

**BIOFUELS:
A THREAT TO THE ENVIRONMENT AND HUMAN RIGHTS?**

**AN ANALYSIS OF THE IMPACT OF THE PRODUCTION
OF FEEDSTOCK FOR AGROFUELS ON THE RIGHTS
TO WATER, LAND AND FOOD**

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This article critically appraises the biofuels regimes from the perspective of their effects on the environment and human rights. It concentrates on agrofuels production in particular, and examines the risks associated with such production for local populations and regions. The article introduces biofuels and its associated problems to the reader and then proceeds to consider the specific cases of the human rights to water, to land and to food in the context of bioenergy. It argues that any biofuel or agrofuel production must take into account sustainability issues, including human rights, and that beyond the commercial risks inherent in failure to do so, greater international regulation of biofuels is necessary and desirable.

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I. INTRODUCTION: BIOFUELS – THE LINK BETWEEN ENERGY SECURITY, CLIMATE CHANGE AND HUMAN RIGHTS

Over the past 50 years, economic growth has been based on the generation

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of non-renewable energy. Indeed, about 80% of the global primary energy still derives from fossil fuels.[1] In developed and developing countries, the growing demand of energy sources for the production, distribution and commercialization of goods and services is putting enormous pressure on energy sector.[2] For instance, the International Energy Agency projected that world primary energy demand will increase by almost 60% between 2002 and 2030, reaching 16.5 billion tonnes of oil equivalent. Two-thirds of the increase will come from developing countries.[3] The growing demand for energy on the one hand, the reduction of the availability of non-renewable energy sources on the other hand, as well as the emergence of other serious influencing drivers such as climate change and population growth, have prompted the international community to explore new efficient and environmentally friendly energy sources.

In this scenario, climate change constitutes, in particular, one of the main elements of consideration on the international energy agenda because of its linkage with energy production and consumption patterns. Compelling evidence has shown that the rising global average temperature at the surface of the earth stems from the increasing consumption of fossil fuels since they give rise to the release of greenhouse gases (GHG) into the atmosphere.[4] This complex phenomenon adversely affects ecosystems and the ecological interrelations which support, in turn, the economic and social development of individuals. To face the negative consequences of climate change, two important response measures have been developed at the international level: mitigation and adaptation. While mitigation encompasses all measures which tend to avoid or reduce GHG emissions, adaptation measures target the prevention of risk and the application of economic and social opportunities under the conditions of the now unavoidable impacts of change of climate.[5] The production of biomass[6] for the generation of bioenergy has been perceived as potential mitigation measure for the reduction of GHG emissions from the energy sector, in particular from the transport sector. In this connection, international forums such as the World Summit on Sustainable Development in Johannesburg have urged nations, in which the generation and consumption of energy depends on systems which are sources of GHG, to reform their energy regimes with the aim to reduce the impact of climate change. According to the International Energy Agency, fossil fuels remain the principal source of primary energy, amounting to 84% of the total increase of the energy demand between 2005 and 2030.[7] Taking into account the contribution of energy sources to sustainable development, to the creation of other important goods and services and to the mitigation of poverty, the Johannesburg Plan of Implementation therefore encourages access to modern biomass technologies and fuelwood sources and supplies and the

commercialization of biomass operations, including the use of agricultural residues, in rural areas and places where such practices are sustainable.[8]

In the context of energy and climate governance, bioenergy addresses two specific issues. On the one hand, the production of biofuels ensures energy security through the diversification of energy supplies, so that the dependence of oil-importing countries on fluctuating commodity prices reduces considerably. For Example, the Brazilian government has developed programs and policies which support the creation and implementation of its own biofuels industry to assure the energy security of the country by reducing its dependence on fossil fuels.[9] On the other hand, the development of new renewable energies, such as bioenergy, may contribute to enhanced climate resilience since it contributes to the mitigation of the effects of climate change and reduces, as a consequence, potential conflicts and security risks caused by the competition for natural resources (soil, water and biodiversity). However, the production of bioenergy raises an important question: what extend does the production of bioenergy have a negative effect on the environment and human rights? Water, soil and biodiversity are decisive elements not only for the cultivation of feedstock for biofuels such as maize, sugar cane and soya beans but also for the fulfilment of several human rights. Therefore, shifts in the use of these resources, scarcity, and negative environmental impacts caused during biofuel production can compromise the access of vulnerable groups to these natural resources and restrict for example their rights to water, land and food. In order to understand the environmental and social connotations of the production of feedstock biofuels, this paper will first explain the concepts around biofuels and its role in the energy sector. There will then be an analysis of the effects of the production of feedstock for biofuels on the environment and on people, in the light of the human right to water, to land and to food.

II. BIOFUELS: AN ENERGY STRATEGY IN THE TRANSPORT SECTOR FOR THE MITIGATION OF THE EFFECTS OF CLIMATE CHANGE

Before discussing the impact of the generation of biofuels on the environment and on human rights, it is important to determine the origin, concept and classification of biofuels as well as their role in the transport sector. Bioenergy can be defined as energy derived from biomass, non-fossil material of biological origin including forest and agricultural plants, wild or cultivated crops, and used for heat, electricity or transport.[10] To obtain bioenergy, biomass can be transformed into so-called biofuels. Depending on the raw material from which these energy sources derive, biofuels can be categorized under three groups. First

generation biofuels include agrofuels, all types of fuels derived from agriculture and livestock products, which are mainly extracted from food and feed crops, animal and agricultural by-products^[11] and transformed in fuels through well-established processing technologies.^[12] Agrofuels can take the form either of solid, liquid or gaseous fuels. Second generation biofuels encompass, in turn, fuels obtained by the conversion of cellulosic materials (e.g. switchgrass and agricultural waste) by thermo-chemical or bio-chemical processes.^[13] Finally, third generation biofuels are planned to be produced from 'energy-designed' feedstock and processed by more efficient technologies than what is used for the current production of biofuels. These are the biofuels of the future.^[14] Taking account the complex interrelations and different questions that each generation of biofuel faces, the scope of this paper will address to the impacts of the production of agrofuels on the environment and human rights. In this paper, the terms agrofuels and biofuels will both refer to liquid biofuels (bioethanol and biodiesel) used for transport.

The transport sector is the principal driver of oil demand in most regions of the world. Globally, it is expected that the share of total primary oil used for transport will rise from 47% in 2005 to 52% in 2030.^[15] In recent years, developed countries and emerging countries have made efforts to stimulate the production of agrofuels within their domestic policies in order to increase the demand of such energy sources in the market for road-transport fuels and to reduce, consequently, their dependence on oil imports. In fact, the International Energy Agency (IEA) projected in a conservative scenario that the demand for biofuels will increase from 2.3 % in 2015 to 3.2 % in 2030 in the transport sector.^[16] At the time of writing, the European Union and the United States are not only the main consumers of biofuels but they are also, together with Brazil, leaders in global biofuels production.^[17] Nevertheless, these tendencies can significantly change in the next years due to the accelerated process of industrialization in emerging countries, such as China and India, and the opportunity for developing countries to attract investments for the production of biofuels. Although the demand for biofuels represents a small component of the total energy demand, producers and consumers of agrofuels face each other in a play of market forces that puts enormous pressure on the environment and on the natural resources from which biomass is obtained.

III. THE IMPACT OF THE PRODUCTION OF AGROFUELS ON THE ENVIRONMENT AND HUMAN RIGHTS

Developing countries in Asia, Eastern Europe, Latin America and sub-Saharan Africa are showing an increasing interest in creating favourable conditions for investment projects aiming the production of feedstock for agrofuels. Many of the countries in these regions possess significant comparative advantages for the generation of biomass owing to their climate conditions, geographical position and abundant land resources.[18] In this context, the development of agrofuel has emerged in the view of international organizations as a formidable sustainable development strategy which can have an effect at two different levels.[19] At the national level, this strategy can address social problems in rural areas in developing countries by improving people's conditions of life through the creation of employment and the improvement of social infrastructure.[20] At the international level, the generation of agrofuels as a sustainable development strategy can ensure the global transportation fuel supply by reducing the dependence of oil imports from political unstable countries and the reduction of GHG emissions as well.[21] However, all these arguments in favour the production of agrofuels can be overshadowed by environmental and social externalities caused by the cultivation of feedstock for this purpose.

The production of feedstock for agrofuels has a significant impact on the environment and on the people's conditions of life. Water and soil are key natural resources for the cultivation of bionergy crops, but they face critical environmental impacts such as pollution or the reduction of their quality and quantity because of the unsustainable exploitation of the resources and biofuel process of production. Indeed, the use of pesticides and fertilizers in biofuels crops, the replacement of natural forest by monoculture biomass forests, the use of genetic modified organisms, or the proliferation of 'invasive alien species' are factors that lead to soil erosion, water run-off and the loss of biodiversity.[22] These, in turn, may have important implications for the rights of individuals and communities that live in the areas where such projects take place. In fact, the realisation of several human rights depends on the availability and quality of resources as well as the quality of the environment. To understand the complex interrelations between negative environmental impacts caused by the production of feedstock for agrofuels and the violation of human rights, this paper will address the question: What complex interrelations exist between the negative environmental impacts caused by the production of feedstock for agrofuels and the violation of human rights, such as the right to access to water, the right to land and the right to food?

1. *The right to access to water in the context of bioenergy*

The right to access to safe drinking water has been recognized either implicitly or explicitly in several international instruments.^[23] However, access to water has not been categorized as a human right until recently when the majority of members of the United Nations General Assembly voted in favour of Resolution 10967 on July 2010. This Resolution urges States and international organizations ‘to provide financial resources, build capacity and transfer technology, particularly to developing countries, in scaling up efforts to provide safe, clean, accessible and affordable drinking water and sanitation for all.’ Although this Resolution has a non-binding character, it strengthens the acknowledgment of the access to water as a human right at the international level.

In relation to the legal framework of the human right to access to safe, clean, accessible and affordable drinking water, the Committee on Economic Social and Cultural Rights outlined its content and scope of applicability in General Comment No. 15. According to the Committee, the right to water ‘entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses’.^[24] Two constituent elements of the human right to access to water derive from this definition: first the idea of ‘safe drinking water’ and second the notion of ‘access to water’.^[25] The first element, ‘safe drinking water’, establishes on the one hand the scope of protection of the human right to access to water which is the use of water for personal and domestic needs. On the other hand, the term ‘safe’ refers to the quality of water. This means that water for personal and domestic consumption must be free of microbial or chemical hazards. Regarding the second element, the ‘access to water’ refers to the availability of water as well as to the promotion of equitable, physical and economic accessibility to water. In this sense, people are not only entitled to the equal and non-discriminatory provision of water, which must be affordable for all, but water should be available as close as possible to each house, to educational institutions or to the workplace. Water quality, availability and accessibility constitute preconditions for the fulfilment of the human right to water; nevertheless, these factors play also an important role in the development of other activities in other economic sectors. In fact, water is an essential resource in agriculture, the energy generation and industry.

Water has been defined by Committee on Economic, Social and Cultural Rights as a ‘limited natural resource and a public good fundamental for life and health’.^[26] This definition points out the significance of the access to water for the fulfilment of other human rights, such as the right to life and to health. However, the scope of protection of the right to water is

limited to the use of water for personal and domestic uses. Agriculture, industry, energy generation constitute other spheres of human development which strongly depend on water and compete for the access to this resource. In addition to the wide scope of the use of water and the competing interest linked to its access, there are other factors which are putting a significant pressure on the availability and quality of water source and could give rise to a global water crisis, such as population growth, rising food requirements, industrialization processes in emerging countries and an increasing energy demand linked to a biofuels development strategy.[27]

In the context of bioenergy, water is one of the most important elements for the production of feedstock for biofuels. Water plays an important role in two different stages of biofuel production: for growing the feedstock and for the production process of biofuels plants.[28] The environmental impacts of the production of biofuels tend to be more perceptible on the quality and quantity of water where these projects are performed. The type of crop, the methods of irrigation and cultivation as well as the amount of water located in a specific region (e.g. semi-arid or water abundant regions)[29] are factors which influence the competition for access to water and ultimately the fulfilment of the human right to access to water. Therefore, the impact of these drivers on the availability and quality of water will be analyzed in this paper in the light of the realization of the right to access to water.

The availability of water is one of the fundamental conditions not only for the fulfilment of the right to access to water but also for the production of feedstock for biofuels. During the production of agrofuels, factors that influence water availability are the type of crop, the uses of water, the efficiency of the methods of irrigation, and the geographical distribution of water. The average requirements of water necessary for the production of one litre of agrofuels are 2,500 l of crop evapotranspiration[30] and 850 l of irrigation water are needed for this purpose. However, this average varies from region to region. While the volume of water needed for irrigation of rain-fed rapeseed crops in Europe is negligible, the amount of water required for the production of maize for a litre of ethanol in China requires on average 2,400 l of water for irrigation.[31] In that context, the inefficient use of water during the cultivation of biofuels and the type of crop cultivated can give rise to water depletion in regions where water is scarce. In addition to these factors, the geographical distribution of water and population pressure exert an additional pressure on the availability of water in a specific geographic area. China and India, for instance, already suffer from water scarcity problems. At the same time, however, both countries are

experiencing strong economic growth supported by an energy-intensive process of industrialization. In this scenario, the production of biofuels has been perceived as a strategy to secure energy supplies and to reduce the dependency on oil-imports. However, the generation of agrofuels and the increasing demand for food are already causing extreme competition for the access to water resources and are putting significant pressure on the already highly-exploited or overexploited water sources.^[32] As a consequence, the production of biofuels in regions which are suffering from water stress can trigger conflicts between competitive uses of water. This could lead to the violation of human rights whenever the State is not in the position to reconcile opposing interests in water and to enforce the fulfillment of the right to access to water.

Another substantial condition for the realization of the human right to access to water is the quality of water. The use of fertilizers or pesticides in the production of agrofuels has significant environmental impacts not only on the surface water and ground water but also on soil productivity as well as ecological systems and services depending on water. This, in turn, restricts the access of people to safe and clean water. According to a report of the United States National Research Council (NRC), the impacts of the increasing use of fertilizers in biofuels crops on large scale constitute an important concern. Fertilizers and pesticides are chemicals which can be washed into bodies of water and affect the quality of water. However, the magnitude of the environmental impacts depends on the amount of fertilizers and pesticides required for each type of crop.^[33] For example, in the United States, corn crops require more fertilizers and pesticides per hectare than any other agrofuels feedstock, so that a higher concentration of nitrogen contaminates groundwater and streams provoking oxygen-starved 'dead zones'.^[34] In this case, the increasing use of chemicals in agrofuels production is causing environmental impacts, such as erosion, sedimentation, lower oxygen in ecosystems and higher concentrations of chemicals in the water for drinking and irrigation, which trigger the access of population to 'clean' and 'safe' water and the realization of other human rights, such as the right to food or health.

In these scenarios, the production of biofuels represents a particular challenge for States. On the one side, States are called upon to ensure energy supplies and economic development; however, States have, on the other side, the international obligation to respect, protect and fulfil human rights.^[35] A State's compliance of both duties can be ensured to the extent that the right to access to water is anchored in national legislation and the implementation of projects for the production of biofuels are subject to social and ecological impact assessments. Many countries and international instances have been taking steps to ensure access to water to

citizens. International human rights instruments and several national constitutions^[36] already contain provisions relating to the right of access to water. This legal basis, in turn, enables individuals and communities to submit claims to national and international courts in case of violation to the right to access to water, especially when large scale projects are negatively impacting the environment and causing detriment to peoples' conditions of life. For instance, in the Ogoni case, the military government of Nigeria was accused of causing environmental degradation and health problems amongst the Ogoni people because of the work of oil companies. The complainants alleged that the Nigerian government had violated the right to health and the right to a clean environment as recognized under Articles 16 and 24 of the African Charter by directly participating in the contamination of the air, water and soil and thereby harming the health of the Ogoni people, and by failing to provide or allow studies to evaluate the potential or actual environmental and health risks caused by the oil operations.^[37]

Despite the non-binding character of Resolution 10967, the recognition of the access to safe, clean, accessible and affordable drinking water implies a moral obligation for States to ensure the realization of this human right, especially for those States that voted in favour this resolution. On this basis, States and all the stakeholders involved in the production of biofuels are called upon to guarantee the access of the population to water by avoiding or reducing the negative impacts – depletion and contamination – during the production of biofuels. Therefore, the content of national legislation, the access to effective judicial mechanisms and the implementation of social and environmental impact assessments are important preconditions to ensure the availability and quality of water.

2. *The right to land*

A precondition to guarantee the long-term profitability of biofuels in the global market is a structural transformation of agriculture and land holdings. This means that the production process of feedstock for bioenergy should be based on the promotion of large-scale plantations and an 'extreme degree of monoculture production'.^[38] This, in turn, implies the concentration of large tracts of land. Hence, smallholders and farmers in developing countries have little chance to compete in the bioenergy market which is characterized by production processes at an industrial scale and presupposes, as a consequence, large investment funding. Furthermore, this imbalance of power is being exacerbated by the fact that governments in developing countries prefer to encourage large scale national and foreign investments by facilitating the access to land for investors.^[39] In this context, the right to land and the

right to property as a human right constitute additional considerations in the decision-making process for designing and implementing bioenergy production projects.

The term 'land grabbing' characterizes a system of land acquisition and concentration in developing countries. Domestic or transnational enterprises in the agro-business sector may buy or lease large extensions of arable land to the host-state or even force farmers off their land with the aim to produce food or feedstock for biofuels.[40] The consequences of this phenomenon are one the one hand, competition over land either for the generation of energy or to grow food crops[41] and on the other hand, the concentration of land in the hands of very few landowners. This may lead to the expropriation of farmers and indigenous communities, and condemn these groups to marginalization, forced eviction and poverty.[42] For instance, forced evictions in Brazil, Colombia, Paraguay and Indonesia has been documented by the non-governmental organization FIAN International. In Colombia, in the region of Chocó, palm oil growing companies occupied the land of indigenous people and people of African descendants after evicting them from their land.[43] In many of these cases, agribusiness corporations, large landowners or security forces compelled farmers to abandon their lands whether through legal or illegal means. In that sense, landownership patterns and the phenomenon of landlessness can give rise to several violations of human rights since these are linked to problems such as inadequate housing, lack of livelihoods options, poor health, food insecurity and hunger, scarce access to water and poverty.[44] In case *Magna indigenous Communities of Toledo v. Belize*, the Inter-American Commission of Human Rights determined that the right to life, the right to religious freedom and worship, the right to a family and to protection, the right to preservation of health and well-being, the 'right to consultation', and the principle of self-determination are compromised by the violation of the right to property.[45] In this connection, vulnerable groups – indigenous people, and communities, minorities, women and farmers – are mainly affected by forced eviction since these groups do not possess formal property titles and their ownership over their land is generally based on customary law.

A key point in the protection of the human right to property is the recognition of the individual and collective right to land of vulnerable groups when energy or development projects are planned to take place in their land or territories. In several national legislations and in international law, indigenous people enjoy a special protection because of the systematic racial discrimination they suffered from in history. Therefore, the international recognition of the collective right of indigenous people to property protects the right to access to, use and control over land,

property and natural resources. This collective right to property derives from the special relation of these groups to the land^[46] since the social development, culture, world view and the political and economic systems of indigenous people are linked with and depend on the territory and the natural resources. States thus have the international obligation^[47] to protect the right of indigenous people to property and access to the natural resources within their territories. In fact, the Inter-American Commission of Human Rights developed in the case of *Marry and Carrie Dann v United States*, three principles of law in order to fulfill the right of indigenous people to property. According to the Commission, these principles are:

The right of indigenous people to legal recognition of their varied and specific forms and modalities of their control, ownership, use and enjoyment of territories and property;

the recognition of their property and ownership rights with respect to lands, territories and resources they have historically occupied;

where property and user rights of indigenous peoples arise from rights existing prior to the creation of a state, recognition by that state of the permanent and inalienable title of indigenous peoples relative thereto and to have such title changed only by mutual consent between the state and respective indigenous peoples when they have full knowledge and appreciation of the nature or attributes of such property. This also implies the right to fair compensation in the event that such property and user rights are irrevocably lost.^[48]

Other vulnerable groups in developing countries beyond indigenous people do not possess formal and legal titles over the land. They also lack access to appropriate legal mechanisms or other protection to ensure their right to property and land. Under this legal uncertainty, domestic or transnational companies sometimes urge farmers to sell their land at low prices. In other cases, they even take *de facto* possession of and control over the land gradually displacing these communities.^[49] Under these circumstances, the legal basis to guarantee the right of vulnerable groups to land constitutes the protection against forced evictions and displacement founded on the right to housing.^[50] In its General Comment No. 4, the Committee of Economic Social and Cultural Rights determined that an important aspect of the right to housing is the legal security tenure. In accordance with the Committee, the term 'tenure' encompasses a variety of forms, including rental (public and private) accommodation, cooperative housing, lease, owner-occupation, emergency housing and informal

settlements, as well as occupation of land or property. In this sense, the Committee highlighted that independently from the type of tenure, all persons should possess a degree of security of tenure which guarantees legal protection against forced eviction, harassment and other threats.^[51]

The Commission on Human Settlements catalogued forced evictions as 'gross violations of human rights'.^[52] By the virtue of article 11 (1) in connection with article 2 (1) of the International Covenant of Economic, Social and Cultural Rights (ICESCR), States have the international obligation to take all appropriate means, including legislative measurements, to progressively promote the rights protected under the Covenant. Therefore, legislation against forced eviction is, according to General Comment 7, an essential basis to ensure the protection of the human right to housing and therefore to ensure the right to land of vulnerable groups.^[53] Furthermore, States are also called upon to develop appropriate mechanisms and institutions to ensure the enforcement of national legislation. Opportunities for genuine consultation with the parties concerned, adequate and effective compensation for lost property and access to justice constitute effective procedural protections against forced evictions.^[54]

There are also many collateral consequences which derive from the concentration of land for the production of feedstock for biofuels. Shifts in land and monoculture production have environmental and social effects. From an environmental perspective, the cultivation of feedstock for biofuels can exacerbate the release of carbon dioxide into the atmosphere as a result of biomass combustion or the chopping down of the forest with the aim of obtaining more agricultural land.^[55] Furthermore, depending on the type and the area of the crop, the concentration of land can put additional pressure on water resources affecting the enjoyment of the access of many vulnerable groups to water. In relation to the social implications of the production of feedstock for biofuels, factors linked to the concentration of land, such as the restrictive access to resources, the diminution of the quality of land and forced eviction threaten the good labor conditions of small farmers in many developing countries. The impacts of the concentration of land are felt in particular by women who play a special role in agriculture. Women are mostly considered as being responsible for the nourishment of their families.^[56] Without land, women and their families are condemned to marginalization and discrimination. According to the General Comment No. 7, the Committee observed:

Women in all groups are especially vulnerable given the extent of statutory and other forms of discrimination which often apply in relation to

property rights (including home ownership) or rights of access to property or accommodation, and their particular vulnerability to acts of violence and sexual abuse when they are rendered homeless. The non-discrimination provisions of articles 2.2 and 3 of the Covenant impose an additional obligation upon Governments to ensure that, where evictions do occur, and appropriate measures are taken to ensure that no form of discrimination is involved.[57]

Given the growing concentration of land for the production of food or feedstock for biofuels in developing countries, States are urged not only to develop legal frameworks, mechanisms and institutions to protect the right of vulnerable groups to access to land, but also to protect vulnerable groups from the intervention of domestic and transnational agribusiness companies. Although transnational operating enterprises are not internationally accountable for human rights violations, they are obliged to act in accordance with the national law of the host state. Public participation in the decision-making process related to biofuels projects, the implementation of environmental and social impact assessments and consultation with the affected parties constitute important mechanisms to ensure the right to land and access to natural resources. In fact, the Inter-American Court of Human Rights concluded in the case of *Saramaka v. Surinam* that regarding large-scale developments or investment projects that would have a major impact within the Saramaka territory, the State had a duty not only to consult with the Saramakas but also to obtain their free, prior, and informed consent according to their customs and traditions.[58] Hence, the fulfillment of the human right to land and other human rights linked to land and its resources is only possible with the participation of all stakeholders.

3. *The right to food*

The impact of biofuels production on the right to food has been approached from two different perspectives. On the one hand, the Special Rapporteur on the Right to Food, Jean Ziegler, referred the rising use of crops to produce biofuels as a replacement for petrol as a 'crime against humanity' since the growing production of this energy source has contributed to push the prices of some crops to record levels.[59] On the other hand, there are voices which have questioned the causal link between biofuel production and the rising of food prices. According to Brazil's President Luiz Inacio Lula da Silva, such arguments are an excuse of industrialized countries for preventing Brazil from becoming one of the leaders in the global agricultural sector. Moreover, he argues that limiting the development of biofuels a priori is the 'real crime against humanity' since such fuels are essential for ensuring

wealth, food and energy security of nations.^[60] Likewise, the European Commission responsible for Energy concluded that biofuels production in Europe had little impact on current global food prices. Therefore, according to the Commission, many statements made on the relation between biofuels and food prices had been 'out of proportion'.^[61] Beyond these statements, the concerns of the international community about the dramatic increase of global hunger and food insecurity due to the growing world population and the increasing stress on natural resources found their expression in the 1996 Rome Declaration on World Food Security. These apprehensions have arisen since several drivers are putting significant pressure not only on the access of vulnerable groups to food but also on the natural resources necessary for its production.

In relation to the access to food, the competition between biofuels and food production, the increasing cost of its production and the growing demand for food are causing a substantial impact on food prices. According to David Mitchell, Lead Economist at the Development Prospects Group of the World Bank, the IMF's index of international traded food commodities prices had increased 130 percent from 2002 to 2008 and 56 percent from 2007 to 2008. Furthermore, in many studies which have dealt with the estimates of the contribution of biofuels production to food price increases, biofuels production has been considered as a major driver of food prices. For instance, in accordance with the International Monetary Fund (IMF), the increased demand for biofuels accounted for 70 percent of the increase in maize prices and 40 percent of the increase in soybean prices.^[62] In addition, water, soil and biodiversity are natural resources which are also being affected by the stress caused by the competition for the production of food and biofuels. Soil erosion due to mono-cropped commodity agricultural systems, deterioration of the quality of water and reduction of its availability as well as the loss or reduction of biodiversity are also triggering the access of poor people to food in developing countries. Taking this panorama into account, it is important to understand the interrelations between the production of feedstock for biofuels and the realization of the right to adequate food.

The legal foundations of the right to adequate food can be found in article 55 (i) of the Charter of the United Nations and the legal basis of the right to an adequate standard of living is anchored in article 11 of ICESCR. In its General Comment No. 12, the Committee of Economic Social and Cultural Rights defined the right to adequate food as the physical and economic access at all times to adequate food or means for its procurement.^[63] In fact, the right to adequate food has been considered as

a fundamental human right in international law. Therefore, this right, like any other human right, imposes because of its significance for human life four levels of duties for States: the obligations to respect, to protect, promote and to fulfil.^[64] Relating the obligation to promote, the African Commission on Human and Peoples' Rights determined in the case of *Ogoni v. Nigeria* that States have the duty to promote the enjoyment of all human rights by ensuring that individuals are able to exercise their rights and freedoms through promotion of tolerance, raising awareness, and building infrastructures. In that sense, this duty constitutes 'a positive expectation on the part of the State to move its machinery towards the actual realisation of the rights', so that it could comprise the direct provision of basic needs such as food or resources that could be used for food.^[65] Furthermore, the Committee of Economic Social and Cultural Rights delineated the scope of obligations to respect, protect and fulfil related to the right to food by stating:

'(...) the obligation to fulfil incorporates both an obligation to facilitate and an obligation to provide. The obligation to respect existing access to adequate food requires States parties not to take any measures that result in preventing such access. The obligation to protect requires measures by the State to ensure that enterprises or individuals do not deprive individuals of their access to adequate food.' ^[66]

The right to adequate food and the obligations on the State should be understood in two ways. The right to food ensures, on the one hand, that people have access to sufficient, safe and nutritious food to satisfy their dietary needs. On the other hand, this right guarantees also the access, especially of vulnerable groups, to resources for food production. The Committee validates this approach in its General Comment No. 12 by declaring that an obligation of the State is to strengthen people's access to and their use of resources in order to ensure their livelihood, including food security.^[67] The production of biofuels puts into question the capacity of States to fulfil their international obligations, especially in relation to the obligation to respect and to protect. For instance, lack of legal safeguards to protect the right of vulnerable groups to land can be considered a violation of a State's obligation to respect since the State can be held accountable for preventing access to food by limiting access to important natural resources for the production of food. Moreover, the use of illegal mechanisms applied by third parties to take *de facto* possession of and control over land by displacing vulnerable groups can also constitute a violation of the obligation of the State to protect individuals or groups against the deprivation of food. Therefore, States are called upon to take all adequate measures at the national level to effectively achieve the

fulfilment of the right to food. However, the obligations of the State also have an international character because of international cooperation.

International and regional cooperation play a fundamental role in the fulfilment of the right to adequate food. According to the Special Rapporteur on the Right to Food, the obligations of States regarding the right to food are not only to be fulfilled, protected and respected at the national level,^[68] but on the basis of article 56 of the Charter of the United Nations and article 23 of ICESCR, States are also called upon to contribute to the realization of the right to food in other countries and to shape an international environment enabling national Governments to realize the right to food under their jurisdiction.^[69] In the view of the Special Rapporteur on the Right to Food, the scope of international cooperation is by virtue of article 23 of the ICESCR not simply restricted to financial assistance. It encompasses three additional obligations. ^[70] Firstly, States have the obligation not to pursue and review policies which have negative consequences on the implementation of the right to food. Therefore, States in collaboration with multilateral organizations and other relevant stakeholders (e.g. transnational enterprises) are called upon to take all necessary measures to ensure the realization of the right to food and to consider reviewing any policy or measure which could have a negative impact on the fulfilment of this human right, before instituting such policy or measure.^[71] As a second obligation, States are urged to protect the enjoyment of the right to food from interference with third parties, including private actors, by controlling the chain of production and distribution of food. In this connection, States are accountable for land concentration through illegal acts and for the pollution of soil and water during the production of biofuels since it fails to adopt the adequate provisions and controls to avoid such negative impacts caused by third parties on decisive natural resources. Finally, the contribution of international cooperation to the fulfilment of the right to food constitutes also a State obligation. Technology transfer, the strengthening of local production and the development of an agricultural commodity value chain from production to commercialization are instruments of international cooperation to achieve the social and environmental sustainability in the production of food and biofuels.^[72]

The right to adequate food as a fundamental human right poses significant challenges to the bioenergy sector. The decision to change the use of crops and land for the generation of biofuels rather than for the production food and could have significant impacts on the storage and supply of food which can, as a consequence, give rise to an increase in food prices in the global market. In order to avoid food insecurity, international

organizations, such as the FAO Council, developed voluntary guidelines to support the progressive implementation of the right to adequate food in the context of national food security. Such international initiatives enable and support cooperation between States, international organizations and relevant stakeholders in the decision-making process towards a bioenergy project.

IV. TOWARDS THE SUSTAINABLE PRODUCTION OF BIOFUELS

Biofuels have been conceived as a climate and energy strategy for the mitigation of the serious effects of global warming and the reduction of dependence on fossil fuels whose emissions are, in turn, responsible for climate change. However, the production of feedstock for these energy sources can lead to significant environmental impacts and to the violations of human rights. In order to prevent or reduce such negative effects and to promote the sustainable production of biofuels, several safeguards and measures have been developed at the international level.^[73] Some mechanisms, such as environmental and social impact assessments, public participation and consultation, redress and restoration, are implemented in the planning, decision-making and implementation process. Other measures which are part of the international obligations of States and constitute a framework for the designing and implementation of biofuels projects, for example, the development of national legislation. Developing biofuels on a large scale needs to be strictly regulated to ensure that they minimise GHG emissions and do not pose threats to other issues; therefore, the regulation of biofuels and the policies surrounding their production are decisive in this sector.

Although there is so far no international agreement on renewable energy, different binding and non-binding instruments and mechanism have been developed and taken at international and regional level. Voluntary initiatives and standards – voluntary guidelines, best practices and certifications – are non-binding instruments that represent a significant contribution to ruling the production of biofuels at the international level. In the area of biofuels, the Roundtable on Sustainable Biofuels (RSB) under the auspices of the École Polytechnique Fédérale de Lausanne developed the so-called ‘RSB Principles’ which are maxims and criteria for sustainable biofuels standards. These principles contain procedural safeguards such as the need for participation and consultation processes (Principle 2). Furthermore, the ‘RSB Principles’ recognize and highlight the contribution of biofuels to the mitigation of the effects of climate change (Principle 3). In relation to the respect of human rights, the principles promote the protection of labour rights (Principle 4) and land

rights (Principle 12). Finally, these principles work towards ensuring that biofuels do not jeopardize food security. These soft-law instruments aim to ensure the sustainable production of biofuels until a treaty that addresses bioenergy generation and its consequences on the environment and on people could be drafted, negotiated and agreed on. Relating binding instrument, the European Union as one of the principal supporters of the development of biofuels set within the European Council a '10% binding minimum target to be achieved by all Members States for the share of biofuels in overall EU transport petrol and diesel consumption to 2020'.^[74] In January 2008, the European Commission reaffirmed this goal in its Proposal for a Directive on the promotion of the use of energy from renewable sources. Furthermore, the Commission highlighted in this document the contribution of third countries to the promotion of renewables in the EU; however, it made clear that the supply of biofuels and other bioliquids from these countries should meet sustainability criteria.^[75] Since April 2009, the EU's biofuels policy is underpinned by the directive 2009/28/EC on the promotion of the use of energy from renewable sources which reasserts the 10% target and establishes that the Community should take appropriate steps for the promotion of sustainability criteria for biofuels production.^[76]

Environmental responsibility and respect of human rights are important considerations to be taken into account when designing and implementing sustainable energy and climate strategies. The balance between profitable investments in large-scale energy projects and the protection of substantial legal interests should take place on the basis of internationally recognized principles and the participation of all relevant stakeholders. In this sense, States and investors should be aware that investments are only profitable on the long-run if they obtain the legitimacy of the population involved through mechanisms for participation and consultation, and when they are implemented in accordance with national and international law. Human rights violations and negative environmental impacts reduce the economic value of an investment in the long run since vulnerable groups are able to claim their rights and for indemnity sums in large amounts of money not only before national courts but also before regional and international instances. Therefore, States are called upon to respect, protect and fulfil human rights and to protect the environment in order to achieve sustainable economic growth.

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