

Title



Direct Land Use Change (DLUC)

DLUC are the emissions that come from changes in direct land use, such as emissions from converting a forest into agricultural land.

Indirect Land Use Change (ILUC)

ILUC are indirect emissions caused by market mechanisms. If a farmer previously was growing food on his land and now uses the land to grow fuel instead, we can ask how the demand for food is met instead. This demand can either be met by growing the food somewhere else or food prices have increased so much that people will eat less and hence the demand for food “disappears”.

See this explanation in [video form](#).

The way to calculate ILUC emissions is through **modelling** as you have to estimate the emissions. We use models often in policy making, for example to calculate employment figures or inflation, so it is a normal procedure. Seeing the fact that the outcome of the models (so called: ILUC factors) are currently not taken into account in EU legislation we continue to produce biofuels that are cheap but are not necessarily saving emissions.

Based on the **precautionary principle** however, Europe should include ILUC emissions in its sustainability criteria. Otherwise it is ignoring a massive loophole in its climate policy and damaging people and the environment worldwide. The inclusion of indirect impacts is one of the biggest challenges the biofuel policy faces, but should be urgently addressed if the EU wants to portray itself as a serious global leader in the fight against climate change. Read about [where we are in the ILUC legislation](#).

Carbon debt

Bioenergy is often presented to be carbon neutral, relying on the assumption that the carbon released when burning wood or other types of biomass, is soon recaptured by trees, vegetation and soils. In reality it takes time (from years to decades, depending on the kind of biomass) for the carbon released to be recaptured again by plant and tree growth and by the soil.

It's also possible that all the carbon released will never be fully recaptured, for example in the case when an old growth forest is replaced by a forest with shorter rotation and smaller carbon stock. The concept of carbon debt refers to the delay in time for the carbon to be recaptured or the amount of carbon that actually never will be recaptured by regrowth. Currently under EU climate targets carbon debt is ignored and all biomass is assumed to be fully carbon neutral. *Read about [where we are in the adoption of the carbon debt principle](#) into the current EU bioenergy policy.*

Related topics

- [Climate Change - our Programme](#)
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- [Biofuels](#)
 - [Biomass](#)
 - [Carbon accounting](#)
 - [Current EU Bioenergy policy](#)
 - [The post 2020 climate and energy package](#)
 - [Role of bioenergy in the post 2020 energy mix](#)
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Peter and Jane: a short film about biofuels



- [Accounting for uncertainty: Precautionary principle and Indirect land Use Change](#) (April 2013)
- [Bioenergy: carbon accounting time bomb](#) (2010)