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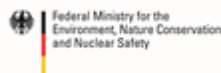


Land Under Pressure

**A policy briefing on the global impacts of
the EU bioeconomy**

**Prepared by the Resource Justice and Sustainability team |
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Land Under Pressure

A policy briefing on the global impacts of the EU bioeconomy

Introduction

Land is vital to our livelihoods, food supply and economy, and to global biodiversity. It is also a topic that should receive more attention, as it is a limited resource and human pressures on it are steadily increasing. One of these pressures is the growing demand by industrialised countries for non-food biomass products of the bioeconomy. At the same time, governments and businesses worldwide are increasingly focusing on and promoting the bioeconomy in the drive to reduce dependence on fossil fuels.

With this in mind, Friends of the Earth Europe has published a new report ([Land Under Pressure: Global impacts of the EU bioeconomy](#)) assessing global and European land demand for non-food biomass products, and related environmental and social impacts.

This briefing summarises the findings of the report and uses them to question the fact that the bioeconomy is being promoted as a sustainable alternative economic model. Solely substituting fossil fuel-based materials for biomass-based ones will replace the problems, and can be considered as a false solution. Friends of the Earth Europe proposes to address the fundamental problems of our overconsumption of natural resources as a priority.

What is the bioeconomy?

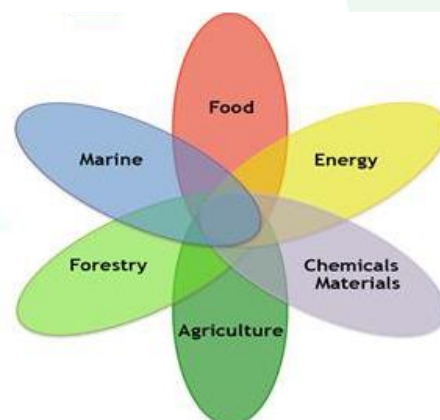
In its Bioeconomy Strategy (2012), the European Commission defines the bioeconomy as the production of biomass and the conversion of biomass into value added products, such as food, feed, bio-based products and bioenergy¹. It includes the sectors of agriculture, forestry, fisheries, food, bio-based textiles and pulp and paper production, as well as parts of the chemical, biotechnological and energy industries.

While most economic activity and consumption in the EU bioeconomy is related to the food (mainly animal feed), beverage and tobacco industries, there is increasing focus and growth in products of the non-food bioeconomy, on which this paper focuses.

The non-food bioeconomy comprises raw materials such as vegetable oils and oil crops, sugar crops, wood, rubber, wheat, maize, fibre crops (such as cotton), and hides and skins, which are processed into products such as bioplastics, textiles, natural oils and biofuels. While wood and wood products comprise an important part of the bioeconomy, they were not analysed in the report that this briefing accompanies due to limited data availability in relation to land footprints.

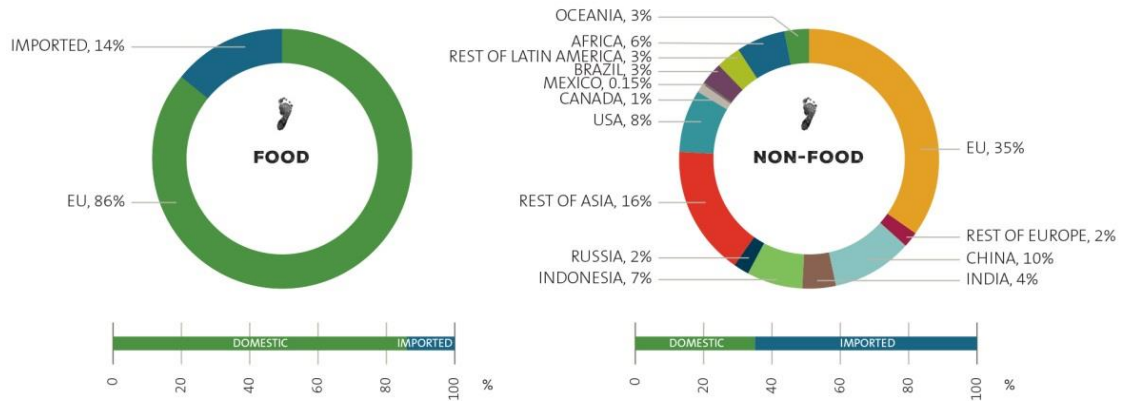
Past trends point at Europe consuming more than its fair share

Globally, a rapidly growing share of the agricultural area is devoted to the production of biomass for non-food purposes. In 2010, 12% of the available cropland worldwide was used for non-food purposes, an increase of over a third since 1995².



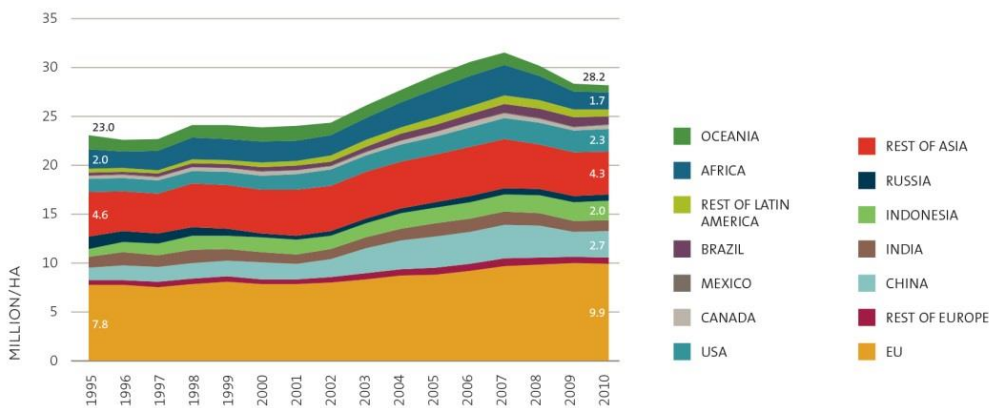
What is Europe's share in this? Analysis of past trends in the non-food bioeconomy, from production to processing to consumption, show that Europe is the biggest consumer region of non-food products in terms of its related land use, despite being only the fifth largest producer. Europe is evidently consuming more than its fair share of land.

Of this land, only 35% was based on domestic land resources (in 2010) with the remaining 65% imported from outside the EU. This is in contrast to Europe's food sector where the vast majority, 86%, of cropland embodied stemmed from the EU itself³ (shown below).



SOURCE: OWN CALCULATIONS.

The graph below illustrates the EU's significant dependency on imported products and embodied foreign land areas, most notably in Asia, including China, Indonesia and Thailand.



SOURCE: OWN CALCULATIONS.

The growing area of land and biomass consumed by the EU bioeconomy adds to the already high land demand for food globally, resulting in growing pressure on planetary boundaries and issues relating to the fair distribution of resources between world regions. With Europe relying on large areas of land overseas, as well as exporting the potentially negative environmental and social impacts related to production such as increased water scarcity and deforestation, it is blocking the ability of local communities to use the land for their own needs and development or for ecosystem preservation.

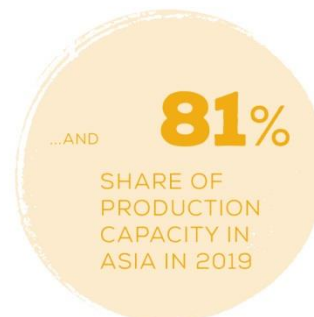
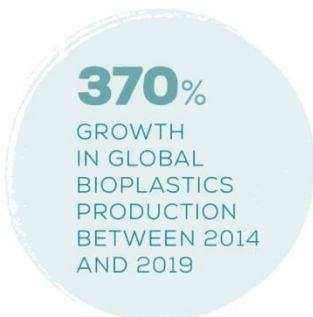
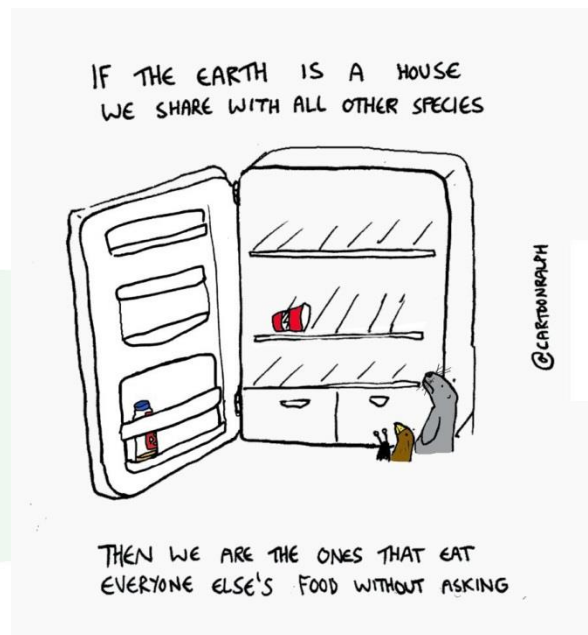
Future trends are not set to fix this.....

A brief assessment of future developments for two products of key importance: biofuels, as the commodity with the highest current land demand of all non-food products, and bioplastics, a market with smaller land appropriation, but with very high growth rates, indicate that land demand of the EU non-food bioeconomy will significantly increase in the future, continuing the concerning trend we have seen in the past.

.....on bioplastics

Trends in bioplastics are significantly affected by strategies of leading companies in the sector, in contrast to biofuels, whose trends are policy-driven. No EU policy measures exist relating to bioplastics, although there are current discussions on measures within the EU Plastics Strategy (due 2017) and the revised EU Packaging and Packaging Waste Directive (due 2017).

Bioplastic production volumes are rapidly increasing with growth expected to more than triple between now and 2019⁴. The figure below shows further predicted trends. Although there are no studies yet on EU land footprint related to bioplastics, estimates at a global level predict that land area required for global bioplastics production is expected to equal an area of 1.4 million hectares before 2020.



Further environmental concerns relate to the design and end-of-life management of bioplastics. Bioplastics have a potentially positive role to play in the transition to a true circular economy, where priorities are consuming within the limits of the planet, ethical and local sourcing, resource efficiency, waste prevention, reuse and recycling. However, Friends of the Earth Europe is concerned that that the current bioplastics drive is merely a shift in the feedstock used by the plastic industry, with no evidence that bioplastics solve the problems currently caused by plastic pollution and our 'throwaway' society.



A part of the problem relates to how bioplastics are designed – they can potentially be recyclable, biodegradable, compostable, or none of the above. For example, many bioplastics are not recyclable or are complex to recycle due to their material properties⁵. Other bioplastics are marketed as biodegradable or compostable – research shows that consumers are more likely to litter these products⁶ when in actual fact, current standards mean these bioplastics are only possible to biodegrade or be composed under very specific conditions (high temperature and humidity) in industrial composting installations⁷.

.....on biofuels

Vegetable oils, including soybean, palm, rapeseed and sunflower oils, form the raw material basis for producing the majority of biofuels consumed in Europe (i.e. biodiesel). Given that 39% of the EU non-food global cropland footprint in 2010 was made up of vegetable oils, it is of significant importance to analyse future trends.

At the EU level, targets on renewable energy in transport have driven increasing trends in consumption of these fuels, most recently (at the time of writing this report) the 2015 measure within the Renewable Energy Directive to continue growing first generation biofuels consumption until a limit of 7% of total transport energy by 2020⁸.

In terms of land requirements, to satisfy increasing biofuels demand globally, some studies estimate that an area of up to 180 million hectares will be needed globally by 2020, three times the size of France⁹. Estimates of Europe's global land footprint for biofuels are scarce, but a previous study (2014) for Friends of the Earth Europe indicated an area of more than 11 million hectares in 2020¹⁰. Furthermore, the associated greenhouse gas emissions from indirect land use change from growing biofuels demand can also be extremely high, sometimes offsetting gains from replacing fossil fuels¹¹.

Environmental and social impacts of the bioeconomy

Despite its intended purpose of “greening” the economy, further expansion of the bioeconomy in the way it is currently developing will cause damaging and unintended impacts to ecosystems and communities.

A literature review of activities in the key supplying countries of the EU bioeconomy outlines the most frequently reported negative impacts in both the environmental and social spheres:

- The most frequently reported negative environmental impact is the **degradation of water quality** as a result of nutrient pollution, followed by **water scarcity and climate change**. Research also shows that the EU's biodiesel land footprint has detrimental impacts on the global environment with evidence of the large scale of embodied land areas for EU consumption of biodiesel, as well as the concentration of production of feedstock for biodiesel in tropical and subtropical regions, mainly in Southeast Asia.

- The most frequently reported negative social impact is the **impact on vulnerable socio-demographic groups in the Global South**, i.e. mainly subsistence farmers, indigenous communities and women in countries with unclear land access rights. These can often be linked to land grabs, frequently driven by investors interested in short-term profits. **Food security** is also a frequently reported impact.

Conclusions and Recommendations

The bioeconomy has, and will continue to have, a role to play in the shift away from fossil fuels. However its current promotion as a ‘magic bullet’ for replacing fossil fuels is overshadowing the vital need for the EU to reduce its overall consumption. Furthermore, rapid development of many sectors within the bioeconomy is taking place without a clear understanding and monitoring of impacts, or the tools to calculate them.

Friends of the Earth Europe urge the EU and its Member States to act on the following:

- **Prioritise consuming a fair share of resources:** Ensure that reduction of the EU's resource consumption to sustainable and equitable levels is prioritised. Friends of the Earth Europe does not support the use of biofuels that compete for land and other resources with food production, and the EU should phase out all support by 2030.
- **Develop a monitoring framework:** Develop and apply a set of robust methods and indicators to quantify and monitor the overall impacts of the EU bioeconomy, applied also at regional and local levels. These must take into account both overall resource use from the footprint perspective (i.e. measuring and monitoring land, water, material and carbon footprints) and associated social and environmental impacts. Databases must be expanded to enable calculation of resource footprints of other commodities, such as timber.
- **Ensure policy coherency:** Any policy or initiative developed in relation to the bioeconomy including those within the EU Bioeconomy Strategy and EU Plastics Strategy, must be coherent with and bring closer together existing internal and external policies and agendas such as the waste hierarchy within the EU Waste Framework Directive, the 2030 agenda for Sustainable Development, including the SDGs, and the EU Nature Directives.
- **Create sustainability criteria:** Create end-specific sustainability criteria for all sectors of the bioeconomy.
- **Abide by the precautionary principle:** Ensure the precautionary principle is adhered to regarding all new areas of the bioeconomy.
- **Develop definitions and standards:** Develop clear and universal definitions of terms related to the bioeconomy, particularly of bio-based materials including “bioplastic”, “biodegradability” and “compostability”. Establish minimum criteria and guidelines for bioplastics, including ensuring all are recyclable alongside conventional plastics.
- **Maintain robust regulation:** New developments and innovations within the bioeconomy must not provide an excuse for deregulation or side-lining of regulation, for example within EU Innovation Deals.
- **Ensure protection of ecosystems and people:** Ensure that any development within the bioeconomy equally values the regulating, provisioning and cultural ecosystem services, and contributes to food security and improved land tenure.

Full report available at http://www.foeeurope.org/sites/default/files/resource_use/2016/land-under-pressure-report-global-impacts-eu-bioeconomy.pdf

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Belgium (Flanders & Brussels)	Friends of the Earth
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Friends of the Earth Europe campaigns for sustainable and just societies and for the protection of the environment, unites more than 30 national organisations with thousands of local groups and is part of the world's largest grassroots environmental network, Friends of the Earth International.

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- ⁸ DIRECTIVE (EU) 2015/1513, amending Directives 98/70/EC and 2009/28/EC <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L1513>
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