

Policy Blueprint

Country Profile Netherlands



Policy Blueprint Country Profile – Netherlands

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SUMMARY

This report is part of the work carried out as part of the Biofuture Platform Policy Blueprint project. It should be read in conjunction with the other reports prepared under the project including similar project profiles for Brazil and the USA, the methodology statement and the summary report, which will be available via the Biofuture Platform website.

Use of bioenergy, and biofuels in transport in NL

- Bioenergy contributed 5.1% to final energy consumption in the Netherlands in 2019, and 6.8% of transport energy.
- NL is a significant producer of FAME biodiesel, HEFA/HVO and bioethanol, mostly based on feedstocks which are imported, along with biofuels, especially into Rotterdam. Much of the production is exported to other European countries.
- Biofuels use has grown strongly in recent years, with biodiesel (mostly from waste-based feedstocks) more than doubling since 2015 and bioethanol use growing by 20%.
- NL will exceed EU 2020 target of the 10% RE in transport by 2030 since the share was already 12.4% in 2019, when “double counting” is taken into account.

BENEFITS AND FINANCIAL SUPPORT

- In 2019 use of biofuels is estimated to have reduced emissions from transport by 2.5 MTCO₂e. These savings are equivalent to 81kTCO₂e for each PJ of energy.
- Biofuels provide 2400 jobs in NL in 2019, equivalent to 73 jobs/PJ of biofuels used.
- The additional costs associated with biofuels are equivalent to between 10–30 Euros/GJ (11.50 – 34.50 USD/GJ), which is equivalent to 140–428 USD/TCO₂e.

PRINCIPAL POLICY MEASURES

Key policy measures include:

- The NL Climate Agreement sets the intention to reduce emissions in road transport by an additional 2 MTCO₂e, compared to the 2030 projection of the National Energy Exploration 2017. This includes the use of a maximum of 60PJ of biofuels in road transport, plus a further 5PJ to be used in inland waterways.
- Through the Annual Obligation fuel suppliers are obliged to achieve a minimum blending level or else face financial sanctions for non-compliance. The obligation mirrors the EU wide scheme, allowing “double-counting” for biofuels based on wastes and residues and other non-food cellulosic and hemi-cellulosic feedstocks as specified in Annex IX of the RED. There are also limits on the proportion that can come from “food and feed crop-based biofuels” and from feedstocks listed in Annex IX Part B (principally

used cooking oil), and a mandatory level for “advanced biofuels”. The levels of the obligation are being set through to 2030, providing market certainty.

- Fuel suppliers to road transport have to comply with the annual obligation and that will be extended to the inland navigation sector in 2022. Companies that supply fuels to the maritime and aviation sectors do not have an obligation but can “opt in” by a voluntary contribution.
- Financial support for biofuels production and use is provided by the award of tradable renewable energy units for each GJ of eligible biofuels. Fuels produced from waste and residues can qualify for 2 units for each GJ of energy used.
- The sustainability governance of biofuels in the Netherlands is based on the comprehensive EU RED (2) framework. This defines a series of sustainability and GHG emission criteria that transport biofuels must meet in order to be counted towards targets and to be eligible for financial support by public authorities. In particular RED II reinforces the measures aimed at reducing ILUC effects.

POLICY REVIEW AND ANALYSIS

Strategic Priority

- NL has established a draft target for biofuels and other renewable fuels of 27.1% for 2030, significantly higher than the EU target of 14% renewables in transport in the revised Renewable Energy Directive.^{i 1}
- This target is close to the level of biofuels associated within the IEA's Sustainable Development Scenario for the EU.

Policy clarity and certainty

- Growth in biofuels to meet the internal and EU targets has been successfully driven by an obligation combined with the system of tradable renewable fuel units (Hernieuwbare Brandstof Eenheden, HBE's). Annual obligation levels have been established and these are being extended to 2030, linearly between 2021 and 2030. This provides a high level of clarity and certainty for investors and market actors.

Market access

- The standard blends in NL are E10 and B7, and other blends containing 20, 30 or 100% of HVO are available at filling stations. Higher blends of ethanol including E85 and the wider use of flex-fuel vehicles are not promoted.

ⁱ These targets include provision for "double counting" of biofuels produced from residues and wastes, and the target represents a much lower level in terms of fossil energy replaced.

- While the Obligation applies to the road transport sector, an “opt-in” scheme for marine biofuels has successfully led to an increase in use of biofuels in this sector.

Financial support or incentives

- Support for biofuels production and use is provided by the award of tradable renewable energy units for biofuels (HBE's; 1 HBE = 1 GJ) These units have a value of between 10 and 15 Euros/GJ. Fuels produced from waste and residues can qualify for 2 units for each GJ of energy used (double counting verification is a requirement for this). The total additional cost of using biofuels therefore amounts to between 10 and 30 Euros/GJ.

Sustainability Governance

- The EU RED (II) establishes strict biofuels sustainability and GHG reduction requirements, which are included in the NL national legislation. Producers must demonstrate that fuels comply with the sustainability and GHG reduction requirements of the RED (2), through certification by EU recognised voluntary schemes.
- An integrated sustainability framework for biomass use is being developed to ensure a consistent approach to biomass use across all sectors in NL. This aims to support the principle that biomass use should be based on the use of residues and wastes and support the transition to a circular economy. It proposes that in the long term, such resources are focussed on the highest value applications possible, and this includes a progressive phase out of the use of biomass for low temperature heat and power

generation and for use in light vehicle transport. The use of biobased materials in aviation and shipping, for heavy freight road transport, and for high temperature heat applications are considered transition opportunities, with long term emphasis on using feedstocks for conversion to materials and chemicals.

Innovation

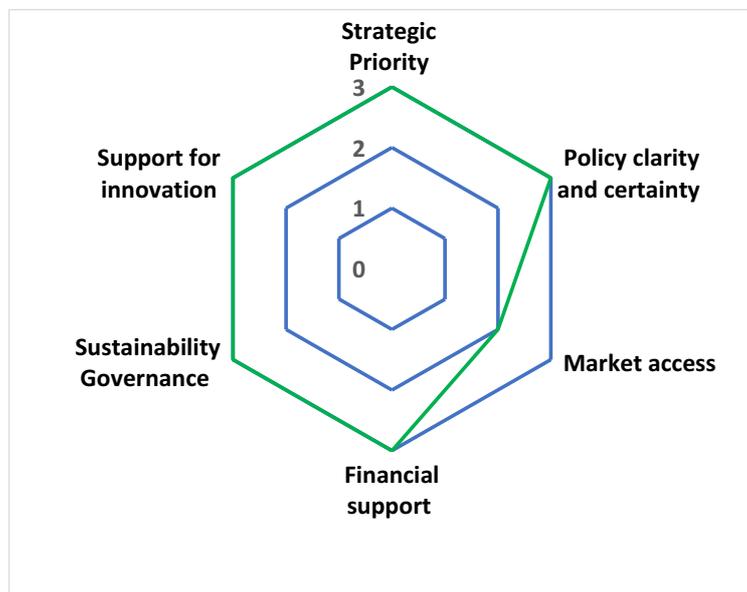
- So far, there has been limited national support for R, D and D effort aimed at production of novel biofuels including those for aviation. However, in the 2019 national climate agreement, Euro 200 million has been reserved for support of production of advanced renewable fuels including advanced biofuels. A support scheme for this funding is currently being elaborated.
- Climate Neutral Fuels: It is foreseen that in July 2021 a specific call will be launched for climate neutral fuels research in the aviation and marine sector with a budget of 3.3 M€. Maximum support will be limited to 0.5 M€/project.
- Renewable energy, including biofuels, used in aviation and the marine sector are eligible under the Annual obligation system using the “opt-in” system (until 2025). Biofuels used in these sectors can count towards the 14% renewable energy in transport target in the RED2 with a multiplier of 1.2 on their energy content.

The review of policy is summarised in Table S1 Figure S1 below.

Table 1 • Table S1: Key Indicators

Bioenergy in energy supply % (2019)	5.1
Biofuels in transport % (2019) ⁱⁱ	6.8
PII 2019 %	107
Jobs/PJ (2019)	73
GHG Savings kTCO ₂ e/PJ	81
Financial support USD/GJ	12 -35
Financial Support USD/TCO ₂ e	140- 428

Figure 1 • Figure S1 Summary of Policy Analysis - NL



ⁱⁱ Based on energy content and not including “double counting”

1. INTRODUCTION

This report is part of the work carried out as part of the Biofuture Platform Policy Blueprint project. It should be read in conjunction with the other reports prepared under the project including similar project profiles for Brazil and the USA, the methodology statement and the summary report, which will be made available via the Biofuture Platform website.

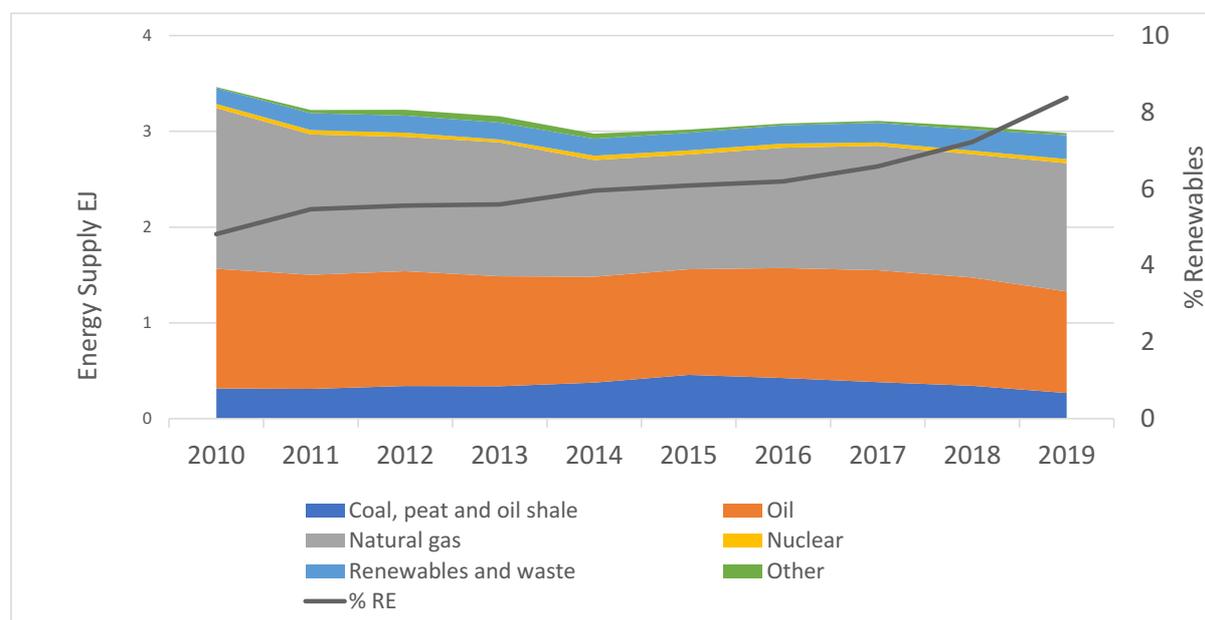
The profile discusses the national energy context in the Netherlands (NL), and then discusses the trends in biofuels use in the transport sector along with the main relevant policies. It then reviews this data by calculating a number of quantitative indicators and reviews the policy portfolio against a number of qualitative benchmarks, as described in the Policy Blueprint methodology document.

2. NATIONAL CONTEXT

OVERALL ENERGY TRENDS

Overall total energy supply energy in Netherlands has declined by some 14% since 2010.² During this period, natural gas production in Netherlands has diminished by 63% and it has become a net importer of natural gas. Renewable energy has grown during this period, from 4.8% of total energy supply in 2010 to 8.4% in 2019.

Figure 2 • Netherlands – Trends in Total Energy Supply



Source: Based on IEA World Energy Balances.³

Renewables are playing an increasing role in power generation, providing 15.1% of generation in 2018 (up from 9.6% in 2010). Renewables supplied 6.1% of the energy

used for heat supply (3.1% in 2010), and 4.8% of energy used in transport (2.1% in 2010) on an energy basis.⁴

ENERGY POLICY AND DRIVERS

The Netherlands is aiming for a rapid transition to a low-carbon economy and has placed ambitious greenhouse gas (GHG) reduction targets at the centre of energy and climate policy.⁵ From 2008 to 2018, the population of the Netherlands increased by 5% and gross domestic product (GDP) grew by 9%. Over the same period, energy demand declined by 5% thanks in part to a 15% improvement in the energy efficiency of the economy. The Netherlands has also achieved notable reductions in GHG emissions. In 2019, GHG emissions were down 17% from 1990 levels.⁶

The 2019 Climate Act sets targets to reduce GHG emissions by 49% by 2030 and by 95% by 2050 (versus 1990 levels). The Netherlands has developed a detailed policy framework to drive the achievement of these targets. The core of this framework is the 2019 Climate Agreement, which was developed by a collaborative process involving over 100 stakeholders from across society. The Agreement includes emissions reductions targets and measures in five sectors: electricity, industry, the built environment, mobility, and agriculture and the natural environment.

Table 2 • NL – Climate Agreement 2050 Goals and Sectoral Targets for 2030

2050 Goals	2030 Targets
Carbon-free electricity system	At least 35 TWh of onshore wind and solar generation from systems with capacity above 15 kW.
	At least 49 TWh of offshore wind generation.
Raw materials products and processes in industry will be net climate neutral and at least 80% circular.	50% reduction in primary feedstock demand
	Greenhouse gases from production processes and waste sector reduced to around 36 MtCO ₂ e.
	Sustainability improvements to the industrial heat system up to 300°C achieved.
	Electrification of industrial processes implemented
	Carbon capture and storage implemented in a cost-effective manner
	Low-carbon hydrogen production on the road to implementation
	Bio-based raw materials seen as the norm.
Zero-emission mobility of people and goods. Zero fossil fuels in transport by 2050	Zero-emission cars make up 100% of new sales and 1.9 million vehicles in total.
	An additional 2 M tonne reduction in GHG emissions including a further 27 PJ or RE (maximum) in road transport (leading to a total of ~60PJ), plus 5 PJ of RE in inland navigation bringing the

	overall total of RE in transport to ~65PJ in 2030
	Reduce freight kilometres by 8 billion kilometres.
	A minimum of 32 largest municipalities will have zero-emission zones for city logistics.
	A 30% CO ₂ reduction target for continental and hinterland logistics.
Net carbon neutral agricultural and natural systems	Reduction of at least 1 MtCO ₂ e in methane emissions. 1MtCO ₂ e from reduced energy demand in greenhouses and 1.5 MTCO ₂ e from smarter land use.
Carbon-free built environment	Natural gas phased out of 200,000 homes per year.
	1.5 million homes and 15% of commercial and public buildings natural gas free
	At least 20% of building energy consumption (including electric vehicles) covered by renewables.

The objectives relating to renewables are consistent with those of the European Union and established by the Renewable Energy Directive (RED). The RED which came into effect in 2010 established mandatory national targets for renewables in final energy consumption for 2020, with an EU wide target of 20% renewables in final energy consumption by 2020, and a target of 10% of renewables in transport.

In NL, the mandatory national target for renewables in final energy consumption by 2020 is 14%. By 2018 contribution of renewables in NL to final energy consumption had reached 7.4%, in 2019: 8,6 % and 11% in 2020.⁷

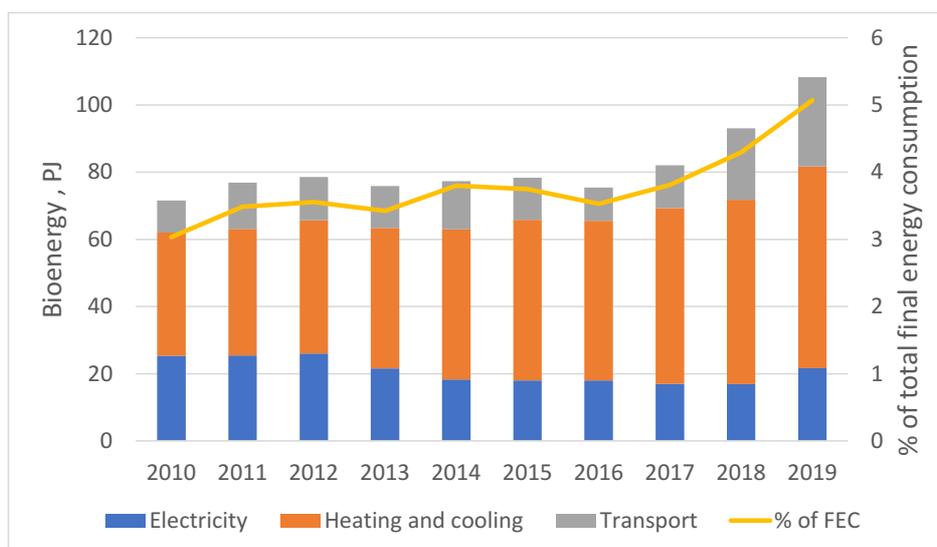
The revised Renewable Energy Directive (RED2, 2018) established EU wide targets of 32% for renewables in final energy consumption by 2030, and 14% in transport. There are no legally binding national targets associated with these targets, but

each Member State has designed a “Integrated National Energy and Climate Plan” which sets out a plan and trajectory designed to reach these overall targets. The NL Plan proposes an overall RE contribution to final energy demand of 27% by 2030.⁸ For road transport the NL annual obligation in 2030 (65 PJ or 27.1%) is significantly higher than the obligatory 14% share in the RED2 in 2030.

ROLE OF BIOENERGY IN NL

The contribution of bioenergy in NL final energy consumption has risen from 3.0% in 2010 to 5.1% in 2019 (Figure 2).^{iii 9}

Figure 3 • Bioenergy in NL final energy consumption (PJ)



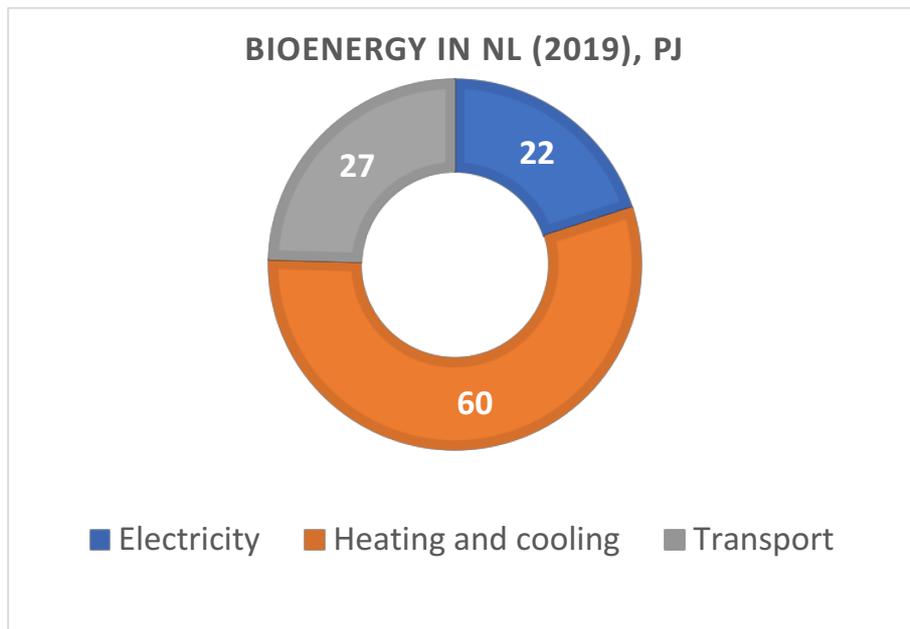
Source: based on Eurostat SHARES database

ⁱⁱⁱ In physical terms, i.e., not applying the EU “double counting” for qualifying biofuels.

This included:

- 4.9% of electricity generation (22 PJ)
- 5.5% of heat requirements (60 PJ)
- 6.8 % of transport energy needs (33 PJ).

Figure 4 • Bioenergy in NL final energy consumption (PJ) – 2019



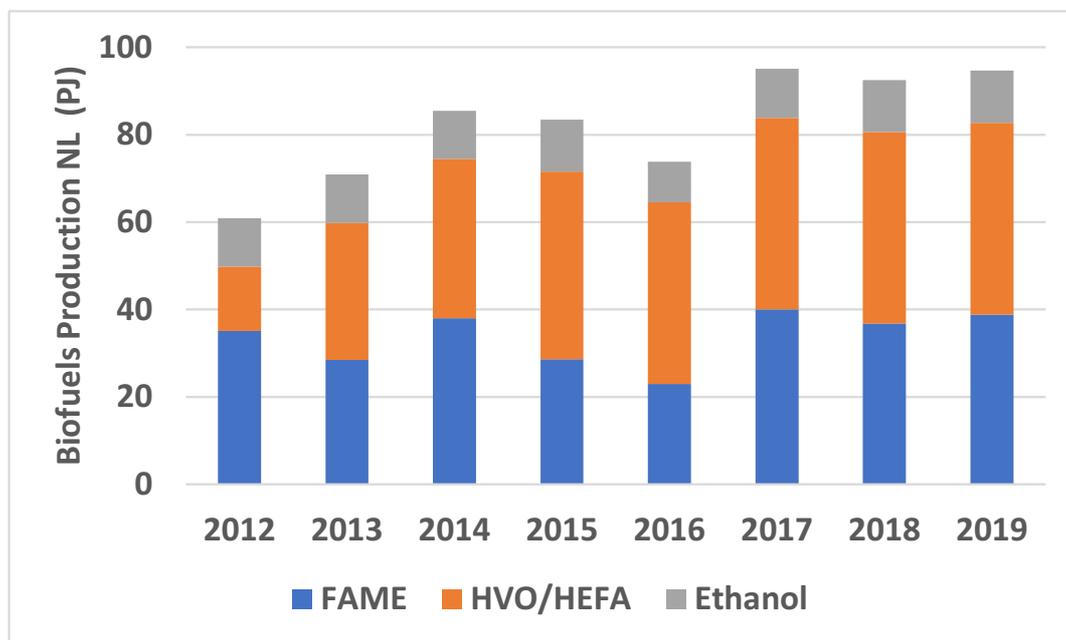
3. BIOFUELS FOR TRANSPORT IN NL

PRODUCTION OF BIOFUELS

The Netherlands is a producer of FAME biodiesel (as well as being an importer and trader) and also hosts a large scale HVO/HEFA production site, as well as producing bioethanol. Production is mostly based on imported feedstocks, and NL is a significant exporter of these biofuels.

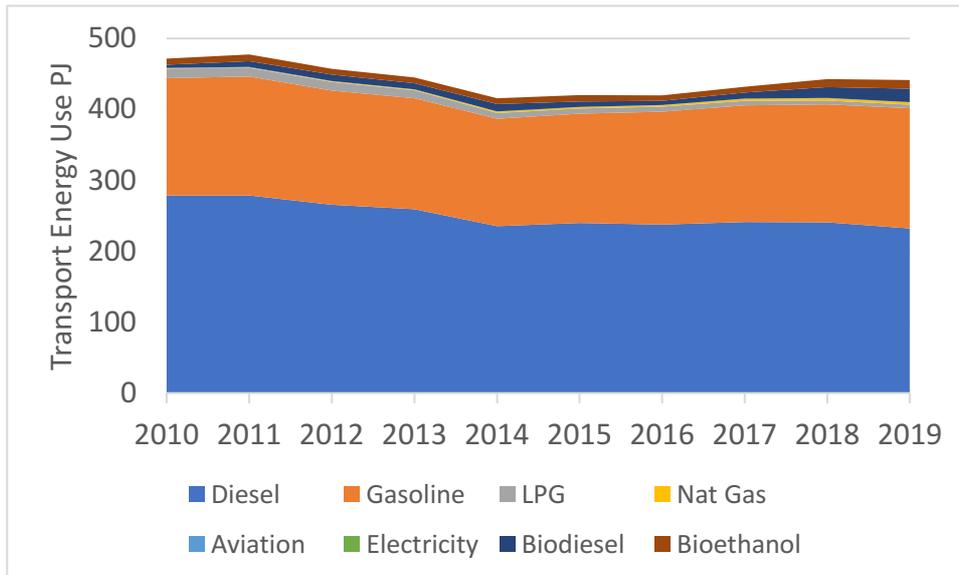
In 2019 NL produced some NLs produce nearly 40PJ of FAME biodiesel (1080 million litres) along with 43 PJ of HVO/HEFA fuels (1220 million litres), along with 12 PJ (570 million litres) of bioethanol (Figure 4).¹⁰

Figure 5 • Trends in biofuels production in NL 2013–2019



Source: Based on USDA GAIN Report, Biofuels Annual, EU 2020.¹¹

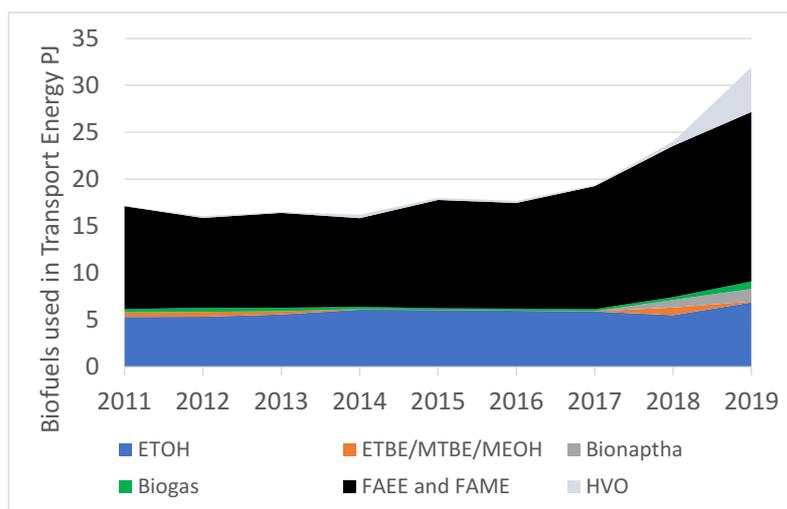
Figure 6 • Trends in transport energy use – 2000–2019



Source: Based on data in Eurostat

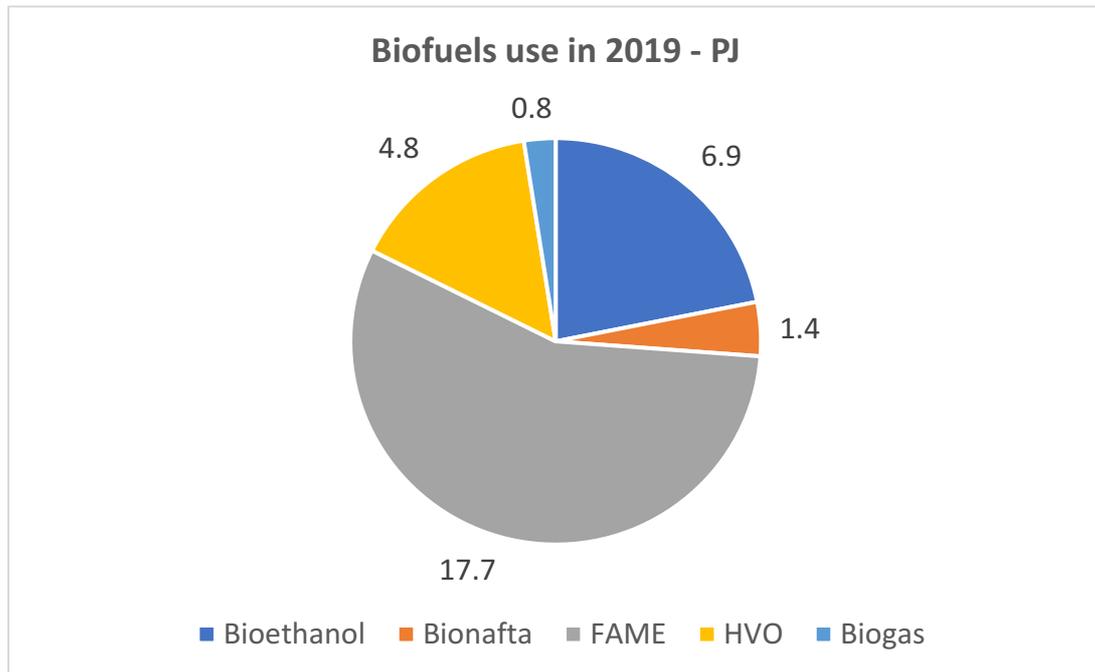
In 2019, biofuels contributed 6.8%(33PJ) to transport energy demand (in energy terms).⁹ Biodiesel use has grown by 65% between 2011 and 2019, providing 18PJ (Figure 9).⁹ HVO use also grew rapidly in 2019, providing nearly 5 PJ. Bioethanol use has risen by 29% between 2011 and 2019, providing 7 PJ. Biomethane use has also risen sharply in 2019 to 0.8 PJ (Figures 6 and 7).

Figure 7 • Trends in biofuels use in NL (2011 – 2019)



Source: Dutch Emissions Authority 2020.¹¹

Figure 8 • Biofuels use in NL 2019 – PJ



Source: Dutch Emissions Authority 2020.⁹

BENEFITS AND COSTS

GHG reductions

The GHG emissions avoided through the use of biofuels for transport in NL were estimated at 2.55 MTCO₂e in 2019, reducing emissions from transport by 5.8%.¹²

The emission factor associated with biofuels used to replace gasoline was 23.8 gCO₂/MJ on average, 75% lower than that from gasoline, and that from biodiesel and HVO averaged was 88% lower than that from fossil-based diesel (11.7 gCO₂/MJ).

Jobs

The production and use of biofuels is estimated to support 2400 direct jobs in the NL in 2019, equivalent to 73 jobs per PJ of fuel used.¹³

Financial Support and Incentives

Support for biofuels production and use is provided by the award of certificates for qualifying biofuels (HBE's). These certificates have a value of between 10 and 15 Euros/GJ. Fuels produced from waste and residues can qualify for 2 units for each GJ of energy used. The total value of policy support therefore amounts to between 10 and 30 Euros/GJ.

PRINCIPAL BIOFUELS POLICY MEASURES

Targets

The EU wide targets established under the EU Renewable Energy Directive include an EU wide target of 10% of transport final energy demand from renewables for 2020, which should be met by all countries. This target allows for "double counting" of biofuels based on wastes and other cellulosic feedstocks specified in Annex IX-A and B in the Directive.¹⁴ NL exceeded the 10% transport target in 2019, reaching 12.4% (allowing for double counting).

The revised EU RED (RED2) includes an EU wide target of 14% in transport, with a specific sub-target of for "advanced biofuels" (Annex IX-A) of 0.2% by 2022, 1% by 2025, and at least 3.5% by 2030.

The NL Climate Agreement sets the intention to reduce emissions in road transport by an additional 2 MTCO_{2e}, compared to the 2030 projection of the National Energy Exploration 2017 (33 PJ of biofuels) by 2030 through the use of a maximum of 60PJ (33 + 27 PJ) of renewable fuels in road transport, plus a further 5PJ to be used in inland waterways. The percentage of the annual obligation for 2030 will therefore be 27.1% (taking into account “double counting”), so much higher than the EU’s proposed 14% target. Please note that because of the different multipliers in the RED2, this target does not reflect a physical share of renewable energy but a calculated share. Annual obligation levels to 2030 in line with this objective have been proposed and are currently the subject of a consultation with stakeholders (see Table 3).

Obligation

Annual obligation 2010–2021 (RED)

Fuel suppliers are obliged to achieve a minimum blending level set by the annual obligation scheme or else face financial sanctions (e.g., a fine) for non-compliance determined by the NEa, with the amount depending in the extent and reason for the non-compliance.

The obligations for biofuels in NL up to 2021 are summarised in Table 2.

Table 3 • NL Annual Obligation targets 2010–2021
Table 4 •

Year	Total % renewable energy in the transport market, obligation to market parties		Sub target advanced biofuels (Annex IX A)	Limit “conventional” biofuels
	Target	Achieved		
2010	4%	Unknown		
2011	4.25%	4.31%		
2012	4.5%	4.54%		
2013	5%	5.05%		
2014	5.5%	5.54%		
2015	6.25%	6.25%		
2016	7%	7.0%		
2017	7.75%	7.75%		
2018	8.5%	8.9%	0.3%	3.0%
2019	12.5%	12.7%	0.4%	4.0%
2020	16.4%		0.5%	5.0%
2021	17.5%		0.5%	5.0%

The obligation for 2019 onwards are significantly higher than the EU 10% wide level. The obligation mirrors the EU wide scheme, allowing “double-counting” for biofuels based on wastes and residues and other non-food cellulosic and hemi-cellulosic feedstocks as specified in Annex IX of the RED. There are also limits on the proportion that can come from “food and feed crop-based biofuels” and from feedstocks listed in Annex IX Part B (principally used cooking oil), and a mandatory level for “advanced biofuels”. All qualifying biofuels must meet sustainability requirements. Renewable electricity also qualifies.

Targets

For later years draft annual obligation figures were proposed for consultation in November 2020. The definitive figures are still to be confirmed. Table 3 shows the proposed levels for the overall obligation for renewable energy and for advanced biofuels for each year to 2030. The limit on biofuels from “conventional biofuels” (biofuels produced from food and feed crops) is provisionally set at 1.2% for the period. The proposed limit for fuels produced from the Annex IX-B feedstocks is 8.4%. In the definitive legislation, both will be set at the 2020 levels, which are still to be determined in the course of 2021, but which are much lower than the EU wide levels.

Companies supplying renewable energy in the transport sector can claim Renewable Energy Units (Hernieuwbare Brandstof Eenheden, HBE’s). Obligated companies can meet the requirement either by buying fuel along with these Units, or else purchasing them separately. HBE’s are created within the register managed by the NEa and are to be used to demonstrate compliance with the annual obligation target.

Renewable energy that can contribute

In the RED2 framework, biofuels as well as the renewable part of electricity, hydrogen, and e-fuels (Renewable Fuels of Non-Biological Origin) can count towards the 14% renewable energy in transport target. This is also implemented into the legislation in the Netherlands. For electricity, a factor 4 will probably be applied and for hydrogen and e-fuels this will most likely be a factor 2,5. Annex IX-A biofuels are to be double counted. This also applies to Annex IX-B biofuels, at least up to 2025 (this will be evaluated 2 years after implementation of the new legislation).

Table 5 • Proposed NL obligations for the period 2022 to 2030

Table 6 •

	Total % renewable energy in the transport market,	Sub target advanced biofuels (Annex IX A) %	Limit "conventional" biofuels %	Limit Annex IX B biofuels
2022	16.4	1.7	1.2	8.4
2023	17.4	2.3	1.2	8.4
2024	18.5	2.9	1.2	8.4
2025	19.8	3.5	1.2	8.4
2026	21.1	4.2	1.2	8.4
2027	22.5	4.9	1.2	8.4
2028	23.9	5.5	1.2	8.4
2029	25.4	6.3	1.2	8.4
2030	27.1	7.0	1.2	8.4

For fuels which are eligible to be "double counted", two HBE's are awarded for each GJ of fuel supplied to road transport in the Netherlands. Since 2018, three types of tradable units have been awarded in order to facilitate meeting the sub-target for advanced biofuels and limiting conventional food and feed crop-based biofuels. These are HBE-C (conventional), HBE-A (advanced) and HBE-O (others). An additional type of HBE unit will be introduced to regulate the cap resulting from the RED2 for Annex IX-B biofuels, i.e., used cooking oil and animal fats (HBE-B). The trading price for various types of HBE vary. The price has been in the range of 10 – 15 Euros/GJ in recent years. Total policy support for biofuels is therefore in the range 10 – 30 Euros/GJ.

Sectors that must/may contribute

Fuel suppliers to road transport and as of 2022 should comply with the annual obligation. It is proposed in the draft new legislation that also companies that supply fuels to inland navigation will have to comply with the Annual obligation, so volumes of renewable energy used in these sectors count towards the annual obligation. Companies that supply fuels to the maritime and aviation sectors do not have an obligation but the RED2 framework allows renewable energy supplies

to these sectors to contribute to the 14% target for road transport (with contributions to the overall RE target boosted by a factor 1.2). This is implemented in the Netherlands by a voluntary contribution to the annual obligation through an “opt-in” scheme. So far, the Netherlands is the only EU Member State that has implemented a voluntary contribution of these sectors to the national annual obligation scheme.

This “opt-in” possibility aims to provide an extra incentive for the application of renewable energy in both the maritime and aviation sectors, where substantial CO₂ emission reduction is still very necessary. For maritime, this has been successful so far, since the volume of biofuels used in maritime has increased substantially since 2019. In practice, the opt-in possibility means that companies that supply renewable energy to maritime or aviation can register these volumes in the NEa register and receive tradable energy units (HBE’s) for them, without having to comply with the annual obligation. These HBE’s can, just like the HBE’s originating from renewable energy in road transport, be used by companies with an obligation to demonstrate compliance with the annual obligation (generate and buy sufficient HBE’s).

One impact of allowing such an opt-in possibility into an obligation scheme for road transport, is that the use of renewables in the maritime may lead to lower volumes applied in road transport, since biofuels used in deep-sea ships can be of lower quality and therefore be cheaper than road transport biofuels.

It should be noted that these volumes used in the maritime sector do not contribute to overall national CO₂ emission reduction targets (since it is an international sector) nor to those specifically for road transport. Although the lower costs of biofuels in maritime may lead to lower overall costs for realizing the annual obligation and the RED2 14% target, it should be noted that with an opt-in possibility the costs of supply of renewable energy to maritime and aviation will be borne by the end-users in road transport.

In 2020 biofuels supplied to maritime comprised 30% of the total volume of renewable energy supplied under the Annual obligation scheme, which was a huge increase compared to 2019.¹⁵ However, due to the reasons described above, the opt-in possibility for maritime is now limited to only Annex IX-A biofuels and e-fuels (RFNBOs). In the draft legislation for the Annual obligation for the period 2022-2030, it is proposed to extend the opt-in possibility until 2025 to still give a boost to the use of renewable energy carriers in maritime and aviation and then stop it. The background of this is that for both maritime and aviation, international sector specific policies are under development (FuelEU Maritime, IMO, ICAO/CORSIA) to boost the use of renewable energy carriers and reduce CO₂ emissions. Inland navigation used to have an opt-in possibility under the legislation until 2020, but in the draft legislation this sector will be placed under the annual obligation scheme as of January 2022.

Other financial and fiscal support

There are no tax or duty reliefs for biofuels in NL (but there is a reduction in excise duty for higher blends on biofuels to compensate for their slightly lower energy density).

Projects involving biofuel production can apply for tax incentives under the Energy Investment Deduction Scheme (MIA) and the Random Depreciation Environment Investment Scheme (VAMIL). Demonstrations for new technology can apply for support under the Demonstration Scheme for Climate Technologies (DKTI).

Blending regulations in the Netherlands

The mandated gasoline blend in NL is E10, which makes up 98% of gasoline sales.¹⁶ Higher blends of ethanol in gasoline including E85 are not promoted.

The standard diesel blend is B7 (under the EN 590 standard/FQD, although B7 is not obligatory) and other blends containing 20, 30 of FAME and up to 100% of HVO are available at filling stations.

Sustainability governance in the EU REDII framework

The sustainability governance of biofuels in the Netherlands is based on the EU RED (2) framework. The EU RED II defines a series of sustainability and GHG emission criteria that transport biofuels must meet in order to be counted towards the overall 14% target and to be eligible for financial support by public authorities.¹⁷ In particular RED II reinforces the measures aimed at reducing ILUC effects and also introduces enhanced sustainability criteria for forestry feedstocks (mostly used for heat and power production).

The principal measures include:

- Biofuels must not be produced from raw materials produced on land with principally land with high carbon stock or high biodiversity.
- Minimum GHG savings thresholds for production plants which become more stringent with time as shown in Table 4.

Table 7 • Greenhouse gas savings thresholds in RED II

Plant operations start date	Minimum GHG Savings
Before October 2015	50%
After October 2015	60%
After January 2021	65%

- The share of biofuels and bioliquids produced from food and feed crops in each member state is restricted to be not more than 1% higher than that in 2020 with a maximum of 7 % of final consumption of energy in the road and rail transport sectors. In (in the Netherlands the limit for food and feed crops will be based on the level of 2020 and will therefore probably much lower than 7%; the draft figure is 1.2%).
- The Directive distinguishes between fuels produced from feedstocks with “high indirect land-use change-risk” for which a significant expansion of the production area into land with high-carbon stock is observed – (principally palm oil).¹⁸ Use of such fuels in each Member State is limited to their level of consumption in 2019 and must decrease to zero between 31 December 2023 and 31 December 2030. However, the Directive recognises that such feedstocks could also be produced by increasing productivity on existing land or by cultivating feedstock on unused land (such as abandoned or severely degraded land), with lower ILUC risk. Fuels produced from such feedstocks can be excluded from these limits.
- Within the 14% transport target, there is a dedicated target for advanced biofuels (i.e., fuels produced from wastes, residues and other cellulosic feedstocks as listed in Part A of Annex IX of the Directive).
- The contribution of fuels produced from these feedstocks must be at least 0.2 % in 2022, 1 % in 2025 and 3.5 % in 2030. Fuels produced from these feedstocks may be considered to be twice their energy content in terms of their contribution towards the EU and national targets (“double-counting”).

- Renewable electricity will count 4 times its energy content towards the 14% renewable energy in transport target when used in road vehicles, and 1.5 times when used in rail transport.
- Fuels used in the aviation and maritime sectors can opt in to contribute to the 14% transport target but are not subject to an obligation. The contribution of non-food renewable fuels supplied to these sectors will count 1.2 times their energy content (and this can be combined with the double counting factor).

IMPLEMENTATION OF THESE REDII REGULATIONS IN THE NETHERLANDS

These principles and measures are applied in NL. The legislation on renewable energy in transport embodies these in terms of the limit on the number of “conventional” biofuels, the separate obligation for “advanced biofuels” and the constraint on Annex IXB biofuels. The current practice of not using biofuels produced from palm oil or soyabean oil in the NL will be continued, and there are no plans to allow fuels produced from feedstocks associated with food or feed production, even if they meet the “low ILUC” standards discussed above.

In order to demonstrate compliance with the sustainability criteria, companies (and therefore also the associated biomass supply chain) who wish to register the volume of biofuels in the register managed by the NEa in order to create tradable units must be certified under a “voluntary” sustainability certification scheme (based on third party independent verification) recognised for RED/RED2 by the European Commission.¹⁹, These schemes must ensure that biofuels are sustainably produced by verifying that they comply with the EU sustainability criteria. As such, the schemes check that:

- production of biofuel feedstock does not take place on land with high biodiversity
- land with a high amount of carbon has not been converted for biofuel feedstock production
- biofuel production leads to sufficient greenhouse gas emissions savings

Several schemes also take into account additional sustainability aspects such as soil, water, air protection and social criteria. For the certification process, an external auditor verifies the whole production chain from the farmer growing the feedstock to the biofuel producer or trader.

An integrated sustainability framework for biomass use is being developed to ensure a consistent approach to biomass use across all sectors in NL.²⁰ This aims to support the principle that as far as possible biomass use should be based on the use of residues and wastes and support the transition to a circular economy. It proposes that in the long term, such resources are focussed on the highest value applications possible. It proposes a phase out of the use of biomass for low temperature heat and power generation and for use in light vehicle transport, while the use of biobased materials in aviation and shipping, for heavy goods transport, and for high temperature heat applications are considered transition opportunities with long term emphasis on using feedstocks for conversion to materials and chemicals.

Support for Innovation

Support has been provided by the Demonstration Scheme for Climate Technologies and Innovations in Transport (DKTI Transport) since 2017. This has provided support for: 1) technology and innovation development at pre-commercial phase; 2) reduction of CO₂, NO_x, fine dust emissions and noise; and 3) transport of alternative fuels, including accelerated roll-out or use of infrastructure for alternative fuels.

In the Climate Agreement € 200 million is reserved for support of production of advanced renewable fuels including advanced biofuels. A support scheme for this funding is currently being elaborated. It is foreseen that in July 2021 a specific call will be launched for climate neutral fuels research in the aviation and marine sector with a budget of 3.3 M€. Maximum support will amount to 0.5 M€/project.

Fuels for aviation and the marine sector are eligible under the Obligation system using the “opt-in” system described above, and benefit from the multiplier of 1.2 on their energy content embodied in the RED 2 provisions.

Policy monitoring development, and review

An annual report on developments in the transport sector is published by the Dutch Emissions Authority which reports on compliance with the annual obligation and developments in the sector including the emissions reductions associated with the use of biofuels and other renewable fuels. It also tracks trends in the feedstocks used for biofuels consumed in NL.

The EU-RED2 was developed through an extensive consultation process involving the European Commission, the European Parliament and the Council of Ministers.

The Directive is currently being re-evaluated to ensure that it is in line with the EU Green Deal.

The new NL policy developments associated with the Climate Act and the revisions to the renewable fuels obligation embodied in the draft new regulations associated with the 2021 Decree and the 2022 – 2030 Decree.

4. NL POLICY AND ANALYSIS

NL - DEPLOYMENT INDICATORS

The Table 5 below shows the NL situation in terms of the indicators identified in the Policy Blueprint methodology.

Table 8 • Deployment Indicators – Netherlands 2019

Current deployment	
% bioenergy in final energy consumption	5.1%
% bioenergy in transport:	6.8%
Growth of bioenergy in transport vs SDS projections for 2025 and 2030:	
Rate of growth 2015/2019	3.48 PJ/y
NL Target for 2030	65 PJ
SDS Biofuels in transport 2030:	67 PJ
Rate of growth needed to 2030	3.16 PJ/y
PII 2030^{iv}	107%
Jobs in NL	
No of jobs/PJ used	73
GHG savings kTCO_{2e}/PJ	
Biofuels in transport PJ	31.6
GHG Savings MTCO _{2e}	2.55
GHG savings – kTCO_{2e}/PJ	80.7
Policy Support	
Support, USD/GJ	10–30 Euros/GJ, 11,50–34.50 USD/GJ ^v
Support – USD: TCO _{2e}	140 – 428 USD/TCO _{2e}

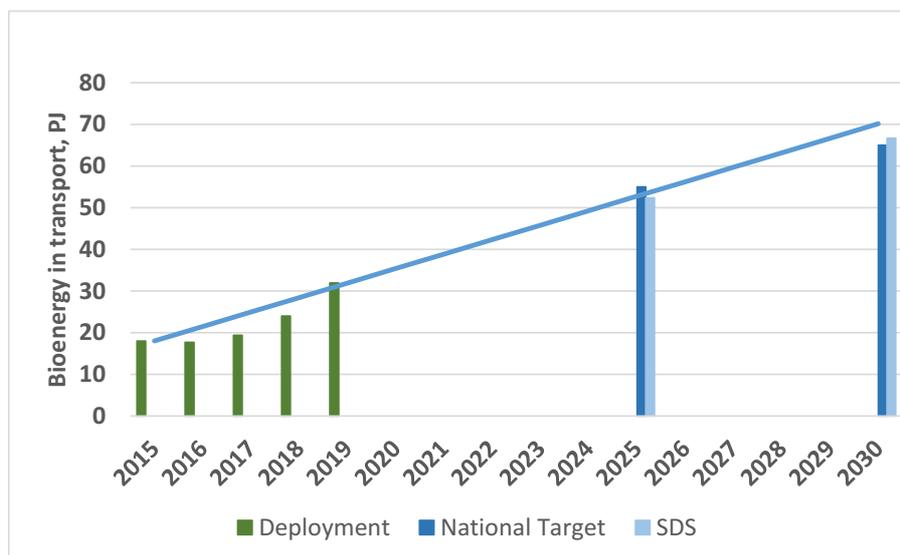
^{iv} PII – Policy Impact Indicator. Compares the rate of increase of deployment between 2015 and 2019 with that needed to meet the level of bioenergy in transport in IEA's Sustainable Development Scenario (SDS) in 2030.

^v Assumes 1 Euro = 1.15 USD.

Current policies (and especially the raised blending obligation) have rapidly increased the contribution of biofuels to NL transport energy needs in order to meet the 10% 2020 target. The proposed new target for renewable fuels for 2030 is 65 PJ by 2030.

The IEA SDS provides a profile for biofuels use at EU level (but not broken down by individual countries).²¹ For the EU the SDS indicates that between 2019 and 2030 total transport demand would decline by some 15% through energy efficiency measures (including increasing electrification). Biofuels use would increase by a factor of 2.8 reaching 16.7% of transport demand. Assuming that in NL demand followed these trends, then biofuels use would reach 52 PJ by 2015 and 67 PJ by 2030. As Figure 8 shows, if current growth rates for biofuels were maintained, these levels would be achieved or exceeded. The current NL target figures are also close to the SDS target levels for 2025 and 2030.

Figure 9 • Trends in bioenergy deployment and SDS projections



POLICY ANALYSIS

Strategic Priority

- NL has established a target for biofuels and other renewable fuels of 24.1% biofuels targets for 2030, significantly higher than the EU target of 14% renewables in transport in the revised Renewable Energy Directive.^{vi}
- This target is close to the level of biofuels associated with the IEA's Sustainable Development scenario for the EU.

Policy clarity and certainty

- Growth in biofuels to meet the internal and EU targets has been successfully driven by a blending obligation and certificate system. Annual obligation levels have been established and these are being extended to 2030, with levels leading progressively to that associated with the 2030 target. This provides a high level of clarity and certainty for investors and market actors.

Market access

- The mandated blends in NL are E10 and B7, with other blends containing 20, 30 or 100% of HVO are available at filling stations. Higher blends including E85 and the wider use of flex-fuel vehicles are not promoted.
- While the Obligation applies to the road transport sector, an "opt-in" scheme for marine biofuels has successfully led to an increase in use of biofuels in this sector.

Financial support or incentives

- The value of policy support therefore amounts to between 10 and 30 Euros/GJ, provided by the award of certificates for qualifying biofuels

^{vi} These targets include provision for "double counting" of biofuels produced from residues and wastes, and the target represents a much lower level in terms of fossil energy replaced.

(HBE's). Fuels produced from waste and residues can qualify for 2 units for each GJ of energy used.

Sustainability Governance

- The EU RED II establishes strict biofuels sustainability criteria which are reflected in the NL approach. These include a minimum GHG saving threshold which rises to 65% in 2021, constraints on conventional crop-based biofuels, incentives for biofuels based on wastes, residues and other cellulosic materials and specific targets for advanced biofuels.
- Companies supplying biofuels to contribute to the blending obligation in the NL market must be certified under a “voluntary” sustainability certification scheme recognised for RED/RED2 by the European Commission.
- The “double counting” system provides a strong incentive for waste-based solutions, especially biodiesel from feedstocks such as used cooking oil (UCO). This provides high levels of GHG savings of around 88% compared to fossil fuels.
- An integrated sustainability framework for biomass use is being developed to ensure a consistent approach to biomass use across all sectors in NL.²² This aims to support the principle that biomass use should be based on the use of residues and wastes and support the transition to a circular economy. It proposes that in the long term, such resources are focussed on the highest value applications possible, and this includes a progressive phase out of the use of biomass for low temperature heat and power generation and for use in light vehicle transport. The use of biobased materials in aviation and shipping, for heavy goods transport, and for high temperature heat applications are considered transition opportunities,

with long term emphasis on using feedstocks for conversion to materials and chemicals.

Innovation

- There is currently limited national support for R, D and D effort aimed at production of novel biofuels including those for aviation. Euro 200 million has been reserved for support of production of advanced renewable fuels including advanced biofuels. A support scheme for this funding is currently being elaborated.
- Fuels for aviation and the marine sector are eligible under the Obligation system using the "opt-in" system described above, and benefit from the multiplier of 1.2 on their energy content embodied in the RED 2 provisions.

SUMMARY

This analysis is summarised in Figure 10.

Figure 10 • Summary of Policy Analysis - NL

