carbon off-sets and transferring the impact of GHGs	Northern/Western countries reducing their own demand and complimenting their own sources with Southern biofuels produced under credible conditions
Increased production targets to reduce CO <sub>2</sub> emissions	Reduced consumption targets and lifecycle GHG emission targets to reduce CO <sub>2</sub> emissions
Focusing on technological fixes	Focusing on changing individual behaviour and lifestyle

## CONCLUSION

NGOs have argued that current biofuel practices are not the answer to the world's energy crisis, nor any of the major problems confronting humanity. NGOs assert that generating biofuel from food crops is neither economically viable, nor energy efficient. The astronomical amount of land and water required to mainstream biofuel use in even a handful of countries should, itself, cause politicians to re-evaluate their biofuel commitments. Rather than subsidizing an industry that is costly and energy inefficient, resources should be channeled into energy-saving technologies and behaviours, as well as advancing research in renewable energy.

In a recent article in *Foreign Affairs* titled "How Biofuels Could Starve the Poor", the authors assert: "Biofuels have tied oil and food prices together in ways that could profoundly upset the relationships between food producers, consumers, and nations in the years ahead, with potentially devastating implications for both global poverty and food security."<sup>63</sup> NGOs insist that a world where SUVs have supremacy above the world's poor is indefensible.

The coming decades will determine how well the global community handles its multiple, interconnected crises in energy, poverty, food security, population, environment and climate. NGOs are offering solutions. The main obstacle now appears to be overcoming the crisis of inaction and feeble political will. Are the stakes high enough yet to get energy right?

---

<sup>1</sup>Interview with Andrew Boswell of Biofuelwatch, on 640 Toronto Radio (31 January 2007). Online: <http://www.biofuelwatch.org.uk/resources.php#2007Jan31>

<sup>2</sup> Suzuki Foundation, Energy: Renewables. Online: [http://www.davidsuzuki.org/Climate\\_Change/Energy/Renewables/biomass.asp](http://www.davidsuzuki.org/Climate_Change/Energy/Renewables/biomass.asp)

<sup>3</sup> Oxford Analytica "Biofuel Benefits Go Beyond Environment" (04 October 2006). Online [http://www.forbes.com/business/2006/04/07/biofuel-benefit-ethanol-cx\\_0410oxford.html](http://www.forbes.com/business/2006/04/07/biofuel-benefit-ethanol-cx_0410oxford.html)

<sup>4</sup> Frédéric Forge, "Biofuels - An Energy, Environmental or Agricultural Policy?" Science and Technology Division Library of Parliament, Canada, (8 February 2007). Online: <http://www.parl.gc.ca/information/library/PRBpubs/prb0637-e.htm>

<sup>5</sup> Ibid. See the following article for detailed information on top biofuels producers and consumers: "FACTBOX - Biofuels Take Off in Some Countries" (9 June 2005) <http://www.planetark.com/dailynewsstory.cfm/newsid/31182/story.htm>

<sup>6</sup> Pembina Institute online <http://www.pembina.org/re/index.php?q=node/47>

<sup>7</sup> Roger Harrabin, "EU fuel push 'may damage forests' BBC News (02 April 2007) [http://newsvote.bbc.co.uk/mpapps/pagetools/print/news.bbc.co.uk/2/hi/uk\\_news/6516893.stm](http://newsvote.bbc.co.uk/mpapps/pagetools/print/news.bbc.co.uk/2/hi/uk_news/6516893.stm)

<sup>8</sup> Green Car Congress, "Ireland's Biofuels Target: 5.75% by 2009 and 10% by 2020." (12 February 2007). Online: [www.greencarcongress.com/2007/02/irelands\\_biofuel.html](http://www.greencarcongress.com/2007/02/irelands_biofuel.html)

<sup>9</sup> Robert Bryce "Ethanol: Feed a Person for a Year or Fill Up an SUV?" CounterPunch (March 5, 2007). Online: [www.alternet.org/story/48790](http://www.alternet.org/story/48790)

<sup>10</sup> "Australian Oil Companies Fail to Meet Biofuel Target" Biodiesel and Ethanol Investing (18 December 2006). Online: <http://www.biodieselinvesting.com/biodiesel-archives/2006/12/18/australian-oil-companies-fail-to-meet-biofuel-target/>

- 
- <sup>11</sup> Planet Ark "French Green Lobby Wary of Biofuel Benefits" (January 12, 2006). Online: [www.planetark.org/dailynewsstory.cfm/newsid/34442/story.html](http://www.planetark.org/dailynewsstory.cfm/newsid/34442/story.html)
- <sup>12</sup><sup>12</sup> Phil Jarrell and Mary Rekas "Biofuels Coming Online: International Biofuel Use Expands" United States Department of Agriculture Foreign Agricultural Service (July 2006). Online: <http://www.fas.usda.gov/info/fasworldwide/2006/07-2006/BiofuelsOverview.htm>
- <sup>13</sup> Ecoclub "Green NGO blasts biofuels" (Nov 30 2006). Online: <http://www.ecoclub.com/c/index.php?showtopic=2769>
- <sup>14</sup> Planet Ark op. cit.
- <sup>15</sup> Climate Ark "Indonesia's Biofuel Expansion on Rainforest Peatlands to Accelerate Climate Change" (18 February 2007). Online: [http://www.climateark.org/alerts/send.asp?id=indonesia\\_peatland](http://www.climateark.org/alerts/send.asp?id=indonesia_peatland)
- <sup>16</sup> World Rainforest Movement <http://www.wrm.org.uy>
- <sup>17</sup> Biofuel Watch "EU Energy Strategy risks failing to stabilise the climate at the cost of exporting emissions to the global South" Press release (January 10th, 2007). Online: <http://www.biofuelwatch.org.uk/files/pressrelease2007-1-10.pdf>
- <sup>18</sup> Ibid.
- <sup>19</sup> Isabella Kenfield "Is Ethanol the Solution or the Problem?" Alternet (March 12, 2007). Online: <http://www.alternet.org/envirohealth/49138/>
- <sup>20</sup> "We Want Food Sovereignty, Not Biofuels", Open Letter (3 January 2007). Online: <http://www.regenwald.org/news.php?id=568>
- <sup>21</sup> Kenfield op. cit.
- <sup>22</sup> Helda Martínez, "Colombia. Biodiesel se mezcla con guerra," Inter Press Service. Online: [www.ipsnoticias.com](http://www.ipsnoticias.com)
- <sup>23</sup> Raúl Zibechi, "Argentina-Uruguay: The Militarization of the Pulp Mill Conflict" Americas Program, International Relations Center (January 5, 2007). Online [http://americas.irc-online.org/am/3871#\\_ftn5](http://americas.irc-online.org/am/3871#_ftn5)
- <sup>24</sup> Kenfield op. cit.
- <sup>25</sup> Ibid.
- <sup>26</sup> Worldwatch Institute, Making Biofuels Sustainable (March 15, 2007). Online: <http://www.worldwatch.org/node/4966>
- <sup>27</sup> Kenfield op. cit.
- <sup>28</sup> Ibid.
- <sup>29</sup> Robert Bryce op. cit.
- <sup>30</sup> John Burstein and Manuel Pérez Rocha, "The price of corn is social justice" "Transnational Institute (15 March 2007). Online: [http://www.tni.org/detail\\_page.phtml?act\\_id=16464](http://www.tni.org/detail_page.phtml?act_id=16464)
- <sup>31</sup> Robert Bryce op. cit.
- <sup>32</sup> Roger Harrabin op. cit.
- <sup>33</sup> "Fuelling extinction? Unsustainable biofuels threaten the environment". Press release by the European Environmental Bureau, Transport and Environment, and BirdLife International. (7 June, 2006). Online: [www.eeb.org/press/pr-BirdLife-EEB-T&E-Biofuels-070606.pdf](http://www.eeb.org/press/pr-BirdLife-EEB-T&E-Biofuels-070606.pdf)
- <sup>34</sup> Ibid.
- <sup>35</sup> Planet Ark op. cit.
- <sup>36</sup> Stephen Leahy op. cit.
- <sup>37</sup> Kenfield op. cit.
- <sup>38</sup> Biofuel Watch Press release (January 10th, 2007) op. cit.
- <sup>39</sup> South-east Asia's Peat Fires and Global Warming Joint Press Release, Ecological Internet (November 10th, 2006). Online: <http://www.biofuelwatch.org.uk/files/pressrelease2006-11-10.pdf>

---

<sup>40</sup> Stephen Leahy op. cit.

<sup>41</sup> Silvia Noronha, Lúcia Ortiz, Sergio Schlesinger “*Agribusiness and biofuels: an explosive mixture - Impacts of monoculture expansion on bioenergy production in Brazil*” *Friends of the Earth/ Amigos da Terra Brazil* (2006). Online:

[http://www.natbrasil.org.br/Docs/biocombustiveis/biocomb\\_ing.pdf](http://www.natbrasil.org.br/Docs/biocombustiveis/biocomb_ing.pdf)

<sup>42</sup> Ruth Gidley, “As Biofuels Boom, Will More Go Hungry?” Reuters posted through the Environmental News Network (07 March 2007). Online: [www.enn.com/today.html?id=12345](http://www.enn.com/today.html?id=12345)

<sup>43</sup> Biofuelwatch. Online: <http://www.biofuelwatch.org.uk/>

<sup>44</sup> Sierra Club, 2006 Energy Resources Policy. (September 2006). Online: <http://www.sierraclub.org/policy/conservation/energy.pdf>

<sup>45</sup> Ibid.

<sup>46</sup> Sawit Watch, Online: [www.sawitwatch.or.id](http://www.sawitwatch.or.id)

<sup>47</sup> Komfie Manalo, “Indian-Based NGO Harnesses Biofuel From Sweet Sorghum” All Headline News (25 January 2007). Online: [www.allheadlinenews.com/articles/7006248425](http://www.allheadlinenews.com/articles/7006248425)

<sup>48</sup> “False & Destructive “Solutions” to Global Warming: Groups Condemn Large-Scale Biofuels, GE” Press release, Portland Independent Media (16 November 2006). Online: <http://portland.indymedia.org/en/2006/11/349376.shtml>

<sup>49</sup> World Rainforest Movement, “Biofuels: A Disaster in the Making.” Online: [www.wrm.org.uy/actors/CCC/Nairobi/Disaster\\_Making.html](http://www.wrm.org.uy/actors/CCC/Nairobi/Disaster_Making.html)

<sup>50</sup> Open letter to the EU calling for biofuel targets to be abandoned (February 2007). Online: <http://www.biofuelwatch.org.uk/2007Jan31-signatures.html>

<sup>51</sup> Ibid.

<sup>52</sup> “South-east Asia’s Peat Fires and Global Warming” Joint Press Release by Ecological Internet, Biofuelwatch, Watch Indonesia and Save the Rainforest, Germany. (10 November 2006). Online:

<http://www.biofuelwatch.org.uk/files/pressrelease2006-11-10.pdf>.

<sup>53</sup> World Rainforest Movement, “We Want Food Sovereignty, Not Biofuels”, Open Letter (January 2007). Online: [http://www.wrm.org.uy/subjects/biofuels/EU\\_declaration.html](http://www.wrm.org.uy/subjects/biofuels/EU_declaration.html)

<sup>54</sup> Sawit Watch “Palm oil for biofuels increases social conflicts and undermines land reform in Indonesia”, Open letter (29 January 2007). Online: <http://tech.groups.yahoo.com/group/biofuelwatch/message/245>

<sup>55</sup> Biopact, “NGO’s want life cycle analysis of EU biofuels” (07 March 2007). Online: <http://biopact.com/2007/03/ngos-want-life-cycle-analysis-of-eu.html>

<sup>56</sup> Ibid.

<sup>57</sup> Ibid.

<sup>58</sup> Ibid.

<sup>59</sup> “Fuelling extinction?” op. cit.

<sup>60</sup> Ibid.

<sup>61</sup> Sergio Shlesinger, “Agribusiness and biofuels, an explosive mixture: Impacts of monoculture expansion on bio-energy production in Brazil.” *Amigos da Terra/Friends of the Earth, Brazil*. Online: [http://www.natbrasil.org.br/Docs/biocombustiveis/biocomb\\_ing.pdf](http://www.natbrasil.org.br/Docs/biocombustiveis/biocomb_ing.pdf)

<sup>62</sup> Stephen Leahy op. cit.

<sup>63</sup> C. Ford Runge and Benjamin Senauer “How Biofuels Could Starve the Poor”, *Foreign Affairs* (May/June 2007). Online: <http://www.foreignaffairs.org/20070501faessay86305/c-ford-runge-benjamin-senauer/how-biofuels-could-starve-the-poor.html>