

# Bioenergy in Netherlands

## OVERVIEW

The Netherlands published “The position of the bioeconomy in the Netherlands” in April 2018, where it was stated as follows: “Biomass is the biggest source of sustainable energy in the Netherlands, for example via co-firing in coal-based power stations and burning of waste. In 2016, the Netherlands produced around 80 million m<sup>3</sup> of biogas. Part of this total is from burning of waste, while one third is from processing manure in ‘co-fermenters’. Research into fermentation of pure manure is currently in progress. Other applications, such as production of bio-based chemicals, are still limited in scale.”

From 2008 to 2018, the share of fossil fuels in total primary energy supply (TPES) declined slightly from 92% to 90%. As a result, a recent increase in economic activity has caused emissions reductions to stall. Natural gas and oil are the most important fuels in the Dutch energy supply. In 2018, TPES came from natural gas (42%), oil (37%), coal (11%), biofuels and waste (5%), and small shares from nuclear, wind, solar, hydropower and geothermal. The Netherlands is still one of the largest gas producers in Europe. Fossil fuels also dominate Dutch energy demand. In 2018, oil and gas covered 77% of total final consumption, while electricity covered just 16%. Energy from renewable sources accounted for only 7.4% of total final energy consumption (TFEC) in 2018. However, renewable energy deployment is progressing rapidly. The renewable contribution to TFEC increased by 50% between 2008 and 2018. Bioenergy is the primary source of renewable energy and includes transportation biofuels and direct use of biomass in heating and electricity. The share of biofuels in transport amounts to 5% (IEA, 2020).

## BIOENERGY MARKET DEVELOPMENT

For the coming two decades, the latest publication of the Dutch national energy scenarios (Nederlandse Energieverkenningen, NEV) shows that the main increase in renewable energy consumption will be due to the development of mainly offshore wind, onshore wind and solar energy. Nevertheless, the contribution of bioenergy is still to more than double from the current level to 2025, and is expected to still make a sizeable contribution by 2035 (IEA Bioenergy, 2018).

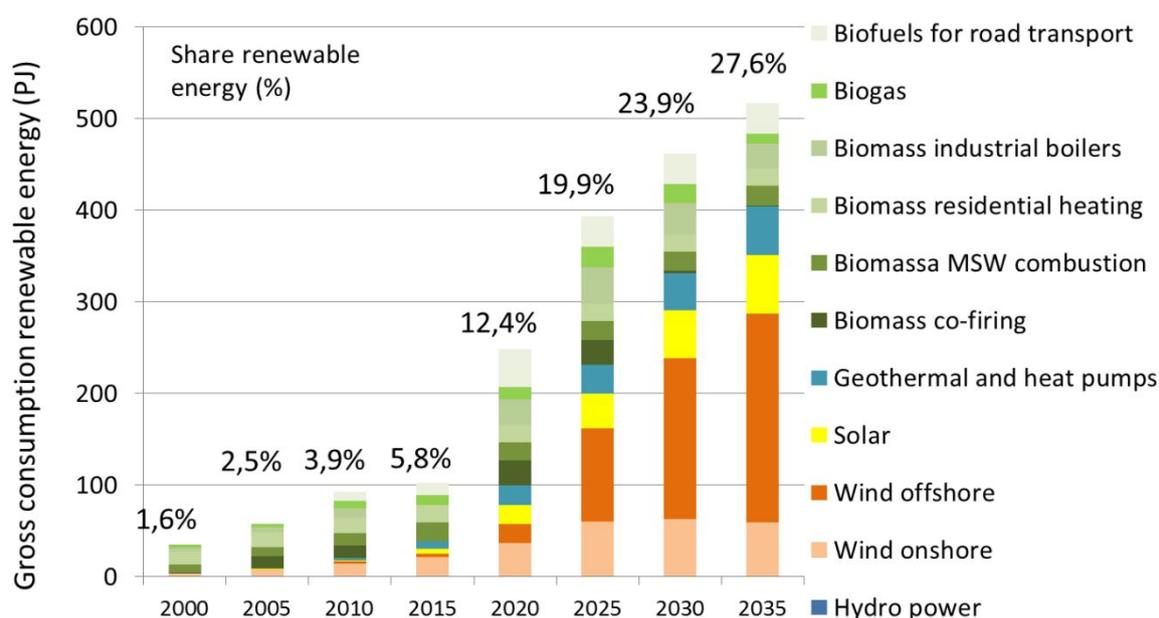


Table 1: Past and expected future development of renewable energy in the Netherlands until 2035 (Source: Nationale Energieverkenningen, PBL, 2017).

## BIOFUELS POLICY, REGULATIONS, MARKET DEVELOPMENT

As an EU Member State, the Netherlands is subject to numerous energy sector targets based on EU directives. The Dutch National Energy and Climate Plan (NECP) defines measures to support the achievement of 2030 targets for GHG emissions reductions, renewable energy and energy efficiency set under the EU Clean Energy Package. The measures in the NECP are based primarily on the 2019 Climate Agreement (IEA, 2020).

Large-scale liquid biofuel production in the Netherlands took off rather recently, producing bioethanol from starch (wheat, tapioca), and biodiesel from vegetable oils (mainly palm oil). As is the case with fossil fuels, the Netherlands provide fuels that are further exported to the rest of the continent. Ethanol in the EU is mostly made from wheat (approximately 50% of the supply), corn (30%) and barley (20%). Rapeseed oil (85%) is the dominant feedstock for biodiesel production, followed by soybean and sunflower oil. In comparison, biofuels in the Netherlands seem to be produced from a larger variety of feedstocks (Langeveld et al., 2016).

## EXAMPLES OF BIOFUELS DEMOPLANTS

**Operator:** Joint Venture of Air Liquide, Nouryon, Enkern, Port of Rotterdam and Shell  
**Location:** Rotterdam  
**Process:** gasification facilities  
**TRL:** 8  
**Start-up year:** 2022  
**Installed capacity [t/y]:** 220,000  
**Link:** <https://www.portofrotterdam.com/en/news-and-press-releases/w2c-rotterdam-project-welcomes-shell-as-partner>

**Operator:** TNO  
**Location:** Alkmaar  
**Process:** gasification facilities  
**TRL:** 6-7  
**Start-up year:** 2016  
**Installed capacity [t/y]:** 1,560  
**Link:** <https://repository.tno.nl/islandora/object/uuid:2749a54c-d1a1-4d28-8874-69ba3d95b75b>

**Operator:** Twence  
**Location:** Enschede  
**Process:** pyrolysis oil production facilities  
**TRL:** 9  
**Start-up year:** 2015  
**Installed capacity [t/y]:** 24,000

**Operator:** BioMCN  
**Location:** Farnsum  
**Process:** methanol  
**TRL:** 8  
**Start-up year:** 2009  
**Installed capacity [t/y]:** 65,000  
**Link:** <https://www.oci.nl/operations/biomcn/>

## LINKS

- <https://www.etipbioenergy.eu/current-status-of-advanced-biofuels-demonstrations-in-europe>
- [https://www.government.nl/binaries/government/documents/leaflets/2018/04/01/the-position-of-the-bioeconomy-in-the-netherlands/WEB\\_113751\\_brochure+ENG+Update.pdf](https://www.government.nl/binaries/government/documents/leaflets/2018/04/01/the-position-of-the-bioeconomy-in-the-netherlands/WEB_113751_brochure+ENG+Update.pdf)
- <https://www.government.nl/topics/environment/biofuels-for-transport>
- <https://www.pbl.nl/publicaties/nationale-energieverkenning-2017>
- IEA (2018), [https://www.ieabioenergy.com/wp-content/uploads/2018/10/CountryReport2018\\_Netherlands\\_final.pdf](https://www.ieabioenergy.com/wp-content/uploads/2018/10/CountryReport2018_Netherlands_final.pdf)
- IEA (2020). The Netherlands 2020. IEA, Paris <https://www.iea.org/reports/the-netherlands-2020>
- J.W.A. Langeveld; K.P.H. Meesters; M.S. Breure (2016): THE BIOBASED ECONOMY AND THE BIOECONOMY IN THE NETHERLANDS. BIOMASS RESEARCH REPORT 1601. [https://www.rvo.nl/sites/default/files/2016/03/Netherlands%20position%20biobased%20economy\\_FBR%20Biomass%20Research%202016\\_0.pdf#:~:text=Together,%20the%20biobased%20element%20of%20these%20sectors%20generates,\(%E2%82%AC100%20million\),%20and%20the%20energy%20sector%20\(%E2%82%AC70%20mln\).](https://www.rvo.nl/sites/default/files/2016/03/Netherlands%20position%20biobased%20economy_FBR%20Biomass%20Research%202016_0.pdf#:~:text=Together,%20the%20biobased%20element%20of%20these%20sectors%20generates,(%E2%82%AC100%20million),%20and%20the%20energy%20sector%20(%E2%82%AC70%20mln).)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 825179