



BIOFUELS

Renewable energies

Biofuels

BIOFUELS OVERVIEW AND CHALLENGES

There are three principal reasons driving the development of biofuels:

- the reduction of greenhouse gas emissions (GGEs) from the transport sector,
- the creation or maintenance of agricultural and forestry activities,
- energy independence.

Public policies aimed at supporting biofuels were first introduced in the 1990s in Europe, the USA and Brazil, followed, more recently, by the rest of the world, particularly China.

First-generation (“**conventional**”) **biofuels** are established on an industrial scale but are also controversial:

- problem of competition with food,
- controversy surrounding the environmental performance of conventional sectors (Indirect Land Use Change "ILUC" debate).

Second-generation (“**advanced**”) **biofuels** depend on processes that are technologically more complex but they present multiple advantages:

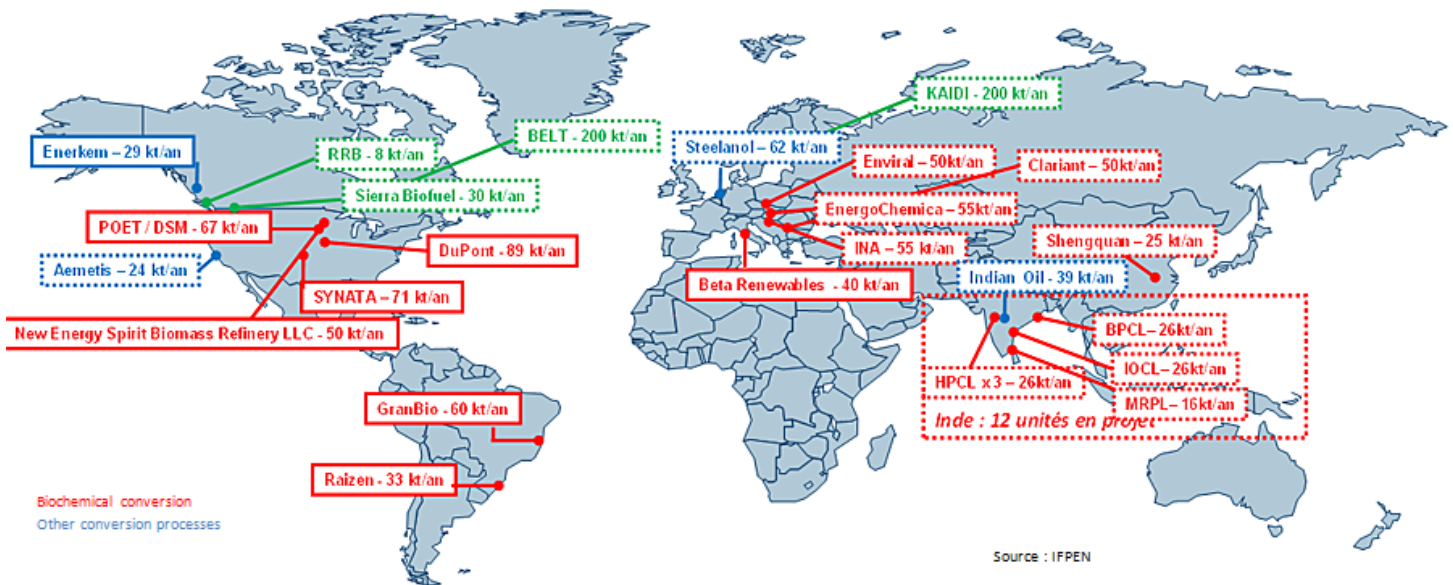
- resource much more widely available (several GToe compared to a few dozen Mtoe),
- the moderate price of biomass (residues, waste, etc.),
- greater environmental benefit of the sectors,
- state start-up support,

- favorable tax treatment of products.

The development of advanced biofuels requires a clarified **regulatory framework**:

- content of **RED II directive** known: the European market for advanced biofuels is now governed by a **regulatory framework** for translation into national legislation,
- **Brazil** offers a regulatory environment (RenovaBio) favorable to biofuels, particularly ethanol fuel, and current investment projects use, among others, European technologies,
- the **RFS2 program in the USA** represents a favorable environment since it sets out requirements for the incorporation of advanced biofuels... but it only runs to 2022,
- in **India**, incorporation targets have been set at above 5% for biodiesel and 20% for ethanol by 2030: in 2017, state-owned refining companies published the first calls for bids for bioethanol units,
- **biokerosene** is a specific case because jet fuel meets international specifications and is tax-exempt; biojet fuel is more expensive than fossil jet fuel so the incorporation of biojet fuel will require state aid or an obligation mechanism.

The first industrial facilities (primarily advanced bioethanol) have been launched or are going to be launched in the USA, Brazil, India and Europe, although most are not operating at full capacity following technical difficulties.



Advanced biofuels will not be able to compete with fossil fuels in the immediate future because the sectors have to follow the industrial learning curve. It is thus important to provide them with a protected environment for a few years to allow them the time to be rolled out and fulfill their economic and environmental promise. This is a condition that must be met to encourage investors to take the associated risk.

Advanced biofuels are associated with a **10-fold reduction in GGEs** compared to the fossil reference.

In partnership with the sector's industrial players, IFPEN is developing eco-efficient technologies to produce alternatives to fossil fuels, with a view to broadening the energy mix in the transport sector and limiting the environmental impact.

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CONTACT



Jean-Christophe Viguié

Program manager: “Biofuels”, and “Waste Plastic Recycling”.

jean-christophe.viguie@ifpen.fr



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