

Agreed Strategic Targets for bioenergy and renewable fuels needed for sustainable transport solutions in the context of an Initiative for Global Leadership in Bioenergy

Agreed Strategic Targets in Renewable Fuels for Sustainable Transport

1. Improve production performance

1.1. *Advanced Biofuels*

- By 2030, improve net process efficiency of conversion to end biofuels products of at least 30% compared to present levels, with simultaneously reducing the conversion process costs
- By 2020, obtain total production of 25 TWh (2.15 Mtoe) advanced biofuels¹

1.2. *Other renewable liquid and gaseous fuels*

- By 2030, improve net process efficiency of various production pathways of advanced renewable liquid and gaseous fuels² of at least 30% compared to present levels
- By 2030, for renewable hydrogen production by electrolysis improve net process efficiency to reach 70%³

2. Improve GHG savings

Total GHG savings through use of advanced biofuels and renewable fuels will be at least that required in Directive (EU) 2015/1513 where Article 7b (amended) states that greenhouse gas emissions saving from the use of advanced renewable fuels shall be at least 60%. The greenhouse gas emission saving from the use of biofuels shall be calculated in accordance with Article 7d(1) of the same Directive and should be at least 60% of the 40% target in 2030.

3. Reduce Costs (*excluding taxes and feedstock cost*)

In conclusion, the target price in 2020 and 2030 for advanced biofuels and renewable fuels should be within a reasonable margin from parity with the fossil based fuels. Nevertheless, when policy incentives for CO₂ reduction are taken into account, they should aim to be in parity with fossil fuel prices in 2030. This will require in particular improvements in process efficiency and energy balance through the application of innovative practices⁴.

3.1. *Reduce cost for end biofuel products*

- Liquid or gaseous advanced biofuels by thermochemical or biochemical processing: <50 €/MWh in 2020 and <35 €/MWh in 2030 e.g. at least by 30% from 2020 levels
- Algae based advanced biofuels <70 €/MWh in 2020 and <35 €/MWh in 2030 e.g. at least by 50% from 2020 levels

¹ this corresponds to the non-binding target of 0.6% of the approximately 4100 TWh (350 Mtoe in 2014) total transport fuel consumption and to 3 GW installed production capacity.

² for example using renewable electricity to produce gaseous or liquid fuels, including the capture and reuse of CO₂, as well as synthetic fuels made by other innovative processes

³ 50-47kWh/kg H₂

⁴ To determine the price margin, input from stakeholders and Member States will be needed for developing the Implementation Plan.

3.2. Reduce cost for renewable liquid and gaseous fuels

- Other renewable liquid and gaseous fuels excluding renewable hydrogen: at least by 50% from 2020 levels (<50 €/MWh)
- Renewable hydrogen: <7 €/kg.by 2020 <4 €/kg.by 2030 (electrolysis, reforming,..)

Agreed Strategic Targets Bioenergy

1. Reduce conversion system costs for high efficiency (>70% based on net calorific value of which >30% electrical) large scale biomass cogeneration of heat and power by 20% in 2020 and 50%
2. Improve performance and reduce GHG emissions by increasing efficiency: Obtain net efficiency⁵ of biomass conversion to intermediate bioenergy carriers of at least 75% by 2030 with GHG emissions reduction of 60% from use of all types of intermediate bioenergy carrier products⁶ resulting to a contribution to at least 4% reduction of the EU GHG emissions from the 1990 levels.

Agreed Strategic Intermediate Bioenergy Carriers⁷

Improve performance and reduce cost (excluding taxes and feedstock cost)⁸ for intermediate bioenergy carriers (before further processing to final bioenergy products)

- A. Liquid and gaseous intermediate bioenergy carriers by thermochemical or biochemical processing: <20 €/MWh in 2020 and <10 €/MWh in 2030 for e.g. pyrolysis oil; <40 €/MWh in 2020 and <30 €/MWh in 2030 for higher quality, e.g. microbial oils
- B. Solid intermediate bioenergy carriers by thermochemical or biochemical processing (e.g., bio-char, torrefied biomass, lignin pellets): <10 €/MWh in 2020 and <5 €/MWh in 2030 compared to present levels.

⁵ Net efficiency is the percentage of useful energy output compared with the net sum of energy inputs where the energy content is based on LHV (Lower Heating Value)

⁶ For bioenergy products, other than biofuels and bioliquids for which GHG savings are not yet defined in directive 2009/28/EC, the Commission has indicated the targets set for biofuels and bioliquids should be used. Otherwise the reference will be the displaced fossil fuel use

⁷ In the context of this document intermediate bioenergy carriers are formed when biomass is processed to energetically denser intermediary products analogous to coal, oil and gaseous fossil energy carriers that could be further refined to final bioenergy products or directly used for heat and power generation. The former European Industrial Bioenergy Initiative (<https://setis.ec.europa.eu/system/files/Bioenergy%20EII%202013-2017%20IP.pdf>), nowadays part of the ETIP on Bioenergy, provides examples of intermediate bioenergy carriers such as torrefied biomass and pyrolysis oils, microbial oils, algae oils, etc,

⁸ The purpose of this target is to give a rating for different technologies concerning their cost competitiveness. Hence this includes production plus profit margin and relevant costs to point of sale to a customer where applicable, and excludes product related taxes applied (e.g. VAT) and feedstock cost