ETIP Bioenergy
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Bioenergy in France

OVERVIEW

In 2018, the French bioenergy sector produced 7.7 TWh of electricity, covering 1.6% of the total electricity consumption (The Ministry of Ecology, Sustainable Development and Energy, 2020). Nuclear energy is the largest source of energy in France (Figure 1). With its 19 nuclear power plants, France produced 393.2 TWh in 2018, which is 71.7% of the total electricity production (ibid.). Following the EU Green Deal, the French government aims to produce 40% of electricity from renewable energy by 2030 (ibid).

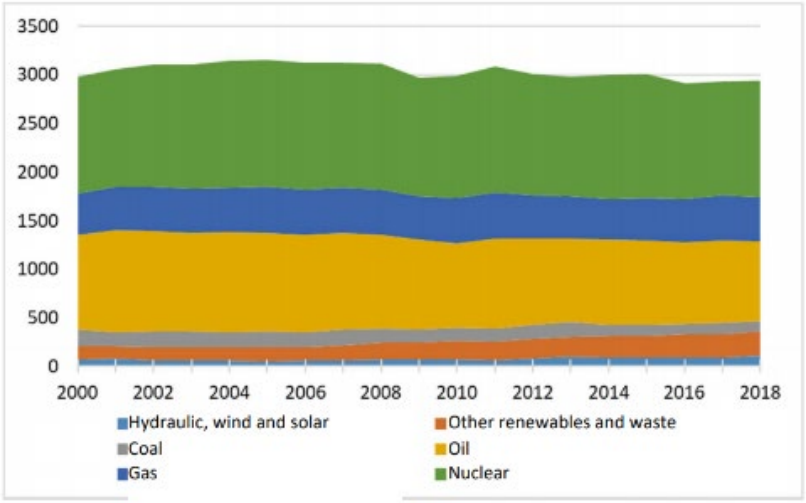

Figure 1: Primary consumption by energy form, (TWh), Source: The Ministry of Ecology, Sustainable Development and Energy, 2020.

Heat generation

40% of the heat in France is produced from gas. 21% is produced from renewable energies (biomass, heat pumps, geothermal), 18% from electricity, 16% from petrol and 5% from coal (The Ministry of Ecology, Sustainable Development and Energy, 2020). Moreover, 78% of renewable heat production in France in 2017 was solid biomass (ibid.). The share of renewable energies has grown by 0.8 points a year since 2010 (ibid.). The French target is having a 38% share of renewable energy in end-use heat consumption by 2030 (ibid.).

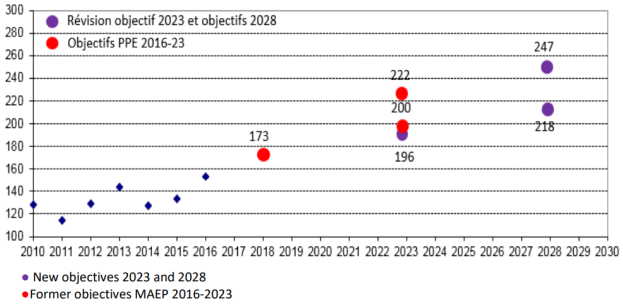

Figure 2: Past and future trend of final consumption of renewable heat, (TWh), Source: The Ministry of Ecology, Sustainable Development and Energy, 2020.

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Electricity generation

21% of electricity in France in 2018 was produced from renewable energy (The Ministry of Ecology, Sustainable Development and Energy, 2020). The largest proportion of bioenergy is produced from household waste (Figure 3). In the same year, the French bioenergy sector produced 7.7 TWh of electricity, covering 1.6% of electricity consumption (ibid.). The goal is to produce 40% of electricity by renewable energy by 2030 (ibid.).

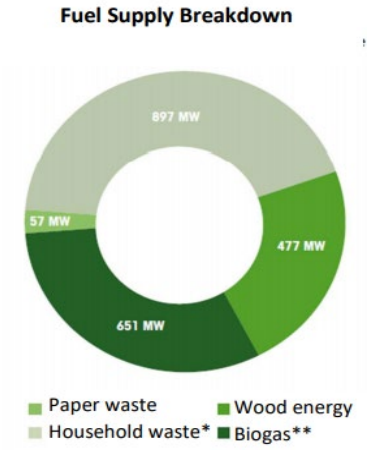

Figure 2: Distribution of electricity generation capacities from bio-energy in 2018, (MW), Source: The Ministry of Ecology, Sustainable Development and Energy, 2020.

Biofuels

In France, conventional biofuels (produced from food-related waste) represent 7% of fuel energy (The Ministry of Ecology, Sustainable Development and Energy, 2020).The target for the incorporation of first-generation biofuels will not exceed 7% of the energy contained in the fuels, by 2023 and 2028 (ibid.). By 2028, 3.8% of advanced biofuels must be incorporated into the fuel supply chain, and 2.8% into the diesel oil supply chain.

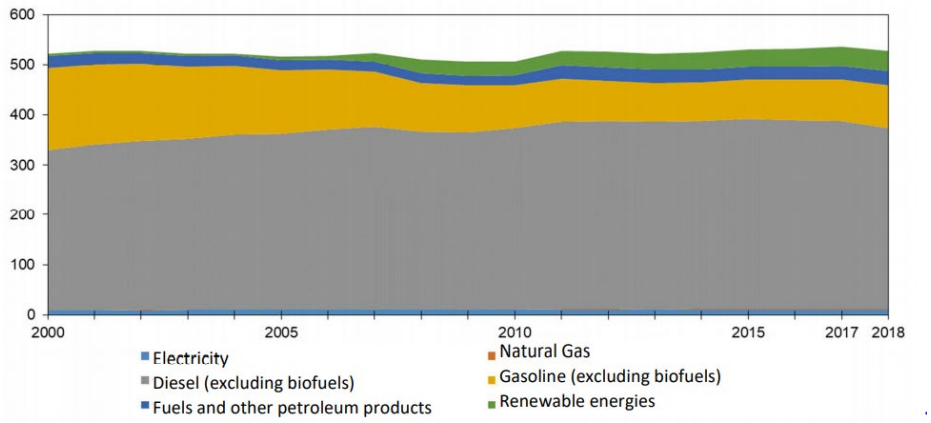

Figure 3: Final energy consumption in transport, (TWh), Source: The Ministry of Ecology, Sustainable Development and Energy, 2020.

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GHG savings by bioenergy

Bioenergy makes a significant contribution to climate protection. Biomass releases only about the amount of CO_2 that the plants previously absorbed during the period of growth. By 2020, France aimed to reduce GHG by 20% (The Ministry of Ecology, Sustainable Development and Energy, 2020). By 2030, the new EU aim is to have a 50-55% reduction in greenhouse gas emissions, compared to 1990 (EU Commission, 2020).

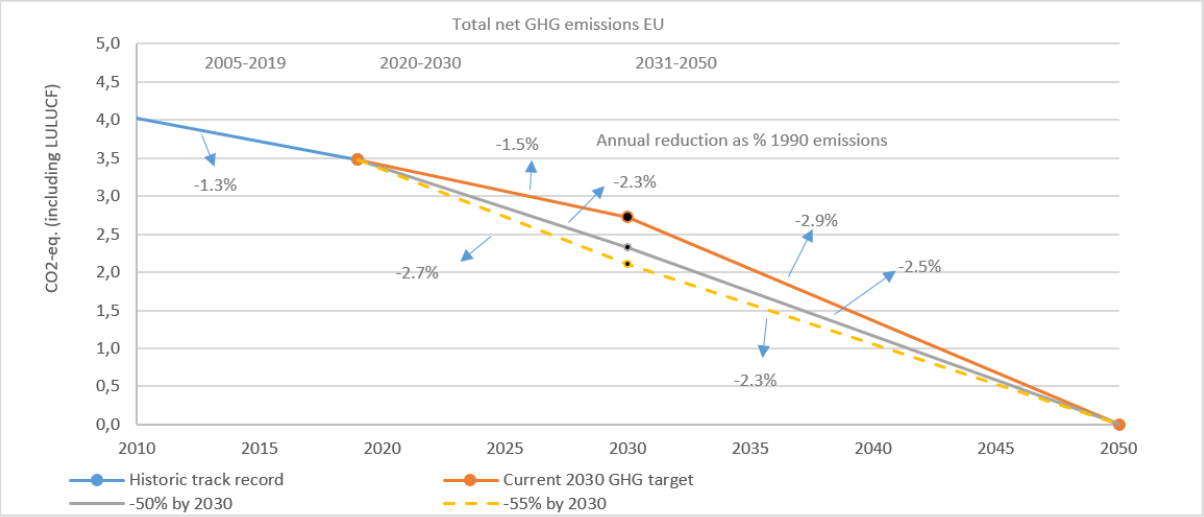

Figure 5: Total net GHG emissions EU, 2010-2050, Source: EU Commission, 2020.

EXAMPLES OF DEMOPLANTS

Operator: Total
Location: Dunkirk
Process: Gasification facilities
TRL: 6-7
Start-up year: 2020
Installed capacity [t/y]: Not available
Product: FT liquids
Link: https://www.total.com/energy-expertise/projects/bioenergies/biotfuel-converting-plant-wastes-into-fuel

Operator: IFP
Location: Bucy-Le-Long
Process: Fermentative alcohol production facility
TRL: 6-7
Start-up year: 2016
Installed capacity [t/y]: 350
Link: https://www.ifpenergiesnouvelles.com/article/2nd-generation-biofuels-industrial-first-french-futuroltm-technology

Operator: IBN-One (JV of Cristal Union and Global Bioenergies)
Process: Hydrocarbon fuel production facilities
TRL: 8
Start-up year: 2017
Installed capacity [t/y]: 50 000

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SOURCES

- EU Commission (2020): Communication from the Comission to the European Parliament, The Council, The European Economic and Social Committee and the Conmmitte of the Regions, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0562
- The Ministry of Ecology, Sustainable Development and Energy (2020): French Strategy for Energy and Climate- Multi-Annual Energy Plan, https://www.gouvernement.fr/sites/default/files/locale/piece-jointe/2020/08/2020-french_strategy_for_energy_and_climate.pdf

FURTHER INFORMATION

- ETIP Bioenergy, https://www.etipbioenergy.eu/current-status-of-advanced-biofuels-demonstrations-in-europe
- Gouvernment, https://www.gouvernement.fr/en/climate-plan

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