

# Greenpeace Position on Bioenergy

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## Summary

**Greenpeace advocates for a transition from a fossil fuel based economy to one based 100% on renewables. Bioenergy can be part of this transition, but in a rather limited way. This position paper is to lay out Greenpeace's principles and criteria for sustainable bioenergy.**

**In general<sup>1</sup>, Greenpeace does not support dedicating land to the production of bioenergy crops, including the harvest of standing trees. Available and suitable land should primarily be allocated to the production of food where necessary in a world of reduced meat and dairy consumption, or to reforestation and the restoration of other ecosystems to maximize net Greenhouse Gas emission benefits and biodiversity conservation.**

**Bioenergy from waste and residues can only be ecologically sound if it results in net emission savings, does not compete with material use or soil-fertility needs, and comes from responsibly and sustainably produced feedstocks.<sup>2</sup>**

**Currently, many policies that incentivise bioenergy production have negative effects, because they often lead to even higher emissions and regularly support unsustainable land use practices. Indirect Land Use Change (ILUC) emissions, as well as forgone carbon sequestration potentials, lead to most current bioenergy feedstocks contributing to, not mitigating climate change.**

**Further, the large-scale production of biofuels from biocrops or also residues<sup>3</sup> produced by an expanding industrial agriculture, with its reliance on fossil-fuel-intensive and toxic inputs regularly leads directly and indirectly to soil degradation and environmental pollution, deforestation, loss of biodiversity, human rights conflicts and competition with food production. The large-scale use of wood from forests for bioenergy worsens forest degradation.**

**Greenpeace sees a limited role for bioenergy in the transition towards a world run by 100% renewable energy, because only a relatively small amount of bioenergy, usually based on waste and residues, can be guaranteed to come from sustainable sources.**

**Greenpeace calls for extreme caution regarding policies that stimulate bioenergy, and sets forward key principles and criteria to ensure that the use of bioenergy does not worsen climate change, destroys ecosystems, and that its production maintains or enhances soil fertility and carbon stocks, and avoids competition with food, feed and materials production. The precautionary principle should guide the development and implementation of bioenergy policies. The enforcement of a robust institutional framework must prevent negative social and environmental impacts. Governments must prioritise forest protection, reforestation and the restoration of ecosystems, as well as ecological farming practices, the move towards plant-based diets and a massive reduction of single use products.**

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<sup>1</sup> In some areas, heavily impacted by changes in weather regimes, already, like e.g. in some Mediterranean countries, there is an urgent need to adapt forests to climate change, also to prevent catastrophic fires that are putting people's lives at risk. Where there is no other fire prevention measures in such areas, adaptation measures can also involve the reduction of biomass fuel loads, including but not limited to the reduction of the density of standing trees. Using the collected / harvested biomass for bioenergy, in such cases, can be acceptable where there is no other competing use

<sup>2</sup> The words "sustainable" and "responsible" are, of course, contested terms that are often used to disguise destructive activities (suggesting industrial logging can be sustainable or dangerous chemicals responsible, for example). The criteria set out in this paper make it clear that our use of these words is simply a short hand and has nothing in common with the greenwash versions of these terms. We also refer readers to the paper by our Science Unit: [Reclaiming the definition of sustainability](#)

<sup>3</sup> Also known as 1st and 2nd generation biofuels

# The Greenpeace Position in Detail

## Leading principles for bioenergy

- Available and suitable land should primarily be allocated to the production of food where necessary in a world of reduced meat and dairy consumption, or to reforestation and the restoration of other ecosystems to maximize net Greenhouse Gas emission benefits and biodiversity conservation.
- Available Bioenergy production must not cause negative impacts on the world's natural capital, such as forests and other natural ecosystems, biodiversity, soil fertility and water resources.
- Bioenergy production must not cause negative impacts on livelihoods, nor on people's access to nutritious and healthy food. Land and water grabbing, land use conflicts and other social conflicts must be prevented.
- Bioenergy must not widen social inequalities between developing and developed countries. International trade in biomass or biofuels must not undermine food security. Production for local needs should take priority over production for the global market.
- Bioenergy production must be as resource efficient as possible, and deliver significant reductions in greenhouse gas emissions compared to fossil fuel-based energy systems.
- Biomass must be utilized for energy following the 'cascading use' principle. Under this principle biomass is preferably used for maintaining soil fertility, food, feed and materials that store carbon in the long term.<sup>4</sup> Bioenergy should not compete with these sectors for biomass feedstock. Policies that incentivize the production of bioenergy (and thereby create a market) must enhance instead of distort the cascading use of biomass.
- In order to close nutrient cycles and reduce CO<sub>2</sub> emissions, bioenergy should preferably be produced from regionally available biomass and satisfy regional energy need.
- Energy demand reductions must be prioritised so as to reduce the volume of bioenergy required to secure a supply of 100% renewable energy.
- Bioenergy for electricity should be used for dispatching and not for large base load capacity.
- Biomass for bioenergy should preferably be utilized in applications where it delivers the highest CO<sub>2</sub> savings.
- Greenpeace does not regard Bioenergy with Carbon Capture and Storage (BECCS) as a technology ensuring safe and permanent removal of carbon from the atmosphere anywhere in the near future. In addition, there is concerns about biodiversity, food and water security and human rights implications resulting from the large scale introduction of BECCS. Greenpeace strongly advocates for ecosystem restoration and reforestation to enhance global carbon sinks, instead.

## Bioenergy and sustainable land use

- Agriculture has to be based on ecological farming practices.<sup>5</sup> A shift is needed from industrial agriculture towards ecological farming based on closed nutrient and water cycles. Agricultural residues can only be used for bioenergy in limited amounts as organic residue is also required to maintain soil fertility and soil health as well as its capacity to retain carbon. Policies that promote bioenergy made from agricultural residues should not enhance unsustainable industrial agriculture, including large-scale production of livestock.

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<sup>4</sup> Greenpeace does not necessarily value feed above energy. The livestock sector is largely unsustainable and should be strongly decreased in most parts of the world. However, the competition effect of a policy driven bioenergy market with the food and feed market lead to uncontrollable negative effects, mainly Indirect Land Use Change (ILUC), which can undermine the environmental benefits of bioenergy.

<sup>5</sup> GPI (2015) Ecological Farming, Greenpeace International, May 2015

<https://www.greenpeace.org/international/publication/7009/ecological-farming-the-seven-principles-of-a-food-system-that-has-people-at-its-heart/>

- Livestock production requires about 75-80% of agricultural land, including land used to grow crops for animal feed, pasture and grazing lands.<sup>6</sup> Consuming less animal protein/calories reduces significantly the pressure for agricultural land needed for food production. Policies are therefore needed to shift towards a more plant-based diet, aiming for a reduction of global meat consumption and production by 50% by 2050.
- In countries that produce forest biomass, governments should impose strict biomass sourcing policies that would stop companies from cutting down standing trees for energy production.
- Keeping global temperature rise below 1.5 degrees, will additionally need removing carbon from the atmosphere, the overall amount depending largely on how fast and deep emission cuts will be realized. Restoration of forests and other ecosystems, as well as reforestation are the only proven approach to realize such 'negative emissions' at the scale necessary and providing essential ecosystem services at the same time (on biodiversity, water, soils, etc.). Reforestation and ecosystem restoration should globally prevail over dedicating land to the production of bioenergy crops.

### Greenhouse Gas (GHG) emissions

- In terms of GHG emissions, instead of dedicating land to bioenergy crops, with very limited exceptions, all suitable land is better used for reforestation or the restoration of other ecosystems, as well as for achieving food security via mainly plant-based diets and much reduced livestock production.
- Whether commercial, non-commercial, diseased or fire-damaged, standing trees from (semi) natural forests must not be cut specifically for bioenergy because of the large upfront carbon debt<sup>7</sup> that is created.
- Tree harvest levels in forests must not increase as a result of bioenergy production.
- Bioenergy from livestock operations (biogas) should not be supported, unless including the whole carbon cycle of meat and dairy production still results in clear GHG emission savings

### Biodiversity

- Bioenergy production feedstock must not be extracted from areas containing High Conservation Values (HCVs) and must not cause direct or indirect destruction, conversion or degradation of valuable ecosystems, such as forests, woodlands, peatlands and grasslands.
- Bioenergy production must not cause a loss of biodiversity in agro-ecosystems.
- In semi-natural forests managed according to responsible forest management standards<sup>8</sup>, some wood from thinnings and some residues from tree harvesting (tops and branches) can be used for bioenergy production with preference to meeting the primary needs of local people. How much wood from thinnings and residues from managed forests could be available for bioenergy production is location-specific and needs local assessment, including consultation of local communities.
- Biodiversity in croplands is best protected when no land is specifically dedicated to energy crops and where food production prioritises plant crops as major direct protein component in healthy diets.
- No deliberate release of genetically engineered (GE) organisms to the environment is permitted. Any bioenergy crops, including trees, must not be GE. GE microbes (including those developed by synthetic biology) must only be used in securely-contained facilities.

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<sup>6</sup> Foley *et al.*, 2011 report 75%, Stoll-Kleemann and O'Riordan, 2015 report 80%. Foley, J. A., et al. 2011. Solutions for a cultivated planet. *Nature*, 478: 337–342. Stoll-Kleemann, S. & Schmidt, U. J.. 2017. Reducing meat consumption in developed and transition countries to counter climate change and biodiversity loss: a review of influence factors. *Regional Environmental Change*, 17: 1261–1277.

<sup>7</sup> The upfront carbon debt of bioenergy is the amount of CO<sub>2</sub> that is instantly released at the moment biomass is combusted and which must be repaid to the terrestrial carbon pool through the regrowth of vegetation at a later stage

<sup>8</sup> aiming to enhance ecological integrity including the protection of biodiversity, water, soils and carbon, socially responsible including respecting indigenous peoples' and worker rights, transparent and independently verified

## Environment

- The production of bioenergy from residues must maintain ecosystem services: water filtration, water quality and quantity, nutrient recycling, soil organic carbon, overall soil fertility and pollination.
- Also for residues, ecological farming practices must be applied that do not pollute the biosphere through the accumulation of agrochemicals, such as synthetic fertilizers, pesticides and herbicides, in the soil, water or air. The use of agrochemicals must be minimised and ultimately phased out, which means that their use must be limited to when there is no biological or organic alternative and to only the most-efficient and non-polluting methods.<sup>9</sup>
- Incentives and subsidies towards bioenergy from agricultural residues like manure must not, directly or indirectly, lead to increased environmental damage by livestock production, such as GHG (methane) emissions, land and water pollution.

## Social justice

- Bioenergy production must not cause direct or indirect destruction of, or transfer of land away from existing peasant, indigenous, and/or nomadic agricultural/agropastoral/pastoral systems.
- Local food security and sovereignty<sup>10</sup>, livelihoods, stakeholder rights and land rights by local communities who live off the land must be respected and strengthened, in line with the tenure guidelines of the UN Committee on World Food Security (CFS)<sup>11</sup>.
- Indigenous peoples and local communities must have the right to free, prior and informed consent for the use of their land ('FPIC').
- Labour rights must be respected and the International Labour Organization (ILO) standards must be respected as a minimum.<sup>12</sup>

## Bioenergy and the energy transition

- Access to clean renewable energy must be delivered for all. Apart from being inefficient and time consuming, most traditional use of biomass in developing countries leads to respiratory problems for its users and degradation of forests and woodland resources, as well as soil erosion and degradation. Clean energy access must therefore be prioritized for communities that still depend on traditional biomass for cooking and heating. This is a 'low-hanging fruit' that could combine a strong increase in welfare with environmental protection and nature conservation.
- According to the polluter-pays-principle, subsidies for bioenergy production must not make fundamentally unsustainable industries more competitive. Examples are co-firing of biomass with coal in coal-fired power plants or digestion of animal manure produced by intensive livestock operations for meat and dairy production. The latter must be required to mitigate methane emissions, but this should not be subsidized.
- In biomass importing countries, governments should not rely on bioenergy for meeting renewable energy targets. The share of bioenergy must be capped.

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<sup>9</sup> Obviously this applies to all agriculture, whether bioenergy production is involved or not.

<sup>10</sup> GPI (2015) Ecological Farming, Greenpeace International, May 2015

<https://www.greenpeace.org/international/publication/7009/ecological-farming-the-seven-principles-of-a-food-system-that-has-people-at-its-heart/>

<sup>11</sup> UN CFS (2012), Voluntary guidelines on the responsible governance of tenure of land, fisheries and forests in the context of national food security, United Nations Committee on World Food Security <http://www.fao.org/cfs/cfs-home/cfs-land-tenure/en/>

<sup>12</sup> ILO (undated) International Labour Standards, International Labour Organization <http://www.ilo.org/global/standards/lang-en/index.htm>

- The transition to 100% renewable energy entails a radical system change, and bioenergy policies should not block nor delay this change. Replacing gasoline and diesel with biofuels within the infrastructure of the oil industry and within inefficient internal combustion engines does not trigger a system change, nor does replacing coal with wood in coal power plants.
- Sustainable bioenergy, which is inherently a limited available energy source, should be part of a long term strategy that leads to 100% renewable energy. Sustainable bioenergy should not be utilized for large-scale base load electricity production, but for dispatching in the electricity sector, heat production and as biofuel in aviation, shipping and heavy road transport. Maximising energy savings is fundamental.
- Biofuel blending targets in the transport sector should be replaced by renewable energy targets, with a focus on a shift to 100% electric and fuel cells (e-fuel) transport and waste and residue based biofuels where this is challenging, produced according to the principles and criteria presented in this paper.

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