Balancing Agro-fuels and Food Security on the Tightrope towards Sustainability

Key Terms

biofuel, agrofuel, land acquisition, agriculture, small-scale farmers, the right to food, Green House Gases

Abstract

The demand for the utilization of agricultural resources for non-food purposes, such as feedstock, has been on a global rise in recent times.[1] This article seeks to examine the underlying reasons behind the boom in agricultural crops for biofuel feedstock. In cognizant of this peak in demand, the article aims to show how the right to adequate food[2] is being restrained by large-scale land acquisition as well as conversion for agricultural crop production namely for the purpose of agro-fuels.[3] In the first part, the rationale that has galvanized the demand for biofuels will be explored. In the second part, the restrictions posed on the right to food will be presented. Some concluding remarks lead the article to an end.

1. Drivers Behind the Peak in Demand

The rise for biofuel production as well as consumption, has primarily to do with the due consideration given to the vital importance of agricultural products as an alternative source of energy, for instance, as agrofuels[4] and other industrial production processes.[5] This connotes

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Christoph Bals, Sven Harmeling and Michael Windfuhr, *Climate Change, Food Security and the Right to Adequate Food*, (Stuttgart, Diakonisches Werk der EKD e.V. for Bread for the World and Diakonie Katastrophenhilfe 2008), at p. 52 et sqq., at p.55. See also, Louis Bockel and Barry Smit, ″Climate Change and Agriculture Policies: How to mainstream climate change adaptation and mitigation into agriculture policies?", Advanced Draft of Policy Guidelines Version, (FAO, 2009), at p. 19 et sqq., at p. 20.

[2] See, The Right to Adequate Food (art. 11. Committee on Economic, Social and Cultural Rights, General Comment No. 12 (1999), U.N. doc. E/C.12/1999/5**.** and UN General Assembly, International Covenant on Economic, Social and Cultural Rights, 16 December 1966, in force, 3 January, 1976, U.N, United Nations, Treaty Series, vol. 993.: Article 11(1).

[3] Richard Doornbusch and Ronald Steenblik, "Biofuels: Is the Cure Worse than the Disease?", Background paper for OECD meeting in Paris 11-12 September 2007, SG/SD/RT (3007)3.

[4] See, Promotion and Protection of all Human Rights, Civil, Political, Economic, Social and Cultural Rights, Including the Right to Development, Report of the Special Rapporteur on the Right to Food, Building Resilience: A Human Rights Framework for World Food and Nutrition Security, A/HRC/9/23, (Human Rights Council, United Nations, General Assembly, 2008), at p. 15 et sqq., at p. 24., Noora-Lisa Aberman and Marc J. Cohen, "Nutrition and Bioenergy" in Brian Thompson and M.J. Cohen (eds.), *The Impact of Climate Change and Bioenergy on Nutrition*, (Rome, FAO and Springer Science and Business Media B.V., 2012). and Asbjørn Eide, "The Right to Food and the Impact of Liquid Biofuels (Agrofuels)", The Right to Food Studies, (Rome, FAO 2008), pp. 1et sqq., at p.26.

[5] Bals, Harmeling and Windfuhr, *Climate Change, Food Security and the Right to Adequate Food*, supra note 1, at p. 52 et sqq., at p.55.

that the preoccupation with the production of biofuels is being driven with the conviction that they can be used as a supplement and alternative to fossil fuels, such as gasoline and diesel that have large Green House Gas (GHG) emission.[6] Therefore, it is their use for transport that has generated the pressing demand and investment for their production.[7]

In addition to this, the peak in the demand for agricultural commodities for non-food purposes has also been driven by recent food price crises that culminated after the 2007-2008 price crisis.[8] According to the World Bank (WB), the commodity price hikes experienced between 2002-2008 was caused due to biofuels production, and ensuing consequences related to low grain stocks, large land-use shifts, speculative activity, as well as export bans.[9] As a consequence, cash-rich, but resource-poor countries, *inter alia*, Asian countries like China, India, Japan, Malaysia, South Korea, and Middle Eastern countries like the United Arab Emirates, Bahrain, Jordan, Kuwait, Qatar and Saudi Arabia have engaged in the acquisition or rent of large-scale land abroad - alternatively termed as land grabs - in order to ensure their food security.[10] This is because non-food agricultural production is also being promoted as being a long-term solution to deal with the high price of agricultural commodities and the resulting increase in demand for agroforestry products such as palm oil.[11] As a response to addressing these challenge, different countries have resorted to the purchase/lease of land abroad for the cultivation of crops so as to support domestic demand.[12] This search for new destinations for the production of biofuels as feedstock, in countries such as Indonesia and Malaysia in relation to palm oil, for instance, has to do with the realization that the EU[13] and U.S., that are large consumers and producers of biofuels, will not be in a position to meet their demands in the

[6] Eide Asbjørn, "The Right to Food and the Impact of Liquid Biofuels (Agrofuels)", supra note 4, pp. 9 et sqq., at p.11.

[7] Ibid.

[8] Christian Nellemann, Monika MacDevette, Ton Manders , et al., (eds.), The Environmental Food Crisis – The Environment's Role in Averting Future Food Crises, A UNEP rapid response assessment, (United Nations Environment Programme, GRID-Arendal 2009), at p. 80.

[9] See, Jean Ziegler, "Biofuels: A Right to Food Perspective", March 26, 2010, available on the internet at, http://www.makingitmagazine.net/?p=400, (last accessed on 21.11. 2018).

[10] See for example, Vera Songwe and Klaus Deininger, "Foreign Investment in Agricultural Production: Opportunities and Challenges", (World Bank, 2009); GRAIN, "Seized: The 2008 Land Grab for Food and Financial Security", (2008), 24 October 2008, available on the internet at http://www.grain.org/go/landgrab, (last accessed on 11/10/2018). As being nations built in the desert, the Gulf States – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates have scarce soil and water with which to grow crops or raise livestock. This has galvanized the urge for land grabs in foreign countries so as to ensure their food security.

[11] OECD-FAO Agricultural Outlook 2011-2020, (OECD Publishing and FAO 2011). Among the most active countries owning, leasing or concessioning farmland overseas are China, India, Japan, Saudi Arabia, South Korea and United Arab Emirates while a number of other countries are only starting negotiations for the coming years.

[12] Aberman and Cohen, Nutrition and Bioenergy, supra note 4 , see also, Seized: The 2008 Land grabs for Food and Financial Security, supra note 10.

[13] For instance, Germany, the leading producer of biodiesel do not have the land available to grow feedstocks in the future, See, Lorenzo Cotula, Nat Dyer & Sonja Vermeulen, "Fuelling Exclusion? The Biofuels Boom and Poor People's Access to Land", (London, IIED, 2008).

future by relying on their own targets of production.[14] What this connotes is that, in order to meet the growing demand for biofuel production domestically, these countries have resorted to the importation of biofuels[15] alongside the raw materials needed for their production, from the countries that are endowed with abundant land for feedstock cultivation.[16] According to estimates, in this regard[17], by 2008, the total area of overseas farmland held in different countries was estimated at 5.7 million hectares (ha) or 0.4% of the global cropland area.

As noted above, the demand for biofuels has been on a global rise[18] owing to the expectation that biofuel production has a low CO2 emission and can serve as a good alternative for fossil fuels. Besides their low CO2 emission potential, the growing attention being paid to biofuels, from the point of view of the developing countries that are considered destinations, has to do with the expectation that their production may help in improving food security by empowering farmers ability to buy food on the market.[19] Governments in developing countries have played and continue to play a marked role in this process as they have been giving away land for foreign investors which they often term as having been underutilized or "idle land", for biofuel production.[20] Moreover, biofuel production is also expected to provide better opportunities for improved terms of trade to the host countries by enabling farmers to get a better price for their

[14] See, Eide Asbjørn, "The Right to Food and the Impact of Liquid Biofuels (Agrofuels), supra note 4. Large-scale Land Acquisitions and Leases: A set of core principles and measures to address the human rights challenge, Briefing Note by the Special Rapporteur on the Right to Food, (Geneva, UN Office of the High Commissioner for Human Rights, 2009), See also, Gunther Fischer, Harrij van Velthuizen and Mahendra Shah, et al., "Global Agro-Ecological Assessment for Agriculture in the 21st Century", (Rome, FAO)., and International Institute for Applied Systems Analysis (IIASA, 2002)., Considering that close to 95 per cent of the cropland in Asia has already been utilized, the demand for cropland for the sake of large-scale production is growingly being geared to Latin American and African countries where most of the demand for increased arable land will concentrate. These are also the regions which according to the Global Agro-ecological Assessment have been identified as being locations where most of the world's reserve agricultural land (up to 80 per cent) is concentrated. In Sub-Saharan Africa, countries that have been destinations include, Cameroon, Ethiopia, Tanzania, Democratic Republic of Congo, Madagascar, Mali, Somalia, Sudan, and Zambia. In Latin America, targets include, *inter alia*, Brazil, Argentina, Colombia.

[15] See, Peter Thoenes, "Biofuels and Commodity Markets: Palm Oil Focus", (Rome, FAO Commodities and Trade Division, 2006).

[16] L. Cotula, N. Dyer, &, S. Vermeulen, "Fuelling Exclusion?", supra note, 13, See also, F.O. Licht, "World Ethanol and Biofuels Report", Vol. 6, No. 9, 10, (2008)., Ethanol imports destined to the EU as of 2007 rose by 43 per cent in the first three quarters of 2007 up to 650 million litres, mainly from Brazil, the US and Pakistan.

[17] OECD-FAO Agricultural Outlook 2011-2020, supra note 11.

[18] FAO, The State of Food and Agriculture, (Rome, FAO, 2008), pp. 14 et sqq., at p. 15.Globally, bioethanol production is mostly concentrated in Brazil and the United States, which together accounted for nearly 90 per cent of the total in 2007. Biodiesel production is geographically concentrated within the European Union, which accounted for 60 per cent of global output in 2007. Moreover, ethanol accounts for 40 per cent of non-diesel fuel in Brazil, which produces nearly 40 per cent of the world's total production, which stood at 9 billion liters in 2007.

[19] L. Cotula, N. Dyer, &, S. Vermeulen, "Fuelling Exclusion?", supra note, 13.

[20] Ibid, See also, Namburete, H.E.S., "Mozambique biofuels", Presentation held at the African Green Revolution Conference, Oslo, Norway, 31 August – 2 September 2006. For instance, the government of Mozambique has stated that only 9 per cent of the country's 36 million ha of arable land are currently in use and that there is the possibility of bringing into production an additional 41.2 million ha of marginal land currently not being used .

agricultural commodities.[21] For the countries that possess abundant land, however, lacking other natural endowments, biofuels have been prescribed as new development and investment opportunities.[22] At a period when hikes in oil price are predicted, biofuel production has also been recommended to poor countries as a sustainable way to ensure energy security.[23]

More specifically, biofuels, such as biodiesel made from palm oil and ethanol made from sugarcane, corn and soybean, accounted for about 1% of the total road transport in 2005, while this rate is expected to reach 25% by 2050, with the EU[24] having set targets as high as 10% by 2020.[25] For developing countries, such as Indonesia and Malaysia[26], for instance, the peak in the demand for biofuels has been conceived as a means of investment in rural areas to improve livelihoods and increase export earnings.[27] Notwithstanding the afore discussions on the drivers as well as anticipated benefits of biofuels/agrofuels especially in terms providing an alternative for dependence on fossil fuel, which is the largest contributor of global GHG emission in energy, as will be seen below, the production process that underlie biofuels/agrofuels has not actually resulted in a sustainable substitute of energy and has as a result caused environmental

[21] L. Cotula, N. Dyer, &, S. Vermeulen, "Fuelling Exclusion?", supra note, 13.
[22] Ibid.
[23] Ibid.
[24] Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC, the EU has set targets that are to be met by Member States (MS). In this regard, the Directive concurs, *inter alia*, that MS must derive 20 per cent of overall energy consumption, across all sectors, from renewable sources by 2020; 10 per cent of energy consumption within the transport sector must be derived from renewable sources by 2020; and greenhouse gas emission reductions targets are set, amounting to 50 per cent relative to fossil fuels by 2017 and 60 per cent by 2018 for fuels produced in 2017 or later.
[25] FAO: The State of Food and Agriculture, supra note 18, & World Bank, World Development Report 2007: Development and the Next Generation, (World Bank, Washington, D.C, 2007.), FAO, "Sustainable Bioenergy and Food Security, Towards an international framework", (Rome, FAO 2008). In 2007, liquid biofuel contributed only 0, 36 per cent of the total energy consumption in the world. To achieve this modest fraction of the total energy use, 23 per cent of US coarse grain production was used to produce ethanol and in the EU about 47 per cent of all vegetable oil production was used to produce biodiesel.
[26] Emily B. Fitzherbert, Matthew J. Struebig, Alexandra Morel, et al. "How will oil palm expansion affect biodiversity?", Trends in Ecology and Evolution 23 (10), (2008), pp. 528 et sqq., at p. 545., UNEP, In Dead Water. Merging of Climate Change with Pollution, Over-Harvest, and Infestations in the World's Fishing Grounds. (UNEP/GRID-Arendal, Arendal, Norway 2008).
[27] FAO, The State of Food and Agriculture, supra note 18, &World Development Report: Development and the Next Generation, supra note 25. The US is the largest producer and consumer of bioethanol, followed by Brazil. Brazil has now used 2.7 million ha of land area for this production (4.5per cent of the cropland area), mainly sugar cane. Production of biofuels has had inconclusive results. This is because, while biofuels are a potential low-carbon energy source, the conversion of rainforests, peatlands, savannas, or grasslands to produce biofuels in the US, Brazil and Southeast Asia may create a "biofuel carbon debt" by releasing 17 to 420 times more CO2 than the annual greenhouse gas reductions that these bio fuels would provide by displacing fossil fuels, Fargione J., Hill J., Tilman D. et al., (2008), Land clearing and the Biofuel Carbon Debt. Science 319 (5867), pp. 1235 et sqq., at p.1238. & Seitzinger, S. and Lee, R.. "Land-based sources of Nutrients to Large Marine Ecosystems", in Sherman, K. and Hempel, G. (eds.), The UNEP Large Marine Ecosystem Report: A perspective on changing conditions in LMEs of the world's Regional Seas, UNEP Regional Seas Report and Studies No. 182. (United Nations Environment Programme. Nairobi, Kenya, 2008), pp. 81 et sqq., at p. 97.

impacts.[28] As a consequence of this, their production process has exhibited restrictions on the realization of the right to food. What have been the reasons behind?

Starting with the concern raised that biofuels as not being a sustainable source of energy, the unease has to do with the fact that in terms of energy efficiency, biofuels only offer a very small gain over petrol, and that at present, their production has resulted in a minimal reduction in GHG emission.[29] In connection to this, some studies[30] have shown that biofuels will actually have a negative effect on GHG emissions.[31] In this regard, when GHG reduction emanating from the use of biofuel is to be compared with that of fossil fuels, which depends upon land use and the source of land for biofuels production, as a result of clearing of new land for biofuels production, large emission of GHGs can be generated which is often referred as "carbon debt[32]".[33] This elucidates that the cultivation of feedstocks such as agricultural raw materials like maize, palm oil or sugar cane, demand the possession of as well as conversion[34] of large tracts of land into plantations[35] as a result contributing to high rates of GHG. Consequently, this peak in demand has galvanized the increasing incentive for land leases and/or acquisition in the countries, *inter alia*, Sub-Saharan Africa[36], where land ownership rights are insufficiently

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[28] This is because the process of production of biofuels will create up to 420 times more CO2 than the annual greenhouse gas reductions that these biofuels would provide by replacing fossil fuels., See, Ziegler Jean, Biofuels: A Right to Food Perspective, supra note 9.

[29] Joachim Von Braun, "When Food Makes Fuel: The promises and challenges of Biofuels", Keynote address at the Crawford Fund Annual Conference, August 15, 2007b.

[30] Timothy Searchinger, Ralph Heimlich, R. A. Houghton, et al., Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change, Science, 319 (5867), (2008), pp. 1238 et sqq., at p. 1240.

[31] Ziegler Jean, Biofuels: A Right to Food Perspective, supra note 9.

[32] "Biofuel carbon debt" is used to imply that the process of production of biofuels will create up to 420 times more CO2 than the annual greenhouse gas reductions that these biofuels would provide by replacing fossil fuels. See, Ziegler Jean, Biofuels: A Right to Food Perspective, supra note 9.

[33] Aberman and Cohen, Nutrition and Bioenergy, supra note 4. and Jean Ziegler, "Burning food crops to produce Biofuels is a Crime Against Humanity; EU Leaders Must Vote Against a Biofuels Policy that is Increasing World Hunger and Causing Environmental Devastation", The Guardian, 26 November, 2013, available on the internet at, https://www.theguardian.com/global-development/poverty-matters/2013/nov/26/burning-food-crops-biofuels-crime-humanity, (last accessed on 21,11, 2018). According to the former special Rapporteur on the right to food, Jean Ziegler, "The demand for additional land to accommodate EU biofuels plans means expanding cropland, which will result in felled forests, plundered peatlands and ploughed prairies. The evidence is increasingly clear that the climate change benefits of most biofuels are negligible or nil".

[34] For instance, according to former special Rapporteur on the right to food, Jean Ziegler converting rainforests, peatland, savannas, or grasslands into fields to produce food crop–based biofuels in Brazil, Malaysia, Indonesia, and the United States, creates a "biofuel carbon debt". Hence, biofuel production, in such conditions, has the function of an environmental Trojan horse, Ziegler Jean, Biofuels: A Right to Food Perspective, supra note 9.

[35] For instance, ethanol which is produced from sugar cane and corn have been behind deforestation in Brazil as well as a weak energetic balance in the U.S. In a similar vein, the production of biodiesel produced from palm oil has been blamed for causing deforestation in Indonesia, See, Elisabeth Caesens and Maritere Padilla Rodríguez, , "Climate Change and the Right to Food: A Comprehensive Study", Heinrich-Böll-Stiftung (ed)., Publication Series on Ecology, Vol. 8, (Heinrich-Böll-Stiftung, Colombia Law School 2009), pp. 31 et sqq., at p. 33.

[36] Sub-Saharan Africa has become a hotspot for land investment due to the consideration that, land is perceived to be cheap and abundant, the enforcement of regulatory frameworks is often weak; and most African countries enjoy trade preferences with the EU., See, Note on The Impacts of The EU Biofuels Policy on The Right to Food,

protected.[37] In this regard, studies[38] conducted by the Food and Agriculture Organization (FAO) and the WB, have concurred that massive amount of land has already been acquired for the purpose of biofuel production in developing countries.

2. Ramifications on the Right to Food

Taking the above discussion into consideration, what have been upshots of these developments on the realization of the right to food?

Firstly, the pace with which agrofuel production has increased, has led to hikes in the price of some crops in the international market.[39] This is due to the fact that the food crops being utilized as energy crops, such as ethanol, also represent a major part for the diets of poor people. Energy crops that are on high demand in the international market for biofuel production include, for example, maize, sugar cane, soy, cassava, palm oil and sorghum which constitute close to 30% of mean calorie consumption of people living in chronic hunger.[40] As such, as a consequence of peaks in biofuel production, the process of land conversion from food to the production of energy crops has resulted in the reduction of food supply and as a result, has caused hikes in food prices therefore restraining the affordability of food supply.[41] For instance, according to an internal WB memorandum, change in land use for the production of biofuels has been responsible for 75% of the hikes in food prices.[42] A similar study by FAO/OECD in 2007[43] has revealed that, due to the production of biofuels, 20-50% of price peak in food commodities was expected to take place in 2016.[44] A 2011 report on food price volatility has

Mandate of the Special Rapporteur on the Right to Food, 23April 2013, United Nations Human Rights office of the High Commission.

[37] Ibid. According to the European Commission, an estimated 6.6 million hectares of additional arable land globally was cultivated for biofuels production between 2003 and 2008.

[38] FAO, Land grab or Development Opportunity? Agricultural Investment and International Land Deals in Africa, (Rome, FAO, 2009); World Bank, Rising Global Interest in Farmland, Can it Yield Sustainable and Equitable Benefits? (World Bank, 2011), Similarly, a world Bank study, based on a review of 405 large-scale agricultural investment projects, showed that 21 per cent of these projects were for the production of energy crops.

[39] Building resilience: A Human Rights Framework for World Food and Nutrition Security, supra note 4, 14 pp. et sqq., at p. 20.

[40] R. Naylor, A. Liska, M. Burke, et al., "The Ripple Effect - Biofuels, Food Security, and the Environment", Environment, Vol. 49, No. 9, (2007). This said however, according to the former Special Rapporteur on the right to food, Olivier de Schutter, such price increases are not per se problematic; under certain conditions, particularly if they benefit rural households who are net food sellers and if the net food buyers are protected by targeted measures aimed at increasing their purchasing power, such increases may in fact have benevolent effects, particularly in a dynamic perspective., see, Building resilience: A Human Rights Framework for World Food and Nutrition Security, supra note 4.

[41] Maria S. Emanuelli, Jennie Jonsén & Sofía M. Suárez, (eds)., "Red Sugars, Green Deserts", (FIAN International, FIAN Sweden, HIC-AL, and SA, 2009), pp. 49 et sqq., at p.65.

[42] Ibid.

[43] OECD-FAO, Agricultural Outlook 2008-2017, (OECD, Paris, 2008).

[44] Don Ethridge, Mark Welch, Suwen Pan, et al, "World Cotton Outlook: Projections to 2015/16", Belt wide Cotton Conferences, San Antonio, Texas, January 3-6, 2006, The demand for non-food crops like cotton is projected to increase to an additional 2 per cent of cropland area by 2030 and 3 per cent by 2050. The amount of designated

moreover disclosed that the prices of food commodities are markedly higher than they would have been under a context of no biofuel production.[45] As a consequence of hikes in food price, the realization of the right to adequate food is significantly strained.[46] This is so because rising food prices will directly make food inaccessible[47] for poor households that spend a considerable share of their income on food.[48] Additionally, the constraint posed by rising food prices will also hinge upon poor small-scale farmers. Even though small-scale farmers may benefit by selling their produce on the market, they are for the most part net-food buyers.[49] The underlying reason for this is that these farmers rely on a combination of sources of income in order to ensure food provision, especially during lean seasons.[50] Moreover, even when food prices have gone up in the international market for food, due to their weak bargaining position, small-scale farmers, mainly those living in low-income countries that have minimal means to protect the public against hikes in price, are forced to sell their crops at a low price.[51]

Secondly, in addition to rising crop prices, the rush for biofuel production impedes on the realization of the right to food because the production of agrofuels, in this regard bioethanol, for instance, which currently constitutes the largest share for biofuel production, relies on land concentration and large-scale agriculture which causes a large percentage of GHG emission.[52] This is because industrial agriculture for energy crop production relies on the extensive utilization of large amounts of "water, agrochemicals, tractors, transportation, processing, commercialization and trade", which have large amount of GHG generating fossil fuels.[53] As a case in point, for instance, between 2000-2006, with the view to compensate for the shortage in arable land needed for feedstock so as to produce biofuels and to substitute for rapeseed oil

area for biofuel and cotton alone could be in the range of 5–13 per cent by 2050 and have the potential to negatively impact food production and biodiversity.

[45] See, World Bank, FAO, IFAD, et al., "Price Volatility in Food and Agricultural Markets: Policy Responses", (2011).

[46] General Comment 12, and International Covenant on Economic, Social and Cultural Rights: Article 11(1), supra note 2.

[47] According to General Comment 12, Economic accessibility implies that personal or household financial costs associated with the acquisition of food for an adequate diet should be at a level such that the attainment and satisfaction of other basic needs are not threatened or compromised. See, General Comment 12: Paragraph 13.

[48] See, Note on the Impacts of the EU Biofuels Policy on The Right to Food, Mandate of the Special Rapporteur on the right to food, 23April 2013, United Nations Human Rights office of the High Commission., Poor households spend between 70-80 per cent of their earnings on food.

[49] Ibid.

[50] Ibid.

[51] Ibid, Small-scale farmers are unable to reap the benefits of higher commodity prices in the international market because of their lack of, information, storage facilities, and in part because they face a limited number of dominant commodity buyers, who can dictate relatively low prices to the producers.

[52] See, Building resilience: A Human Rights Framework for World Food and Nutrition Security, supra note 4.

[53] Emanuelli Maria, Jonsén Jennie & Suárez Sofia (eds.), Red Sugars, Green Deserts, supra note 41, pp. 49 et sqq., at p.65.

diverted from food to fuel uses, palm oil imports of the EU have doubled.[54] Such land use change often termed, indirect land-use change[55], however, rolls-back the land which is to be used in other countries. This is because a number of developing countries are setting aside land both for energy crops production as well as for the sake of meeting EU food production demands.[56] This trend nevertheless threatens to take away the land available for domestic food production needed to feed households as well as local communities.[57] As a consequence, the growing competition for food production inputs, *inter alia*, access to land, water, and other resources, will hinge upon the realization of the right to food in these developing countries, by snatching away needed inputs for food production.

Thirdly, in addition to price hikes, and promotion of large-scale agriculture, the form of production that underlie biofuels, moreover, threatens to seize land available for agricultural production for small-scale farmers as well as that available for indigenous populations.[58] In this vein, national policy, as well as market incentives that promote the conversion of land to biofuel production, will automatically lead to a rise in the value of land.[59] In this regard, the EU's Renewable Energy Directive[60], besides putting in place mandatory targets and subsidizing biofuels, "... not only creates a heavily distorted biofuel market, but it also encourages an artificial land market, boosting land values and transforming it into a profitable asset for investors".[61] Hence, due to the opportunity foreseen, small-scale farmers that have made their living on the land being sought will risk being displaced as a result further restraining their food security.[62] The right to food is restrained in this context because, in order to make way for the production of biofuels, the possibilities of poor farmers to feed themselves either directly from productive land or other natural resources will be taken away.[63] Moreover, according to the United Nations Committee on Economic, Social and Cultural Rights (UNCESCR), this is in violation of the right to adequate food because biofuel production seizes the land available and needed "...either for feeding oneself directly from productive land or other natural resources".[64]

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[54] Thoenes P., "Biofuels and Commodity Markets: Palm Oil Focus", supra note 15.
[55] Indirect land use change takes place when land previously used to grow food or animal feed is turned over to grow biofuels thereby displacing the original land use into new areas., See, Note on The Impacts of The EU Biofuels Policy on The Right to Food, supra note 36.
[56] Ibid.
[57] Ibid.
[58] Building resilience: A Human Rights Framework for World Food and Nutrition Security, A/HRC/9/23, supra note 4.
[59] L. Cotula, N. Dyer, &, S. Vermeulen, "Fuelling Exclusion?", supra note, 13.
[60] See, European Union Renewable Energy Directive, 2009/28/EC.
[61] See, Mitchell Donald, "Biofuels in Africa: Opportunities, Prospects, and Challenges", (World Bank, 2011).
[62] L. Cotula, N. Dyer, &, S. Vermeulen, "Fuelling Exclusion?", supra note, 13, Although in some cases, this could give new opportunities to poor farmers.
[63] General Comment: Paragraph 12., supra note 2.
[64] Ibid.

Likewise, as a consequence of this, the economic accessibility of adequate food will be slashed in that these farmers that no longer possess productive land, may not have the financial means so as to acquire food for an adequate diet which "...should be at a level such that the attainment and satisfaction of other basic needs are not threatened or compromised".[65]

Moreover, small-scale farmers constitute a small share in the production of energy crops as the production process requires an integrated industrial organization of production, which comprises factory processing, transport, and distribution.[66] This further ascertains how the production of biofuels does not create economic incentives for farmers to be able to ensure the provision of adequate food for themselves and their families.[67] This is against the common expectation that biofuels will help ensure rural development and poverty alleviation in the regions that have become common destinations.[68] Notwithstanding this, as noted above, there is evidence[69] to contend that the production process for biofuels demands a mode of farming that is capital - intensive and as a result only benefits large agricultural producers - as opposed to small-scale farmers - that have better connections to the markets.[70] As such, this denotes that the benefits to be garnered from the production process would go towards international investors and local elites, at the expense of the community that is poverty and food insecurity stricken.[71] Therefore, this development impinges on the right to food of local communities due to the fact that an area where small-scale farming was practiced is replaced by large-scale and heavily-mechanized monocultures. This will give way to a context where many of the former land users end up jobless and landless further restraining their economic as well as physical accessibility to ensure adequate food.[72]

Fourthly, it is evident that the demand for biofuels is mainly driven by developed countries, while production is concentrated in developing countries that possess the comparative advantage for biofuel production in a more efficient and cost-effective manner.[73] This trend promotes a form of development focused on cash crop production in developing

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[65] Ibid: Paragraph 13.
[66] See, Eide Asbjørn, The Right to Food and the Impact of Liquid Biofuels/Agrofules, supra note 4.
[67] See, General Comment 12: Paragraph, 12. supra note 2.
[68] See, Note on the Impacts of the EU Biofuels Policy on The Right to Food, supra note 48.
[69] United Nations High Level Panel of Experts on Food Security and Nutrition, Land tenure and International Investments in Agriculture, (FAO Committee on World Food Security, 2011)., Eide Asbjørn, The Right to Food and the Impact of Liquid Biofuels/Agrofuels, supra note 4.and I. Maltsoglou and Y. Khwaja, The BEFS Analysis for Tanzania, (2010).
[70] See, Note on the Impacts of the EU Biofuels Policy on The Right to Food, supra note 48.
[71] For example, in a recently leased land in Mali, which could conservatively sustain 112,537 farming families, in the hands of 22 investors who plan to employ a few thousand plantation workers, See, Note on the Impacts of the EU Biofuels Policy on The Right to Food, supra note 48.
[72] See, General Comment 12, Paragraphs 12 and 13, supra note 2. and Note on the Impacts of the EU Biofuels Policy on The Right to Food, supra note 48.
[73] Building resilience: A Human Rights Framework for World Food and Nutrition Security, supra note 4.

countries so as to satisfy the needs of developed countries. Nevertheless, this may lead to distorted development benefiting the interest of a minority producing crops for exports against the interests of other agricultural producers.[74] As high demand for biofuels is bound to lead to price increases for food, people's access to land for production will be snatched. Nonetheless, this trend will happen alongside increasing oil prices which means that the effect will automatically result in an increase of agricultural prices because of its influence on the prices for agricultural input.[75] In relation to this, the increase in demand for agricultural products will additionally cause a reduction in the land available for both pasture and grazing.[76]

As the above examples demonstrate, the rising demand for the production of energy crops, by the EU for instance, when looked at from the angle of climate change and State responsibility, is in contravention to the State duty to respect the right to adequate food. In this vein, the UNCESCR[77] has highlighted that States as part of their duty to respect the right to food, should avoid contributing to practices that harm the environment which as a consequence constrains access of the public to adequate food.[78] The current rush for biofuel production, by Annex I[79] countries to the United Nations Framework Convention on Climate Change (UNFCCC) notably the EU, is as such in violation of the State duty to respect the right to adequate food.[80] In line with this, this development under which developing countries mainly in Sub-Saharan Africa, Asia, and Latin America have given large tracts of land for biofuel production, shows that the States concerned have acted in contravention of their international duties. These developments have had a negative effect on the right to adequate food. This is because, by giving away the land that provides the basic means of livelihood for local communities, the State Parties to the international human rights instruments[81] (mainly the International Covenant on Economic, Social and Cultural Rights, ICESCR) are acting in violation of their duty to fulfill the right to adequate food[82] which requires the State concerned to act proactively to create an enabling environment where people can become self-reliant for

[74] Ibid.
[75] Bals , Harmeling, & Michael, Climate Change, Food Security and the Right to Adequate Food, supra note 1.
[76] Ibid.
[77] The Right to Adequate Food (art. 11), supra note 2.
[78] Caesens and Rodriguez, Climate Change and The Right to Food, supra note 35, pp. 42 et sqq., at p.45., See Brot für die Welt Report, (2008), p. 60 et sqq., at p.61.
[79] United Nations Framework Convention on Climate Change (FCCC), May 9, 1992, 31 I.L.M. 849 (1992)., Article 3(4).
[80] See, General Comment 12, Paragraphs 15 and 19.
[81] See, for example, Convention on the Rights of the Child, adopted 20 Nov. 1989, G.A. Res. 44/25, U.N. GAOR, 44th Sess., Article 24(2)(c), Convention on the Rights of the Child, 20 November 1989, in force, 2 September 1990, international legal materials, pp. 4 et sqq., at P. 8.
[82] See, General Comment 12: Paragraph 15, see also, UN Committee on Economic, Social and Cultural Rights (CESCR), supra note 2, General comment No. 3, supra note 2.

food production.[83] However, in the circumstance that a State knowingly contributes to an environment that will expose the public to become more dependent, as a consequence of losses in land, for instance, the State concerned is acting in violation of its duty to fulfill. In this vein, failure by the State to help the population so affected due to the loss of resources for livelihood, in finding new food alternatives, leads to a violation of the duty to fulfill the right to adequate food.[84]

As such, as can be grasped from this discussion, the peak in the demand for biofuel production as an alternative for fossil fuel, besides providing a questionable alternative to reduce GHGs, has resulted in restrictions on the realization of the right to adequate food.

3. Concluding Reflections on the Ethical Implications of the Use of Agrofuels

The interplay between the need to find environmentally sustainable sources of energy and the States' obligation to ensure access to adequate food for everyone, has controversial implications, since the former may risk to hinder and obfuscate the latter.

In addition to the externalities that the choice for biofuels risks to generate with regard to food security, data show the increasing trend of small farmers and indigenous peoples displacement from their lands, as well as of gender unbalances in access and control over lands and productive assets.

In order to overcome a Manichean vision of the biofuels as the inadequate cure to climate threats, a comprehensive policy framework is probably the most viable solution, to regulate the balance of interests of environmental and fundamental rights' protection. In a perspective *de jure condendo*, a regulatory reform should take into account the environmental benefits of biofuels (which include, among others, the reduction of GHGs and of local pollution; the bio-degradability of bio-ethanol; the replacement of current fossil fuels; the production of lower levels of carbon dioxide emissions) on the one side, and the need to guarantee the protection of fundamental rights (to food, water, adequate standard of living and housing, health, self-determination, gender equality and culture)[85] on the other side[86].

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[83] FAO, Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context Of National Food Security (FAO General Council 2005), at p.2.

[84] Ibid.

[85] See ex multis Laura German, George C. Schoneveld, and Pablo Pacheco, Local social and environmental impacts of biofuels:global comparative assessment and implications for governance. Ecology and Society 16(4): 29.http://dx.doi.org/10.5751/ES-04516-160429

[86] North American 2007 Energy Bill (the Energy Independent and Security Act of 2007, or EISA), that aims to ensure that biofuels policies result in renewable energy that mitigates dangerous climate change without compromising on other rights, such as the unintended consequences on the wildlife, the environment and the food production. Progress has been made towards reconciling different interests also in the EU legislation, in Section 27 of Directive (EU) 2015/15 DIRECTIVE (EU) 2015/1513 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 September 2015 amending Directive 98/70/EC relating to the quality of petrol and diesel

fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources (Text with EEA relevance), available at https://eur-lex.europa.eu, last visited in January 2019.
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