

The Netherlands's Effort to Phase Out and Rationalise its Fossil-Fuel Subsidies

An OECD/IEA review of fossil-fuel subsidies in the Netherlands

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Acronyms and Abbreviations

ACM	The Netherlands Authority for Consumers and Markets
ASCM	Agreement on Subsidies and Countervailing Measures
Bcm	Billion cubic meters
BZM	Heavy-duty vehicle tax
CBS	Statistics Netherlands
CCS	Carbon Capture and Storage
CHP	Combined Heat and Power
CIEP	Clingendael International Energy Programme
CPB	Netherlands Bureau for Economic Policy Analysis
EBN	Energy Management Netherlands
ESR	Effort Sharing Regulation
ETD	Energy Taxation Directive
EZK	Ministry of Economic Affairs and Climate Policy
GHG	Greenhouse Gas Emission
GTS	Gasunie Transport Services
GW	Gigawatt
IBO	Interdepartmental Policy Review
IDR	In-Depth Review
IISD-GSI	International Institute for Sustainable Development – Global Subsidies Initiative
KNMI	The Royal Dutch Meteorological Institute

LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
MRB	Motor Vehicle Tax
Mt	Million tonnes
Mtoe	Million tonnes of oil equivalent
MWe	Megawatt electric
MWh	Megawatt hour
NAM	The Netherlands Petroleum Company
NECP	National Energy and Climate Plan
NSR	Self-Report of Netherlands
ODE	Surcharge for Renewables
PBL	The Netherlands Environmental Assessment Agency
RPE	Periodic Evaluation Research Regulation
RVO.nl	The Netherlands Enterprise Agency
SDE	Stimulation of Sustainable Energy Production
SPS	State Profit Sharing
TCMG	Temporary Committee on Mining Damage Groningen
TEU	Taxing Energy Use
TFC	Total Final Consumption
TPES	Total Primary Energy Supply
TSO	Transmission System Operator
TTF	Title Transfer Facility

Executive Summary

As part of the G20 commitment to phase-out inefficient fossil-fuel subsidies that encourage wasteful consumption, several G20 member countries volunteered to undergo a peer review of their fossil-fuel subsidies. China, Germany, Indonesia, Italy, Mexico, and the United States were the first six countries to participate in such an undertaking. Argentina and Canada are currently working on a reciprocal peer review of their fossil-fuel subsidies and France and India recently announced their commitment to follow suit.

The Netherlands, as an Invited Guest Country under G20 presidencies, looked to apply the peer review framework to evaluate its own fossil-fuels subsidies and identify opportunities for reform. The Netherlands requested that the OECD and the IEA, with their long-standing record of tracking and analysing fossil-fuel subsidies and their experience in the G20 peer reviews, facilitate the review process, in consultation with other stakeholders.¹

This report is the principal outcome of this peer review process, reflecting the IEA and OECD review team's in-person discussions with officials from the Netherlands, but also deliberations among the review team and consultations with stakeholders. After summarising the key aspects of the Netherlands' energy landscape, the report analyses in detail the subsidies and other measures that the Netherlands and the review team have identified in the course of the review process.

As part of its budgetary planning process, the government of the Netherlands conducts periodic policy evaluations of its tax expenditures and subsidy programmes. This review complements the government's efforts to cast light on the state of fossil-fuel subsidies and their relevance for the broader energy, climate and fiscal policies in the country. In support of this review the government of the Netherlands produced a self-report (NSR) identifying 13 individual fossil-fuel subsidy measures in the form of tax exemptions or reductions, benefitting both the production and consumption of fossil fuels. Together, they amount to at least EUR 4.48 billion of revenue forgone for the government. While no subsidies were put forth for reform in the NSR, the government views this review process as part of its commitment to better align its policies with its climate and energy-transition objectives and to "green" its tax system. This report will be used to inform the government's response to questions from Parliament concerning fossil-fuel subsidies and the potential need for reforms.

In this peer review, the Netherlands chose to maintain a broad definition of fossil-fuel subsidies that extends beyond a narrow definition of "subsidies" whereby government budgetary transfers are used to directly affect prices. The scope of the review accounts for both direct budgetary transfer and tax measures that result in government revenue forgone. Tax-related measures are the main mechanism through which the government of the Netherlands delivers support to fossil fuels. Several exemptions and reductions are granted to energy-intensive industries and other energy-consumer groups. Although the burden sharing between households and companies has changed recently, energy taxes in the Netherlands are still very

¹ The OECD and IEA has been supporting the commitments that countries' leaders made under the G20, APEC, and G7 to "phase out and rationalize over the medium term inefficient fossil fuel subsidies that encourage wasteful consumption." OECD support includes the periodic release of the Inventory of Support Measures for Fossil Fuels, which uses data obtained from government sources to produce estimates of budgetary transfers and tax expenditures used to support fossil-fuel production and consumption. The OECD is chairing the peer reviews of fossil fuel subsidies under the auspices of the G20. IEA support includes annual country-by-country estimates of global fossil-fuel consumption subsidies and analysis of the impacts of pricing reforms.

degressive, translating into a heavier tax burden on households and other small-scale energy consumers. The review team notes that the inclusion of the degressive energy tax structure in the NSR is an important step towards assessing the efficiency of this policy design and identifying avenues for reform.

The review team notes also the centrality of the EU Energy Tax Directive (ETD) – a framework legislation that harmonises energy taxes in the EU to ensure the well-functioning of the Single Market – in deciding the scope of fossil-fuel subsidies in the Netherlands. Reforms of the Dutch tax measures conferring preferential tax treatment to different sectors will depend on a concerted EU effort and better alignment of tax policy with the EU's Emission Trading System (ETS). As some of these measures are mandatory under the EU ETD, they are not included in tax expenditures reports of the Netherlands and therefore not subjected to the periodic evaluation process. The review team encourages the government of the Netherlands to include these measures in its tax expenditure reporting.

A main reason the government of the Netherlands invoked for maintaining low effective tax rates on energy-intensive users is to provide an international level playing field for their domestic industries and reduce the risk for carbon leakage. The low tax rates levied on larger energy consumers and the tax benefits provided to industrial users imply relatively lower energy prices for natural gas than for other IEA country industrial users, including neighbouring EU states. The review panel suggests that the government of the Netherlands continue to assess the sectors that are most at risk of carbon leakage in order to better target its subsidy programmes and identify alternative measures. The carbon levy that will be introduced in 2021 for reducing industrial emissions is a welcomed effort towards aligning carbon prices with climate objectives.

Government support for fossil fuels extends beyond measures provided through lower taxation on energy use. While production from the Groningen natural gas field will be phased out by mid-2022, a recent increase in the investment allowance from 25% to 40% has been granted to promote production from other fields. Other incentives to the upstream oil and gas sector were not covered in the NSR and the review team recommends that the government of the Netherlands broaden the scope of production subsidies it considers for its period policy evaluations.

By undertaking a peer review of their fossil-fuel subsidies, the government of the Netherlands is taking an important step to promote the transparency of public policies and government budgets and foster a greater accountability of its use of public resources. This peer review also answers to the European Commission recommendation requesting its Member States to “list all energy subsidies, including in particular for fossil fuels, and actions undertaken as well as plans to phase them out” in their respective National Climate and Energy Plans (NECPs). The Netherlands draft NECP stated that the country does not have any subsidies for the consumption of energy from fossil fuels, but that some exemptions to energy taxation and lower rates may actually result in higher consumption of fossil fuels. The finalised NECP was delivered to the European Commission at the end of 2019. It expands the scope of fossil-fuel subsidies and specifically refers to this report as an input for formulating Dutch policy on fossil-fuel subsidies. Another step towards more transparency is the recent Netherlands report under the Extractive Industries Transparency Initiative.²

The planned 2020 evaluation of energy taxation is an opportunity for the Netherlands to identify reform options. When doing so, the government is encouraged to maintain a broad interpretation of tax and non-tax provisions that support the use and production of fossil fuels, including those that fall under the purview of the EU ETD. In particular, incentives to the production of fossil fuels should be examined as part of the evaluation of energy taxes to build a more complete picture on how government support measures influence both the demand and supply of fossil fuels and the accumulation of long-lived carbon-intensive capital.

² Rapport 2017; Nederland Extractive Industries Extractive Industries, <https://www.rvo.nl/sites/default/files/2020/01/NL-EITI%20rapport%202017.pdf>

1. Introduction

1.1. Background and context

Fossil-fuel subsidy reviews are being undertaken in a number of contexts globally. G20, G7 and Asia-Pacific Economic Cooperation (APEC) Leaders committed in 2009 to rationalise and phase out inefficient fossil-fuel subsidies over the medium term while providing targeted support to limit the impact on low income households. To follow up on this commitment, members of both groups have since engaged in a voluntary process of periodically reporting on their fossil-fuel subsidies.

In an effort to further facilitate the sharing of experience and mutual learning among G20 members, G20 Finance Ministers announced in February 2013 that they would seek to develop a framework for voluntary peer reviews for rationalising and phasing out inefficient fossil-fuel subsidies that encourage wasteful consumption. Since 2013, the United States, the People's Republic of China (hereafter 'China'), France, Germany, Mexico, India, Indonesia, Italy, Argentina and Canada have completed or committed to undertake peer reviews of their own subsidies under this G20 framework. A similar exercise took place in the context of APEC, with Peru, New Zealand, the Philippines and Chinese Taipei, each having already undergone a peer review of their subsidies in, respectively, 2014, 2015, 2016 and 2017.

The peer review process is completed in several steps. The country under review submits terms of reference for its review, defining the scope and the timeline, designates a review panel comprised of other G20 country representatives, and if it so chooses representatives from non-G20 countries and experts from civil society and academia and the OECD as a Secretariat. At the same time, the country under review submits a self-report of its fossil-fuel subsidies that would be discussed in an in-person meeting with the review panel for evaluation of fossil-fuel subsidies. The peer review is completed with a final report produced by the review panel that proposes options for evaluation and reform of the country's fossil-fuel subsidies.

The Netherlands is undertaking a review of its fossil-fuel subsidies (FFS), led by Ministry of Economic Affairs and Climate Policy and the Ministry of Finance. In reviewing the efforts of the Netherlands to reform their fossil-fuel subsidies, the review team followed a process similar to that followed in G20 peer reviews.

The government of the Netherlands organised a stakeholder consultation on 1 October 2019 with academics, and representatives of civil society organisations, the IEA and the OECD.³ The aim of the stakeholder meeting was to discuss definitions and methods for developing a list of fossil-fuel subsidies that would be submitted for review. The preparatory material consisted of a draft paper that had been prepared by the Clingendael International Energy Programme (CIEP) and a discussion paper prepared by the Ministry of Economic Affairs and Climate Policy and the Ministry of Finance. Based on the results of the stakeholder meeting, the government developed a self-report (NSR hereafter). The NSR sets out the working definition of subsidies considered by the Dutch government and includes an inventory of 13 fossil-

³ Participants in the stakeholder meeting were: Herman Vollebergh, PBL; Frans Oosterhuis, VU Amsterdam; Martijn Blom, CE Delft; Laurie van der Burg, Milieudefensie; Peter Wooders, IISD; RonRonald Steenblik, IISD; Harro van Asselt, UEF; Coby van der Linde; CIEP, Pier Stapersma, CIEP, Assia Elgouacem, OECD; Nathalie Girouard, OECD, Peter Journeay-Kaler, IEA.

fuel subsidies of both tax and non-tax measures for consumption and production. The NSR includes estimates of the fiscal cost of each subsidy, a description of the measures and their intended objectives.

The government chose fossil-fuel subsidies as one of the focus areas for the IEA In-Depth Review (IDR), and asked the OECD and IEA IDR review team to examine policies that support fossil fuels and provide policy options for reforming their subsidies in light of the transition to a low-carbon energy system. The IDR review team visit took place 20-24 November 2019 and included a session dedicated to fossil-fuel subsidies. Based on the findings of this session and additional inputs from the government, the OECD in collaboration with the IEA IDR review team developed this stand-alone report of fossil-fuel subsidies in the Netherlands taking into account contributions from the stakeholders' consultation. The recommendations of this report will be summarised in the IDR report. This report provides an evaluation of Dutch fossil-fuel subsidies that can inform the reform process in the Netherlands. The Ministry of Economic Affairs and Climate Policy will submit a Letter to Parliament articulating its position on fossil-fuel subsidies and their reform. The Letter will draw on the conclusions put forth in this report and propose next steps for this policy agenda.

Peer reviews of inefficient fossil-fuel subsidies are a mechanism for generating and sharing information, knowledge exchange, and an invaluable commitment to transparency. They encourage capacity building in the measurement and tracking of government policies that may confer a benefit to the use and production of fossil fuels. For countries under review, peer reviews create an opportunity for cross-ministerial co-ordination and discussion on policy coherence. Peer reviews reveal, both for countries under review and participating panel members, the importance for governments to regularly evaluate subsidies' effectiveness and efficiency, and therefore their relevance, as policy instruments. The review processes also provide successful examples of reforms and point to the importance of complementary policies to alleviate adverse effects on a country's vulnerable populations and the competitiveness of their industries.

By undertaking a review of its fossil-fuels subsidies, the Netherlands is following through on its commitment to align its public financial flows with its climate objectives and transition to a low-carbon economy. The review process is thus an opportunity to evaluate current fiscal and other government support policies that may tilt the energy playing fields toward fossil-fuel use and production. The review process can help identify areas for reform and better policy alignment.

1.2. The scope of fossil-fuel subsidies

Although the G20 has not adopted a formal definition of what constitutes a fossil-fuel subsidy, the terms of reference prepared by the six countries that had, as of 2019, completed their peer reviews took note of the fossil fuel subsidy studies carried out by international organisations such as the International Monetary Fund, the OECD, and the World Bank, as well as the International Institute for Sustainable Development Global Subsidies Initiative (IISD – GSI).

These studies served as references for the Netherlands and a point of departure to build on the country's preliminary deliberations and inform the reform process. After considering the various fossil-fuel subsidy definitions, the Netherlands selected the World Trade Organization's definition of subsidies for its review. Under the Agreement on Subsidies and Countervailing Measures (ASCM),⁴ the World Trade Organization's definition indicates that *a subsidy shall be deemed to exist if:*

- i) *practice involves a direct transfer of funds (e.g. grants, loans, and equity infusion), potential direct transfers of funds or liabilities (e.g. loan guarantees);*

⁴ https://www.wto.org/english/docs_e/legal_e/24-scm.pdf

- ii) *government revenue that is otherwise due is foregone or not collected (e.g. fiscal incentives such as tax credits);*
- iii) *a government provides goods or services other than general infrastructure, or purchases goods;*
- iv) *a government makes payments to a funding mechanism, or entrusts or directs a private body to carry out one or more of the type of functions illustrated in (i) to (iii) above which would normally be vested in the government and the practice, in no real sense, differs from practices normally followed by governments;*

or

- (b) *there is any form of income or price support in the sense of Article XVI of GATT 1994;*

and

- (c) *a benefit is thereby conferred.*

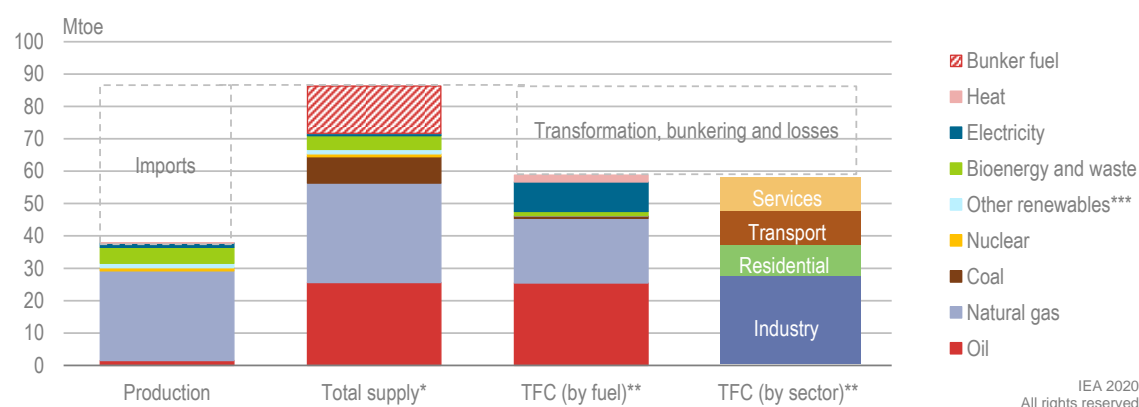
The NSR considers those measures that result in revenues forgone as subsidies and as the most relevant for this review. Tax expenditures have featured in most of the G20 peer reviews as fossil-fuel subsidies and are considered as government support according to the OECD *Inventory of Support Measures for Fossil Fuels* (OECD, 2015^[1]). Additionally, the newly established method for tracking the Sustainable Development Goal (SDG) target 12.c to “rationalize inefficient fossil fuel subsidies that encourage wasteful consumption”, recommended the OECD inventory approach for tracking progress in this area (UNEP, OECD, IISD, 2019^[2]). Members of the United Nations, including the Netherlands, are expected to annually report on fossil-fuel subsidies between 2020 and 2030 to track progress towards this goal.

2. Energy sector overview

2.1. Energy supply and demand

The Netherlands relies largely on fossil fuels for its energy supply. In 2018, the country's total primary energy supply (TPES) was 72 Mtoe, with fossil fuels accounting for 90%. Domestic energy production was 37 Mtoe, equal to 51% of TPES (Figure 2.1). Around 75% of domestic energy production came from natural gas, but this share is declining fast, following the decision to close the Groningen gas field by mid-2022. Oil and natural gas are the largest energy sources in both TPES and total final consumption (TFC). Oil is used mainly in transport and industry, while natural gas dominates energy consumption in residential and commercial buildings. Natural gas and coal are the largest sources of electricity generation.

Figure 1. Overview of energy production, supply and consumption, 2018



* TPES plus international bunker fuel.

**TFC data from 2017.

***Other renewables includes solar, hydro, geothermal and wind energy.

Note: The Netherlands has large storage facilities for bunkering fuels, which are used in international shipping and aviation. The Netherlands mainly holds marine bunkers. Bunkering fuels are not included in TPES, but if counted, would represent over a third of total oil supply in 2018.

Source: IEA (2019), *World Energy Balances 2019*, www.iea.org/statistics/

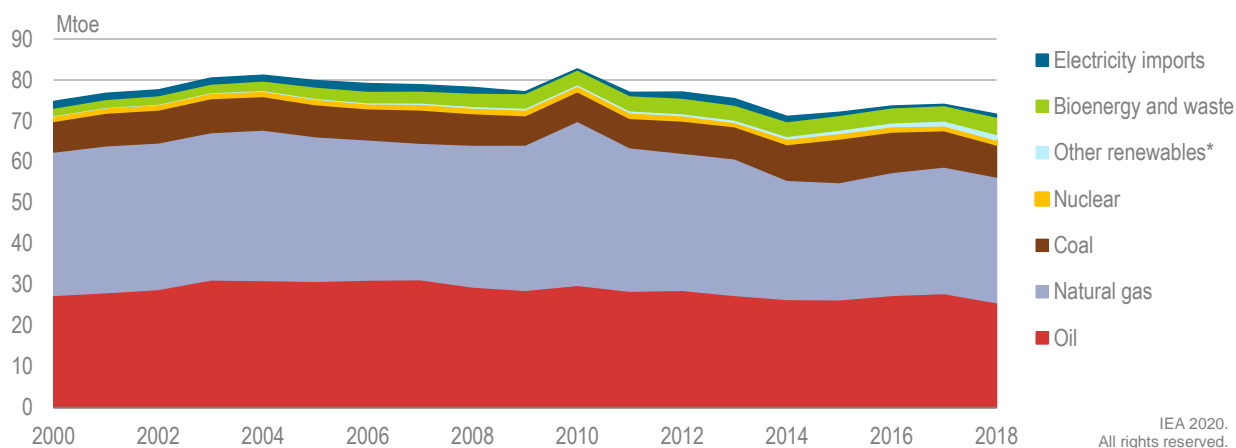
Energy supply

TPES has been relatively stable, at around 75-80 Mtoe since the early 2000s, but has declined slowly since a peak of 83 Mtoe in 2010 to reach 72 Mtoe in 2018 (Figure 2.2). In 2018, natural gas accounted for the largest share of TPES (43%), followed by oil (36%), coal (11%), bioenergy and waste (6%), small shares of other renewables – wind, PV, hydro and geothermal energy – (2%), nuclear power (1%) and electricity imports (1%).

The share of fossil fuels in TPES declined slightly, from 93% to 90% between 2008 and 2018. Over the same period, the supply of renewable energy increased from 2.9 to 4.6 Mtoe, to reach 6% of TPES in

2018. Coal supply peaked in 2015 at 10.9 Mtoe, as coal power generation spiked in response to rising natural gas prices. Since 2015, the share of coal in TPES has declined from 15% to 11% in 2018.

Figure 2. TPES by source, 2000-18



*Includes wind, solar, geothermal and hydro.

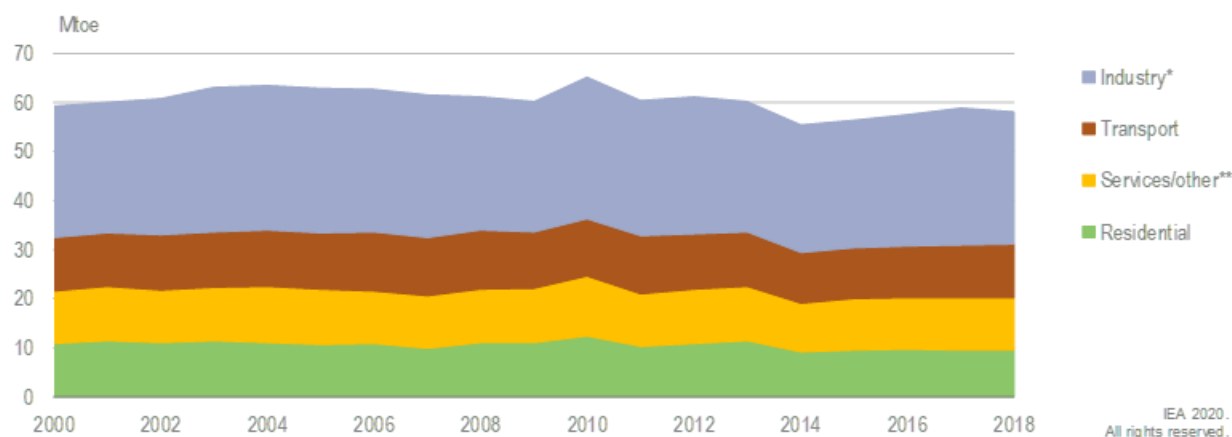
Source: IEA (2019), *World Energy Balances 2019*, www.iea.org/statistics/

Energy demand

The Netherlands' TFC peaked at 65 Mtoe in 2010, due mainly to high natural gas consumption during an unusually cold winter (Figure 3). After 2010, TFC declined until 2014, when it started to increase slightly across all sectors to reach 58 Mtoe in 2018. The industry sector is the largest energy consumer, accounting for 46% of TFC in 2018, followed by the transport sector at 19%, the services and other⁵ sector at 18%, and the residential sector at 18%. Oil accounted for the largest share of TFC (43%), followed by natural gas (34%), electricity (16%) and district heating (3%). The remaining 4% of TFC was provided by direct consumption of renewables and waste and by coal.

⁵ The services and other sector includes energy consumption by commercial and public services, agriculture, forestry and fishing.

Figure 3. TFC by sector, 2001-18



Note: *Industry includes non-energy consumption. **Services and other includes commercial and public services, agriculture, forestry and fishing.

Source: IEA (2019), *World Energy Balances 2019*, www.iea.org/statistics/

2.2. Energy resources

Natural gas is the main domestic energy resource and accounted for 76% of the total domestic energy supply in 2018. The Netherlands has limited domestic oil production, but notable biomass resources linked to its large agricultural sector, and a strong offshore wind resource.

Approximately 25% of all natural gas reserves in the European Union are located in the Netherlands, primarily in the Groningen gas field, which is one of the largest gas fields globally. However, the Netherlands gas production has been falling rapidly due to multiple earthquakes in the north of the country, which led the Dutch government to start phasing out gas production from Groningen. In September 2019, the Dutch government announced a new phase-out plan for Groningen, according to which the field should stop producing natural gas by mid-2022, almost eight years earlier than previously planned. The production cap for the 2019/20 gas year was lowered to 11.8 bcm (billion cubic meters) compared to 53 bcm of production in 2013.

From 2000 to 2013, total energy production in the Netherlands was relatively stable between 60 to 70 Mtoe with natural gas consistently accounting for around 90% of energy production. However, total energy production in the Netherlands has declined every year since 2013, primarily as a result of falling natural gas production. In 2018, total energy production was 36.5 Mtoe with a 76% share from natural gas. As domestic energy production has dropped, the self-sufficiency rate (domestic production divided by TPES) decreased from around 90% in 2013 to around 50% in 2018. Meanwhile, domestic production of renewables increased. Bioenergy and waste accounted for 14% of total energy production in 2018 (compared to 4% in 2008) and other renewables, mostly offshore wind and PV, contributed 4% (compared to 0.6% in 2008).

Natural gas

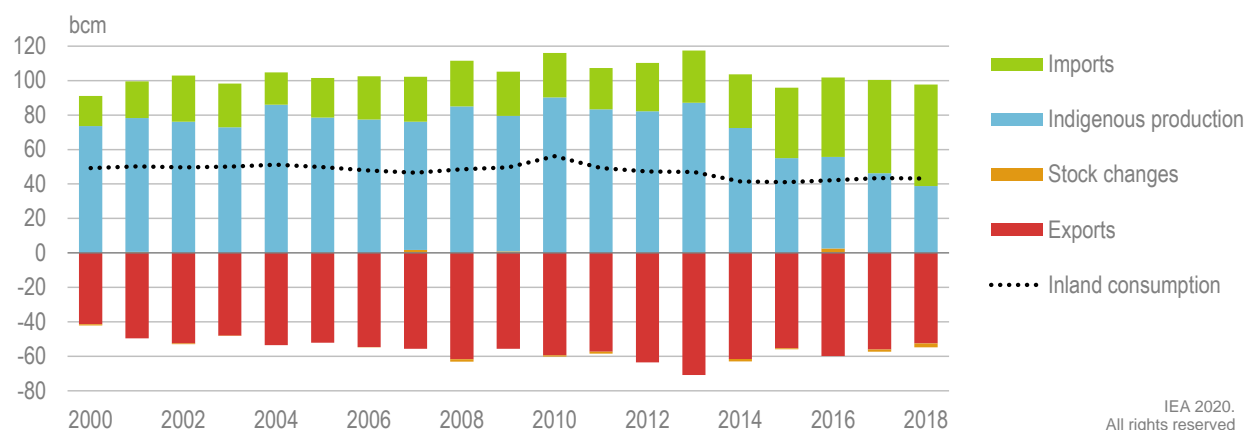
Natural gas is a major energy source in the Netherlands. In 2018, gas accounted for the largest share of TPES (43%), half of electricity generation, and around a third of TFC. However, after peaking at 40 Mtoe in 2010, consumption of natural gas declined to around 30 Mtoe in 2014 and has not increased significantly since then. The power and heat generation sector was the largest gas consumer in 2017, accounting for 31.5% of total gas consumption (9.7 Mtoe). The demand for electricity from gas depends on its price competitiveness versus other generation sources, notably coal, in the electricity market. Over the last

decade, gas consumption in heat and electricity generation has declined from 14 Mtoe in 2010 to 8 Mtoe in 2015, but increased to 10 Mtoe in 2017.

The residential and service sectors together accounted for 39% of total gas consumption (residential: 6.9 Mtoe, services: 5.2 Mtoe) primarily for heating. Gas consumption in the residential sector fluctuates with heat demand, from a high of 9.7 Mtoe in 2010 to a low of 6.3 Mtoe in 2014. Industry accounted for 25% of gas demand in 2017, more than half of which was used in chemical industry. Industry demand is more stable than other sectors at around 8 Mtoe per year from 2007-17.

Because of falling production from the Groningen field and stable gas demand, the country became a net importer for the first time in 2018 (Figure 2). The Netherlands is a large regional gas hub and trades through a number of interconnections with neighbouring countries. The largest amount of natural gas was imported from Norway, followed by Russia, Germany and the United Kingdom. Natural gas exports, which have decreased over the last five years, went mostly to Germany, followed by Belgium, Italy and France. The Title Transfer Facility (TTF) is a virtual trading point for natural gas in the Netherlands. It is one of the most liquid gas markets in Europe, where producers sell to suppliers with or without facilitation through intermediary traders. TTF is the largest hub in continental Europe with 146 parties active and a wide range of products traded (within-day, day-ahead; month ahead, quarter ahead, seasons ahead and calendar year).

Figure 4. Natural gas supply by source, 2000-18

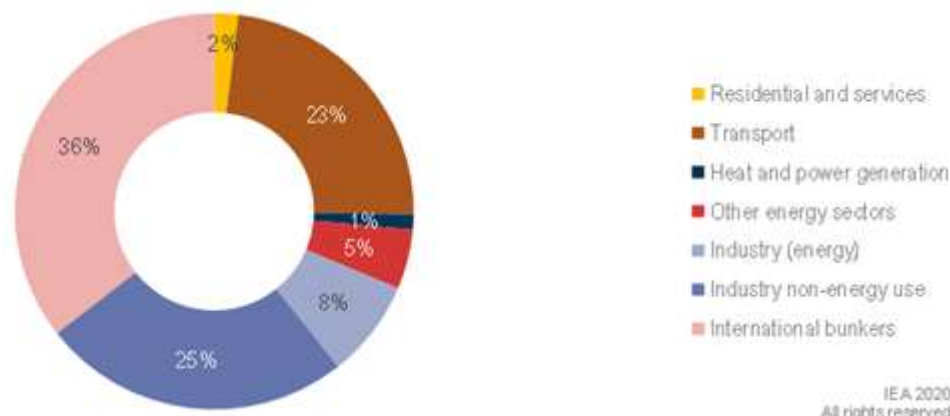


Source: IEA (2019), *World Energy Balances 2019*, www.iea.org/statistics/

Oil

Oil is the largest energy source in TFC and the second largest in TPES after natural gas. The Dutch oil supply has fallen by 11% over the last decade, but has become relatively stable at around 27 Mtoe in recent years. Transport and industry are the main sources of oil demand (Figure 5). International bunkering of shipping and aviation fuels accounted for 36% of demand in 2017. Domestic transport, which is the largest oil consuming sector for most IEA member countries, accounted for less than a quarter of Dutch oil demand. Industry accounted for a third of oil demand, primarily for non-energy uses in the chemical and petrochemical processes. Oil dominates road transportation consumption. In 2018, diesel accounted for 54% of road transportation consumption, gasoline was 40% while remainder came from small shares of biofuels, LPG and electricity.

Figure 5. Oil supply by source, 2000-18



The Netherlands produces only small amounts of crude oil, accounting for only 2% of its crude-oil supply in 2018. However, the country is a major player in both oil refining and distribution. There are six refineries in the Netherlands, with a total capacity of 1.3 million barrels per day. These refineries have consistently produced at close to maximum capacity in recent years. Oil imports and exports by far exceed domestic demand. In 2018, the Netherlands produced 60 Mt of oil products, imported 87 Mt and exported 108 Mt, while domestic demand was 28 Mt and international bunkers accounted for 11 Mt. In the Rotterdam area and the southwest of the country a huge grid of oil pipelines connects the terminals, depots, refineries and Schiphol airport. Pipelines also send oil and oil products to major industrial areas in Germany and Belgium. Oil product imports come principally from Russia and the United Kingdom while most exports go to Germany, Singapore and Belgium.

Coal

The Netherlands has no domestic coal production (its last coal mine was closed in 1974) and depends entirely on imports. In 2018, the country imported 8.2 Mtoe of coal, 36% from Russia, 22% from the United States, 16% from Australia and 15% from Columbia. The rest came from various smaller suppliers.

Coal is the third largest energy source in TPES and the second largest in electricity generation. Total coal consumption in 2017 was 9.1 Mtoe, 74% of which was steam coal used for heat and power generation. 85% of steam coal was consumed in plants generating electricity only and 15% in combined heat and power (CHP) plants. Coal consumption increased by nearly 50% in four years between 2011 and 2015 due to higher consumption for electricity generation as cheaper coal replaced more expensive generation from natural gas power plants and because three new coal plants, with a combined 3.47 GW of capacity, were commissioned in 2015. Coal electricity generation increased from 25 TWh in 2011 to 42 TWh in 2015, but decreased to 30 TWh in 2018.

On 11 December 2019, the Netherlands passed a law requiring an end to the use of coal in electricity generation by 1 January 2029. Older plants with an efficiency of less than 46% must stop using coal by 1 January 2024. By these dates, coal-fired plants must have fully converted to alternative fuels or must be shut down. Under this law the 0.63 GW Hemweg 8 coal plant would have had until 1 January 2024 to stop using coal. However, as a result of the Urgenda legal case requiring action to reduce CO₂ emission by 2020⁶ the Hemweg 8 plant was permanently closed at the end of 2019. Besides steam coal used in power generation, coking coal is used both for generating heat in the steel industry and in coke ovens and

⁶ Under legal proceedings known as the Urgenda case, the Dutch Supreme Court reached a decision on 20 December 2019 requiring the government to take immediate action to reduce CO₂ before the end of 2020. <https://www.urgenda.nl/en/themas/climate-case/>

blast furnaces. Demand for coking coal has been stable from 2007 to 2017, when it accounted for 26% of total coal consumption.

Renewable energy

The Netherlands has experienced significant growth in renewable energy in recent decades. Bioenergy dominated the primary supply of renewable energy while wind energy is the largest renewable source in power generation. In 2018, bioenergy totalled 3.3 Mtoe, or 4.6% of TPES. In 2017, almost two-thirds of bioenergy was used for electricity or district heating production.

Renewable energy in electricity generation increased from 9% in 2008 to 16% in 2018. Despite the rapid growth, the share is still the eighth lowest among IEA members. Wind generation nearly doubled during the period 2013-2018 to reach 9.3% of total electricity generation. Offshore wind in particular has increased rapidly, and accounted for around one third of total wind power in 2018 with plans for substantial new capacity to be commissioned in the near future. Electricity production from solar photovoltaic panels has also experienced rapid growth recently, doubling its generation in the past two years to reach 2.8% of total electricity generation in 2018.

2.3. Energy sector institutions

The Ministry of Economic Affairs and Climate Policy has a broad mandate covering general energy policy, nuclear energy policy and renewable energy policy along with policies relating to climate change, the environment, natural resources and mining. The Ministry is also responsible for commercial policy, industrial policy, investment policy, technology policy and tourism affairs.

Responsibility for energy efficiency is shared among several ministries and implementing agencies. The Ministry of Economic Affairs and Climate Policy is the lead for general energy efficiency policy and for efficiency measures in the industry and energy sectors; the Ministry of the Interior and Kingdom Relations is responsible for energy efficiency in buildings; the Ministry of Infrastructure, Water Management is responsible for energy efficiency in the transport sector; and the Ministry of Agriculture, Nature and Food Quality is responsible for energy efficiency in the agriculture sector.

The Ministry of Education, Culture and Science is responsible for research, development and demonstration (RD&D), including energy RD&D, through publicly funded universities and research institutes. Other energy-related authorities include:

- The Netherlands Authority for Consumers and Markets (ACM) is the competition authority and regulatory authority for gas, electricity and heat.
- TenneT is the electricity transmission system operator (TSO), Gasunie Transport Services B.V. (GTS) is the owner and TSO of the national gas transmission network. TenneT and GTS are, both 100% owned by the Ministry of Finance.
- The Netherlands Environmental Assessment Agency (PBL), an autonomous research institute within the Ministry of Infrastructure and Water Management, is the national institute for strategic policy analysis in the fields of the environment, nature and spatial planning.
- The Netherlands Bureau for Economic Policy Analysis (CPB) is the main research institute concerned with economic and policy analysis; CPB is responsible for assessing the economic impacts of the policy proposals in the Climate Agreement.
- The Royal Dutch Meteorological Institute (KNMI) focuses on collecting and analysing climate data and develops climate models and climate scenarios.

- The Netherlands Enterprise Agency (RVO.nl) is the main implementing agency for energy efficiency and renewable energy policies and acts as an intermediary between energy producers and end-users and the government to encourage sustainable development in the field of energy and the environment.
- CBS Statistics Netherlands is an autonomous agency responsible for collecting and processing data in order to publish the national and European statistics.
- The Pollutant Release and Transfer Register (PRTR) serves a repository for data on air, water and soil pollutants.

2.4. Energy prices and taxes

The electricity and natural gas prices in the Netherlands have three key components: 1) energy costs, 2) network costs, and 3) taxes (including levies and charges). The share of each of these three components in the final price paid by consumers depends in part on the level of consumption, applicable rate classes and energy type. A rough indication for consumers in the Netherlands is that the final price consists of 15-24% network costs, 30-40% taxes and 44-51% energy costs.

In 2018, Dutch households paid USD 210/MWh for electricity, which is close to the IEA median value of USD 200/MWh. Tax accounted for 26% of the total, which is slightly higher than the median tax rate of IEA member countries (22%). The Dutch electricity price for industries was USD 93/MWh, which was slightly lower than the IEA median of USD 102 /MWh. However, tax accounted for 24% of the electricity price, which was the seventh highest tax rate among IEA member countries.

Gas retail prices in the Netherlands vary greatly between consumer classes. In 2018, industry paid USD 30/MWh of which 17% were taxes. This placed the country seventh lowest in terms of industrial gas price among IEA member countries. Dutch households paid USD 95/MWh of which 54% were taxes. The price is the sixth highest among IEA member countries and is above the IEA median of USD 74/MWh. The household tax rate is the highest among IEA member countries.

The Netherlands has an open, non-regulated, competitive oil market and does not impose any price control on oil products. The actual price at the retail service stations is based on supply and demand dynamics. There are many retailers in the Netherlands. For unleaded gasoline, the Netherlands has the highest price and tax among IEA member countries at USD 1.79 per litre in the first quarter of 2019, 67% of which was tax. In comparison, the price of automotive diesel ranked 12th highest in the IEA at USD 1.51 per litre, of which 54% was tax. The median price of IEA member countries was USD 1.46 per litre). Heating oil prices were the fifth highest among IEA member countries at USD 1.51 per litre, 63% of which was tax.

The Netherlands has a broad energy tax that must be paid for electricity or gas supplied via the distribution network or a direct line, purchased on the exchange or obtained through other means. Consumers are also required to pay value added tax, currently 21%.

The rate of the energy tax depends on the amount of natural gas and electricity consumed and declines strongly as consumption increases. Energy tax rates are adjusted on an annual basis. No energy tax is owed for the onsite consumption of self-produced:

- Electricity from renewable energy
- Electricity from CHP plants
- Electricity from an emergency generator in the event of failure of supply
- Landfill gas, sewage treatment gas or biogas

A reduced energy tax rate applies to natural gas used for heating in the horticulture sector. Natural gas that is used as an input for the production of electricity is exempt from energy tax under certain conditions, in accordance with the Energy Taxation Directive. With regard to non-profit institutions and religious buildings, the energy tax provides for a partial refund scheme.

In addition, there is a reduced energy tax rate for locally generated renewable electricity. If a co-operative or an owners' association generates renewable electricity and supplies it to its members, then those members would be entitled to this lower rate under certain conditions. In some cases, an energy tax refund may be obtained, including for district heating and for participation in a multi-year contract.

Under the energy tax directive, international aviation is exempt from excise duty on kerosene. Under the Convention of Mannheim, fuels used by craft using coastal or inland waterways are exempt from excise duties.

To encourage reduction of industrial CO₂ emissions the government is establishing a carbon levy that will come into effect in 2021. The levy must be paid on industrial emission above a certain threshold, which will be set by the government to drive emission reductions from industry in line with the Climate Agreement. The emission threshold triggering payment of the levy will be reduced annually until at least 2030.

The levy aims for emission reductions beyond those required under ETS and necessitates a payment on top of any ETS payments. The government is aiming to design and manage the levy in combination with the SDE++ support scheme in a manner that allows domestic companies to stay competitive while investing in cost effective emission reductions measures. It is expected that about half of the SDE++ budget (which should reach around EUR 1 billion per year by 2030) will support projects in reducing industry emissions.

Funds for SDE+ and SDE++ are provided by the Surcharge for Sustainable Energy Act levy (ODE), an additional charge on all taxed energy consumption. Until 2020, households provided half of ODE funding with the other half coming from businesses. In 2020, the ODE will be adjusted so that two thirds of funding comes from business and only one third from households.

2.5. Energy policy overview

Looking to 2030, the primary focus of Dutch energy policy is transitioning to a low-carbon energy system; in short: energy policy has become mostly climate policy in the Netherlands. On 10 October 2017, the Dutch Parliament passed a Coalition Agreement, which established a national target to reduce greenhouse gas emissions (GHG) by 49% by 2030 compared with 1990 as the central policy measure to drive energy transition in the Netherlands. Until 2017, the Netherlands has reduced its total GHG emissions by 13% compared with 1990, excluding international aviation and shipping. With international transport, emissions have only reduced by 3% compared with 1990. The 2017 Coalition Agreement also contained 2050 targets for GHG emission to be reduced by 95% versus 1990 and for 100% of electricity to come from renewable energy.

Following the 2017 Coalition Agreement, a Climate Agreement was developed based on roundtable discussions of more than 100 parties to develop specific measures to achieve the 49% reduction goal. In June 2019, the Dutch government approved the Climate Agreement. The Agreement translates the 49% reduction target into a goal of reducing annual GHG emissions below 48.7 MtCO₂ by 2030 with indicative goals for emission reductions across five sectors, as shown in Table 1.

Table 1. Indicative 2030 emission reduction targets, by sector

Sector	2030 CO ₂ emission reduction target
Electricity	20.2 Mt
Industry	14.3 Mt
Transport	7.3 Mt
Agriculture and land use ⁷	3.5 Mt
Built environment	3.4 Mt
TOTAL	48.7 Mt

Note: These reductions are only indicated of the sectoral contributions to meet the overall 2030 Climate Agreement goal and do not include reductions that would result from policies already in place.

Source: IEA (2019a), *World Energy Balances 2019*, www.iea.org/statistics/

In addition to the Climate Agreement, for the first time a Climate Act was adopted in 2019 by Parliament, establishing a long-term legal framework for government climate policies. The Climate Act contains a structural and legally binding framework for planning, anchoring and regularly assessing and evaluating progress towards the climate targets. The Climate Act requires an annual climate and energy outlook report developed by PBL, which provides information on realised and projected effects of the measures in the Climate Agreement.

On 1 November 2019, PBL delivered its first assessment of the Climate Agreement indicating that the measures proposed in the agreement are insufficient to achieve the 49% reduction target. PBL's analysis shows that Climate Agreement measures would result in a reduction of 43-48% at best. PBL noted that the Climate Agreement did not account for potential reductions in natural gas prices. Lower natural gas prices would lead to increased use of natural gas in domestic power generation and reduced electricity imports, which would therefore result in increased domestic emissions. PBL also noted that the sales of larger, inefficient cars (SUVs) are increasing more than expected and, if not addressed, would result in higher transport sector emissions.

To support the achievement of Climate Agreement targets the government intends to use a “push and pull” strategy to reach the national 2030 and 2050 goals. The pull comes from financial support through RD&D and various subsidies. The current main subsidy scheme SDE+ (which provides market premiums for renewable electricity and renewable (bio)gas) will be transformed from a scheme supporting only renewables into a scheme (SDE++) which supports several further activities and investments that reduce CO₂, such as carbon capture and storage (CCS).

The push part consists of taxes and levies such as the energy tax and increased tax on natural gas. Fiscal policy is currently used to support the uptake of low and zero emission cars. A minimum carbon price will be introduced in the electricity sector as well as a carbon levy for industry. The carbon levy aim is to push industry to reduce emissions at a higher level than required by EU policy. This could increase the number of available ETS-credits on the market and might affect the market price of CO₂ depending on how the Market Stabilisation Reserve develops.

As an EU member, the Netherlands has energy-sector targets driven by EU Directives. In line with EU directives, the Netherlands submitted a finalised National Energy and Climate Plan (NECP) at the end of 2019. The NECP are 10-year plans that define policies and measures EU Member States will implement to attain the EU energy and climate targets for 2030. The NECP details the plans to meet the EU required targets for GHG reductions, renewable energy and energy efficiency. The Dutch NECP in general refers to the Climate Agreement as the driving force for achieving the EU targets. Under EU Directives, the

Netherlands has targets for 2020 and 2030 for renewables deployment, energy efficiency and GHG reductions (Table 2).

Table 2. The Netherlands' 2020 and 2030 energy targets and 2018 status (EU definitions and data)

Sector	2018 Status	2020 Target	2030 Target
Renewable energy (% of gross final energy consumption)	7.4%	14%	32%
Energy Efficiency	64.5 Mtoe	Not exceeding 60.7 Mtoe	Not exceeding 45.6 Mtoe
Non-ETS GHG reductions versus 2005	21%	16%	36%

Source: MEA (2010), *Renewable Energy Action Plan*, <https://ec.europa.eu/energy/en/topics/renewable-energy/national-renewable-energy-action-plans-2020>; MEACP (2018), *National Energy and Climate Plan*, <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/national-energy-climate-plans>

The government has noted that it does not expect to meet the 2020 targets for renewable energy or energy efficiency. The government does expect to achieve the EU 2020 GHG emissions reduction target, however, the Dutch Supreme Court has ruled that the Netherlands must reduce its nation-wide emissions (ETS and non-ETS sectors taken together) by 25% by 2020 (Urgenda case⁸). The government is speeding up measures; e.g. one coal-fired power plant was closed at the end of 2019. PBL's recent review indicated that it is not clear if proposed measures are sufficient to reach the 25% target.

The Netherlands passed a law in December 2019 requiring an end to the use of coal in electricity generation by 1 January 2029. The Amercentrale coal plant, which began operating in 1993, has an earlier deadline of 1 January 2024. To remain operating beyond these dates Dutch coal plants have to convert to alternate fuels. All four of coal plants are moving towards increased co-firing of biomass to maintain operations and plant operators have indicated an interest in investing in full biomass conversions to keep the plants open. In 2018, the Amercentrale plant was running on 80% biomass, while the newer Maasvlakte 3, Rotterdam, Eemshaven plants were running on 15 to 25% biomass.

⁸ <https://www.urgenda.nl/en/themas/climate-case/climate-case-explained/>

3. Fossil-fuel subsidies in the Netherlands

3.1. General observations

The government of the Netherlands tracks subsidies and tax expenditures as part of the country's general budgetary process. Subsidy values are provided by the amount received by a given beneficiary, broken down by scheme, financial instrument, policy article and budget chapter. Tax expenditure estimates are organised by the tax regime to which they apply, with a dedicated section for energy-tax and excise fuel tax related expenditures. The data are publicly available as part of the general budget documentation.

The government periodically evaluates its subsidy and tax expenditure policies as an essential practice of transparency and good policy design. The National Budget Regulations, *Rijksbegrotingsvoorschriften*, require that each ministry includes a multi-year plan for its policy evaluations in the annual budget. An appendix is attached to the budget indicating all the evaluations conducted in the past four years and those planned for the next four years.

The evaluation process assesses the effectiveness and efficiency of the measures in attaining their objectives. In so doing, it identifies factors for success, reasons for insufficient effectiveness and efficiency and the unintended consequences, negative or positive, of the policy. Policy reforms thereafter are based on insights derived from the evaluation process.

The periodic evaluations are organised by policy area whereby only relevant policy instruments are assessed. In the most recent evaluation rounds for this review, the Energy and Climate Review of 2010 focused on government spending for implementing climate policy. In this round, energy-related tax expenditures were part of the reform packages considered. The subsequent Energy Policy review of 2014 considered those policies used to operationalise the country's energy transition and climate policy with no discussion of tax benefits for fossil-fuel users.⁹ An upcoming evaluation round of the country's energy tax policy is scheduled for 2020.¹⁰

The peer review of fossil-fuel subsidies in the Netherlands complements these periodic evaluations as it brings together all the policies that support the use and production of fossil fuels in a single review. The government used a broad scope for fossil-fuels subsidies in its NSR in line with the OECD's inventory approach and the recently established methodology for tracking the Sustainable Development Goal target 12.c of phasing out inefficient fossil-fuel subsidies (UNEP, OECD, IISD, 2019^[2]).

In the NSR, the government included both tax and non-tax measures conferring a benefit to the use and production of fossil fuels on the basis of the WTO's definition of subsidies under ASCM. On this basis, the NSR identified 13 subsidies that benefit the production and consumption of fossil fuels, most of which are

⁹ Broad review 1. Energy and climate, 2010 (*Brede heroverwegingen 1. Energie en klimaat*). See: <https://www.rijksoverheid.nl/documenten/rapporten/2010/04/01/1-energie-en-klimaat>. Policy review Energy Article (Article 14) (*Beleidsdoorlichting Energieartikel (artikel 14)*), 2014. See: https://www.tweedekamer.nl/kamerstukken/brieven_regering/detail?id=2014Z23842&did=2014D48069 See:

¹⁰ See: Tweede Kamer der Staten-Generaal (vergaderjaar 2019–2020), Nota over de toestand van 's rijks financiën, <http://www.rijksbegroting.nl/2020/voorbereiding/miljoenennota> . <http://www.rijksbegroting.nl/2020/voorbereiding/miljoenennota> .

tax expenditures resulting from reduced rates, refunds and exemptions from excise duties and energy taxes on fossil fuels (Table 3). The government provided budgetary estimates for seven of the 13 measures, totalling EUR 4.483 billion; the budgetary cost of the remaining measures was either not quantified because the tax expenditure does not form part of the regular reporting practice or because of a lack of viable benchmarks against which to estimate the revenue forgone.

Table 3. The 13 fossil-fuel subsidies identified in the self-report of the Netherlands

Measure ID		Estimated annual fiscal cost (EUR millions)				
		2016	2017	2018	2019	2020
Subsidies to the exploration, development and production and refining of fossil fuels						
T-1	Remittance reduction with respect to investments for exploration and production of natural gas small fields in the North Sea	56	19	28	n.a.	n.a.
T-2	Exemption for the use of oil products in refinery processes (excise duty) – under EU ETD	n.a.	n.a.	n.a.	n.a.	n.a.
Subsidies to end-users of fossil fuels						
Energy-intensive industries						
T-3	Reduced rate for glasshouse horticulture, subject to conditions (energy tax)	125	128	116	136	160
T-4	Refund scheme for energy-intensive industry under conditions (energy tax)	5	6	7	8	8
T-5	Exemption for dual consumption of coal (coal tax) – under EU ETD	24	24	24	25	25
T-6	Refund for energy-intensive processes (energy tax) – under EU ETD	20	59	65	73	104
T-7	Degressive structure of energy tax on natural gas (energy tax)	n.a.*	n.a.*	n.a.*	n.a.*	n.a.*
S-1	EU ETS compensation	45	53	45	61	73
Electricity generation						
T-8	Exemption for use of natural gas and coal in power plants and CHP plants (energy tax) – under EU ETD	n.a.	n.a.	n.a.	n.a.	n.a.
International flights and maritime transport						
T-9	Exemption from the use of kerosene in international aviation (excise duty) – under EU ETD	2 261**	2 350**	2 381**	2 410**	2 449**
T-10	Exemption for the use of diesel and heating oils in Community waters (excise duty) – under EU ETD	1 521	1 548	1 463	1 481	1 504
Other end users						
T-11	The refund scheme for churches and non-profits (energy tax)	25	29	29	30	31
T-12	Differentiation excise duty diesel versus petrol in combination with a higher road tax (excise duty)	n.a.*	n.a.*	n.a.*	n.a.*	n.a.*
Total		4 127	4 283	4 248	4 322	4 483

Note: n.a.: data is not available. n.a.*: data is not available because it is deemed difficult to set a benchmark rate against which to calculate the revenue forgone. **Figures came from a specific study on the subject in 2017. Total includes estimates for fiscal cost of the fuel exemptions in shipping and aviation and of the exemption from the use of diesel and kerosene in the year 2017. Since the figures of T-1 are fluctuating, these figures have not been taken into account in the Total Amount.

Source: NSR, Ministry of Finance (<http://www.rijksbegroting.nl/2020/voorbereiding/miljoenennota>)

Several of the 13 subsidies identified in the NSR fall within the scope of the EU Energy Tax Directive (EU ETD) for which a reform process would require a consensus among EU Member States (Box 1). The NSR submitted by the government reflects some of these restrictions. Other tax exemptions or reductions for energy uses included in the NSR are explicitly stated to be outside the scope of the ETD.

Box 1. Energy Taxation Directive and fossil fuel support

The EU's Energy Taxation Directive (Council Directive 2003/96/EC) of 2003 was introduced to replace the "Mineral Oils Directives" (Council Directives 92/81/EEC and 92/82/EEC) to lay out new rules for taxation of energy products used as motor fuels, for heating and to generate electricity. It aims to harmonise energy taxation across EU Member States to ensure the good functioning of the internal market by reducing distortions to competition between energy sources, energy uses and markets. As secondary objectives, the ETD also seeks to support policy objectives in other areas such as environmental protection and international climate commitments, energy efficiency, maintaining the competitiveness of EU companies and combatting unemployment. To this end, the ETD is structured on minimum tax rates for energy products and electricity based on which Member States can establish their tax rates at or above the minimum rate requires. The ETD provides additional flexibility to Member States by allowing for exemptions and reductions for certain uses of energy products and electricity and end-user sectors.

As part of the flexibility embedded in the framework that allows Member States to establish their own national tax systems, the ETD grants exemptions and reductions on the minimum tax rates to several sectors, further weakening incentives to investment in more energy-efficient and lower-carbon capital stock. While some exemptions are obligatory, as in the case of those granted for air and sea navigation, other exemptions and reductions are optional (Table 4). The multitude of optional tax preferences under the ETD leads to their proliferation across Member States, including in the Netherlands, due to concern over potential competitiveness impacts.

Table 4. Scope and tax preferences of identified fossil-fuel subsidies in the EU ETD

Out of scope	Mandatory	Optional exemption or Reductions
Heat output; dual uses and non-fuel use of energy products and electricity used in a similar way; mineralogical processes	Energy supplied for air navigation and sea navigation; energy products and electricity used to produce electricity	Combined heat and power; Renewable energy; energy products and electricity used for the carriage of good and passengers by rail, metro, tram, and trolley bus and by household or charitable organisations; natural gas and LPG used as propellants; energy products used in agricultural, horticultural or piscicultural works, and in forestry

Note: The list of sectors or energy uses that benefit from reductions and exemption from energy taxes is not exhaustive.

Source: Council Directive 2003/96/EC and (European Commission, 2019^[3]).

In 2011, the European Commission proposed to change the scope and structure of the ETD based on an Impact Assessment. However, a reform of the ETD did not gain the unanimous support of the Membership and was abandoned. A 2019 evaluation report by the European Commission concluded that the ETD was not designed to ensure the equal treatment of different energy sources based on the externalities resulting from their use, such as greenhouse gas emissions and local pollutants. It found also that the current ETD has not delivered on its key objective of diversifying energy sources and has not created strong enough incentives for energy efficiency improvement since tax rates are based on volumes of products and electricity consumed and not their energy content. Lastly, the absence of an increase in ETD minimum tax rates has eroded the tax-induced price signal that was supposed to incentivise investment in energy-efficient technology and behaviour (European Commission, 2019^[3]). The recently introduced European Green Deal calls for a revision of the ETD to ensure that taxation is better aligned with climate objectives (European Commission, 2019^[4]).

One recurring reason invoked by the government of the Netherlands for maintaining the optional exemptions and reduced rates allowed under the ETD is to ensure a level playing field for their domestic industries given that other Member States provide similar benefits. As a result, the reform of these fossil-

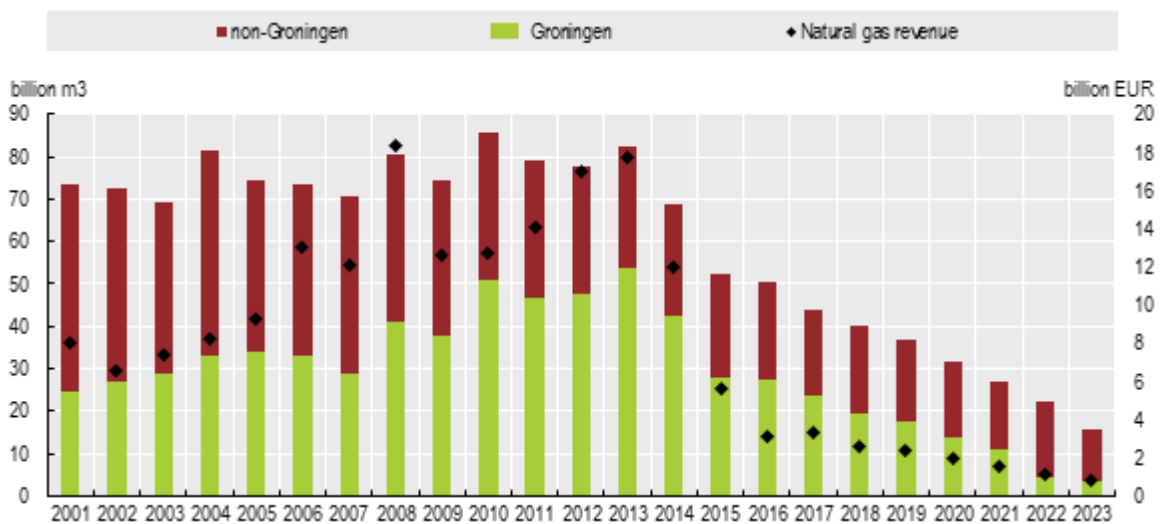
fuel subsidies could require concerted efforts from the EU membership to design tax systems that better reflect current environmental and international climate commitments and that can facilitate the transition to a low-carbon energy system. The government could also consider alternative competitiveness-oriented support measures that are less damaging to the environment.

3.2. Subsidies for the exploration, development and production of fossil fuels

The discovery of natural gas in the Netherlands, in particular the natural gas field in the Province of Groningen in 1959, had a transformative impact on the country's energy system. The subsequent implementation of a "small field policy" in 1974, guaranteeing the purchase of gas produced from higher-cost smaller fields outside of Groningen, facilitated their exploration and development and brought additional production capacity to the system.¹¹ The abundance of domestic natural gas has given gas a large role in the country's energy mix. Natural gas accounted for an average of 40% of total final consumption over the most recent decade, well above the EU average of 23%.¹²

Natural gas has also provided a non-negligible source of revenue for the government, reaching 10% of total government revenues in the 1980s.¹³ Since 2001, the average share in public revenue to the government budget from the gas sector was 5%, but dropped to 1% as of 2016. The government raised a total of EUR 130 billion from the gas sector between 2001 and 2018 (Figure 6).¹⁴

Figure 6. Production of natural gas and government revenue (2001 – 2023)



Note: Government revenue includes tax revenue and dividend payments from natural gas production. The right axis represents total natural gas revenue in total government revenue. The left axis represents domestic natural gas production. Revenue data on the statistical portal of Central Bureau of Statistics (CBS) is only available from 2001. Production levels for year between 2018 and 2023 are expressed as the average of projected production in cold and warm temperatures. Figures are shown in nominal terms.

Source: Central Bureau of Statistics and Rijksbegroting Ontwikkeling van de uitgaven (National Budget development of expenditure) 2019.

¹¹ GasTerra, a public-private joint venture between the Dutch State and oil companies Shell and ExxonMobil, guaranteed the purchase.

¹² In addition to its natural gas endowment, the country developed a far -reaching gas distribution network to provide gas to 99% of all households and make natural gas the primary source of heating for buildings.

¹³ The 1980s was also the period when the "Dutch Disease" was in full effect when the appreciation of the Dutch Guilder crowded out non-oil and gas related manufacturing activities. This was coupled with a generously expanding welfare system, resulting in high government expenditures.

¹⁴ Total government contribution is adjusted for inflation using the annual GDP deflator in the Netherlands.

The prospects for natural gas in the Netherlands took a rapid turn in 2012 after a magnitude 3.6 earthquake in the village of Huizinge, triggered by extraction activities in the Groningen natural gas field, raised public concern and resistance. This change in sentiment strengthened over time and eventually translated into a policy shift as environmental and safety considerations started to outweigh the economic benefits from the gas resources. As of 2016, the government issued a ruling to set caps to progressively lower production from the Groningen field and thus minimise the safety risk and damage. Following the earthquake of 3.4 in magnitude in the village of Westerwijldwerd in 2019, the government announced its decision to stop production completely by the end of 2022 (Box 2).¹⁵

Box 2. Phasing-out the production of natural gas in the Groningen field

Operationalising the phase out of production in the Groningen field required amendments to the Gas Act and Mining Act to transfer full control to the government over the decisions to set production levels from a joint decision with the licence holder, Nederlandse Aardolie Maatschappij (NAM), a Royal Dutch Shell-ExxonMobil joint venture.¹⁶ During the phasing-out regime, the network operator, Gasunie Transport Service, will advise the Minister on what production levels are necessary for keeping the national gas distribution network operational, while the government will set production levels to meet demand for the low-calorific gas (high nitrogen content) on a “never more than necessary” basis. This means that all other means of meeting this demand would be exploited, including converting high-calorific gas through nitrogen enrichment, before setting the production level from Groningen.

To meet the demand for the low-calorific gas as production from Groningen is phased out, the government is working on expanding nitrogen production capacity to convert high-calorific gas by building a new nitrogen plant, scheduled to open in 2022. Production of low-calorific gas is also expected to come from a newly discovered field, north of the island of Schiermonnikoog. At the same time, the government expects a decline in demand for low-calorific gas from large domestic users (170 companies) and foreign consumers in Belgium, France and Germany as they switch to high-calorific gas connections or other energy sources. Demand reductions from small-consumer classes will be delivered through lowering their dependence on natural gas for heating via changes in the housing stock – i.e. newly constructed building would be natural gas free and 30 000 to 50 000 existing homes would be converted to gas-free homes each year between 2018 and 2021.

The cost of the damage caused by the induced earthquakes and reinforcement operations are estimated to be between EUR 3.5 billion and EUR 5.5 billion through year 2030.¹⁷ They are to be borne by the NAM as a profit-reducing cost item, which also translates into revenue reductions in corporate tax and SPS revenues for the government. The state-owned enterprise, Energie Beheer Nederland B.V. (EBN) also contributes to the damage costs accordingly to its 40% stake in the oil and gas production.

¹⁵ See Letter to Parliament about Groningen gas extraction level in 2019-2020 (*Kamerbrief over gaswinningsniveau Groningen in 2019-2020*): <https://www.rijksoverheid.nl/documenten/kamerstukken/2019/09/10/kamerbrief--gaswinningsniveau-groningen-in-2019-2020>

¹⁶ Amendment to the Gas Act and to the Mining Act on minimizing gas extraction from the Groningen field: Kamerdossier 34957: <https://zoek.officielebekendmakingen.nl/kst-34957-3.html> .

¹⁷ See: <https://zoek.officielebekendmakingen.nl/kst-33529-524.html>

As of 31 January 2018, the claim settlement process has been handed over from NAM to public authorities, the Temporary Committee on Mining Damage Groningen (TCMG) with support from Rijksdienst voor Ondernemend Nederland (RVO.nl), the Netherlands Enterprise Agency. The damages are paid by RVO.nl and recovered from the Ministry of Economic Affairs and Climate Policy and NAM. For reinforcement operations and all safety related operations are paid for by NAM, but their financial cost are yet to be quantified. A Groningen National Programme is also in place with earmarked funds of at least EUR 1 billion to promote an economic revitalisation of the region, including a EUR 500 million contribution from NAM. The contribution will be deducted as a cost from NAM's tax liability and thus lower the government's take in NAM's profit, which implies that 75% of the cost of the programme would be borne by the government at a sum of EUR 365 million.¹⁸

Remittance reduction with respect to investments for exploration for and production of natural gas in the North Sea (T-1)

While the Groningen field is the largest field in the Netherlands, there are dozens of other smaller oil and gas deposits onshore and on the Dutch part of the Continental Shelf, that make up a quarter of natural gas reserves and half of the gas production in the country. These small fields are more complicated and expensive to explore and yield lower production volumes. The “small field policy”, introduced by the government in 1974 guarantees the purchase of natural gas extracted from these fields and was largely successful in developing new reserves (Honoré, 2017^[5]). A number of these small fields were, however, not put into production and thus left as stranded assets.

To incentivise the production from the high-cost small fields on the Dutch part of the Continental Shelf, an investment allowance, *Regeling investeringsaftrek marginale gasvoorkomens Nederlands continentaal plat*, was introduced in 2010. This tax incentive provides a 25% deduction of investment costs on income subject to the State Profit Share (SPS) levy of 50%, a resource rent tax charged in addition to the prevailing corporate income tax. For a gas field to qualify for the investment allowance it must fulfil several criteria, for example on the expected productivity of the gas well, the technically producible gas volume of the reservoir and the shortest distance to an existing platform (EY, 2019^[6]).

More recently, with the winding down of production from the Groningen field, a bill to amend the conditional investment allowance for small fields was proposed in 2018. The change will be to generalise the allowance to all new investments in offshore exploration and production regardless of field characteristics, and to increase the current deduction of investment expenses from 25% to 40%.¹⁹ This policy aims to secure domestic energy supply for the country by levelling the playing field for North Sea investments between the Netherlands and the United Kingdom.²⁰ The government anticipates that this incentive will encourage the additional production of around 22-37 billion m³ and raise EUR 180-226 million in government revenue. In the NSR, the government of the Netherlands evokes security of energy supply as the main reason for maintaining and expanding this provision. The proposal is under discussion with the European Commission.

There are other support measures that may encourage the production of fossil fuels that were not included in the NSR. The *small field policy*, whereby the retailer Gasterra serves as a guaranteed sales channel for

¹⁸ See Parliamentary Document 33 529, no. 497: Gas extraction: <https://zoek.officielebekendmakingen.nl/kst-33529-497.html>

¹⁹ Letter to Parliament on gas extraction from small fields (Kamerbrief over gaswinning uit kleine velden) – Parliamentary Paper 33 529, no. 469, <https://www.rijksoverheid.nl/documenten/kamerstukken/2018/05/30/kamerbrief-over-gaswinning-uit-kleine-velden>

²⁰ Letter to Parliament about gas extraction from small fields: <https://www.rijksoverheid.nl/documenten/kamerstukken/2018/05/30/kamerbrief-over-gaswinning-uit-kleine-velden>

small fields producers, can be deemed a support measure (OECD, 2019^[7]). Small field producers can sell their product to other parties, but Gasterra has the statutory obligation in the *Gas Act* to purchase their gas at prevailing market prices, thus alleviating an important cost factor for these producers.²¹ The main advantage of this policy for upstream companies is that they do not have to establish a sales company for its gas and seek its own clients in the Netherlands. As Gasterra is 50% government owned, this cost-reducing purchase guarantee confers a benefit to producers and thus can qualify as government support. With the planned closure of Groningen field by the end of 2022, Gasterra will cease to exist along with the small field policy.²²

Other tax incentives provided to producers lessen their liability to pay the State Profit Share (SPS) levy of 50% of qualified income. The SPS, in the tradition of a resource-rent tax, is collected in addition to the standard corporate income tax (CIT) of 25%; companies in the sector face a marginal tax rate of 75%.²³ The SPS is levied on ring-fenced profits, whereby non-oil or gas income should be disregarded and the tax base is, for the most part, similar to that under the CIT. There are, however, differences on how losses are treated under the two taxes. For the SPS levy, a loss may be carried back for three years and carried forward for an indefinite period, unlike for the CIT, under which a loss can be carried back only one year and forward for six years. This difference emerged with the 1 January 2019 reform in CIT rules of. A further advantage provided to producers is the 10% uplift on investments, which further reduces their SPS tax liability (EY, 2019^[6]).

Oil and gas extraction has the potential to generate rents that are revenues in excess of all necessary costs of production including the minimum required return to capital. This feature sets the sector apart from most other economic activities. Resource rent taxes, such as the SPS, are fiscal instruments used to raise revenues from these abnormal profits. Tax provisions, such as the ones discussed above, reduce government revenues raised from the sector. Including them in the discussion of the overall policy environment governing the production of fossil fuels in the Netherlands would cast light on potential sources of preferential treatment. It would also contribute to efforts to increase the transparency of government support in the context of the country's energy transition.

Exemption for the use of oil products in refinery processes (T-2)

The Netherlands is home to some of the largest refineries in Europe; five of the country's six refineries are located in the Port of Rotterdam's industrial cluster. CO₂ emissions from the refining sector account for approximately 8% of total emissions in the country.²⁴ With the country's emissions-reduction targets, international climate commitments coupled with changing demand and supply dynamics in the European and global energy market, the country's refineries are expected to come under increasing pressure. Already, refineries in the Netherlands and Europe more generally are characterised by low-profit margins and face a stable demand for their oil products.

Direct emissions from the sector are due mainly to the combustion of fossil fuels and the production of hydrogen. The refining sector is covered under the European Emissions Trading System (EU ETS). In 2017, emissions were 9% lower than their 1990 levels and with a 25% lower CO₂ intensity. Efficiency gains and abatement of emissions are expected to be important determinants of the sector's longer-term competitiveness (Römgens and Dams, 2018^[8]).

²¹ Gas Act (*Gaswet*): <https://wetten.overheid.nl/BWBR0011440/2019-01-01> .

²² <https://www.gasterra.nl/en/news/gasterras-operations-to-be-gradually-phased-out-over-the-next-few-years> .

²³ Companies with taxable profits of up to EUR 200 000 pay 19% in CIT in 2019.

²⁴ <https://www.dnvgl.com/cases/carbon-emission-reduction-roadmap-for-refineries-135592>

The tax exemption of oil products used in refinery processes falls under the purview of the ETD under Article 21 (3), in which the consumption of energy products for own use is exempt from fuel taxation, provided that the fuels are produced within the immediate vicinity of the refinery. In line with the ETD, the Netherlands does not levy an excise tax on fuels used by its refineries. The government reports that the primary objective of this exemption is to not directly influence the use of fossil fuels, but recognises that it indirectly encourages it. An alignment of the ETD with the EU ETS, taking into account their interactions, could result in an effective price on carbon emissions that better internalises their social cost.

3.3. Subsidies to end-users of fossil fuels

Energy-intensive industries

Reduced rate for glasshouse horticulture (T-3)

Upon the introduction of the energy tax on natural gas and electricity in 1996, glasshouse horticulture, like other energy-intensive consumers was subject to a zero tax rate. In 2013, a “surcharge levy for sustainable energy” (*Opslag duurzame energie*, ODE) was added on to the energy tax. Subsequently, both the energy tax and the ODE were converted to use degressive staggered rates, whereby larger consumers pay lower rates (Table 5).

Glasshouse horticulture, being a geographically concentrated, energy-intensive activity carried out by over 4 400 producers, would have faced high tax rates under the degressive energy tax structure because of their smaller scale. The sector is more energy-intensive than the five most energy-intensive firms in the country; energy costs represent on average 17% of a company’s turnover and are an important determinant of profitability. As a highly export-oriented sector that employs nearly 90 000 individuals, horticulture is considered an important economic sector in the Netherlands.²⁵

Therefore, a specific degressive natural gas tax structure was designed for glasshouse horticulture since energy intensity varies across its different producers. The reduced rate only applies for the first and second lowest energy-consumption bracket, while the third and fourth brackets face the same tax rate as other large consumers of natural gas. Natural gas used in combined heat and power plants (CHP) is exempt from the energy tax for all sectors including horticulture, provided that the plant has an energy-conversion efficiency to electricity of at least 30% and an installed capacity of 60 kWe or greater. There is no specific tax structure for electricity that applies to the horticulture sector.

A policy review to assess whether the reduced tax helps prevent an increase in costs for the typical relatively small-scale, energy-intensive glasshouse horticulture firm was completed in 2016.²⁶ The evaluation found that this policy design still contributes to its initial goal of equalising the tax burden between the energy consumers in the horticulture sector and other larger energy-intensive consumers.

Alternative tax structures were also evaluated, i.e.e flat rate, progressive rate and two-rate structure. The policy review concluded that these designs could also alleviate the heavy tax burden on small-scale producers. It found also that the higher tax rates on larger-scale producers in the sector enhances the sustainability dimension of the measures. However, these alternatives are not compatible with the generic structure of the energy tax. By introducing such modifications, consumers in higher energy-consumption brackets would be subject to a heavier tax burden than those in other sectors. Thus, such targeted changes to the tax structure result in unequal treatment of larger-scale horticulture producers compared with other

²⁵ <https://rijksbegroting.nl/algemeen/gereferreed/2/2/5/kst225995.html>

²⁶ Kamerstukken II 2015/2016, 32 627, nr. 24: <https://zoek.officielebekendmakingen.nl/kst-32627-24.html> .

sectors in the same energy-consumption bracket and consequently, the reduced rate for natural gas was maintained.

At the same time, the sector agreed to strengthen its efforts to reduce its energy intensity and carbon emissions in a Long-Term Agreement on Glasshouse Horticulture Energy Transition 2014-2020 (*Meerjarenafspraak Energietransitie Glastuinbouw*).²⁷ The sector committed to capping its CO₂ emissions to 6.2 Mt by 2020 with the view towards promoting energy and system innovations that would help ensure that the sector becomes climate neutral by 2050 at the latest. In 2018, this target was tightened and accelerated, to 4.6 Mt by 2020.²⁸

Refund scheme for energy-intensive industry under conditions (T-4)

The government of the Netherlands provides an energy tax refund to energy-intensive businesses (electricity consumption above 10 million kWh per year) that participate in covenant agreements known as *Long-Term Agreements on Energy Efficiency for the non-ETS sector* or *Deelname aan de Meerjarenafspraken energie-efficiëntie* (MJA3/MEE). More than 1 000 companies from 40 sectors participate in these agreements and, in exchange, those that qualify as energy-intensive businesses benefit from a refund of their electricity tax bill.²⁹ This scheme is deemed permissible state aid by the European Commission and is consistent with the optional exemption stipulated in the EU ETD whereby Member States can charge tax rates below the minimum rates for businesses that qualify as energy intensive as defined in Article 17 (1) (a).

As part of joining these voluntary covenant agreements, businesses need to set up long-term energy efficiency plans that are revised every four years. RVO.nl monitors the voluntary agreements and provides yearly reports on the energy efficiency performance in the different participating sectors for a sample of 100 companies. For those companies benefiting from a refund, a yearly progress statement is required to show compliance with the obligations under the agreement. In an effort to promote energy efficiency, the conditions to comply with the long-term agreements were tightened in 2015 (Veum, 2018_[9]). The covenants are to expire by the end of 2020.

Refund for energy-intensive processes and exemption for dual use of coal (T-5, T-6)

The Netherlands refunds energy-tax related expenditure for businesses in the metallurgical and mineralogical sectors and for chemical reduction and the dual use of coal.³⁰ Natural gas and electricity used in these process fall outside the scope of the EU ETD and therefore they are not subjected to a minimum tax rate nor do they benefit from obligatory or optional exemptions or reductions set in the ETD. The Administration explained that the refund is applied, however, to maintain a level playing field with other Member States with similar provisions. Emissions from these energy-intensive processes are under the scope of the EU ETS and therefore the resulting negative externalities are partially priced.

EU ETS indirect compensation (S-1)

Companies that incur higher electricity cost due to effects of the EU ETS on electricity prices can benefit from a subsidy scheme, *Subsidieregeling indirecte emissiekosten ETS*, which refunds these costs. Only

²⁷ Parliamentary Paper 32 627, no. 17.

²⁸ <https://www.rijksoverheid.nl/documenten/kamerstukken/2018/11/09/kamerbrief-over-gewijzigde-meerjarenafspraak-energietransitie-glastuinbouw-en-plan-van-aanpak-programma-kas-als-energiebron-voor-de-periode-2018-2020-voor-de-huidige-klimaatopgave-van-de-glastuinbouw>

²⁹ See Rijksdienst voor Ondernemend - Meerjarenafspraken energie-efficiëntie (MJA3/MEE): <https://www.rvo.nl/onderwerpen/duurzaam-ondernemen/energie-besparen/mja3-mee>

³⁰ An energy product has a dual use when it is used both as heating fuel and for purposes other than as motor fuel and heating fuel. The use of energy products for chemical reduction and in electrolytic and metallurgical processes shall be regarded as dual use (Council Directive 2003/96/EC).

businesses belonging to one of the 14 sectors, including steel, aluminium, fertilizer and paper, deemed at risk of carbon leakage qualify³¹, and they must participate in the energy efficiency covenants MJA3 or MEE discussed above. They need to submit long-term energy efficiency plans and yearly progress reports. The subsidy amount is based on the ETS emissions costs calculated using the CO₂ emissions factor, the reference output of the product (average production per year), the electricity consumption in MWh/tonne of product per year (i.e. the efficiency benchmark for the sector) and the European Emissions Allowance (EUA) forward price. In line with EU state aid guidelines, the level of the subsidy was 85% of the calculated costs between 2013 and 2015 and 80% from 2016 to 2018 and 75% for 2019 and 2020. The final subsidy amount is adjusted down by the ETS emission costs of 1 000 MWh using the same formula.³² Initially the scheme was introduced in 2014 for expiry on 1 July 2017 but was granted an extension until 31 December 2021 after a policy review.

The Ministry of Economic Affairs and Climate Policy last evaluated this measure in 2017 and has plans for another evaluation in 2022 to ascertain whether to further extend the measure. The 2017 evaluation was carried out by SEO Economic Research and included a combination of a desk study, international benchmarking, econometric analysis, a survey and interviews (Tieben and in 't Veld, 2017_[10]). The research found that the scheme is effective in preventing carbon leakage using an econometric approach of comparing economic outcomes (i.e. sales and exports outside the EU) of companies benefiting from the scheme and a control group of companies affected by higher electricity prices related to ETS costs but do not receive compensation for it. The study found that the compensation offsets deterioration in sales and exports and therefore the subsidy was deemed effective.

The study found also that the scheme was cost-effective as it delivers positive outcomes at relatively low costs and administrative burdens. The level of compensation, when compared with compensation schemes in eight other countries, is similar to that in neighbouring countries like Belgium (Flemish system) and Germany. Southern European countries provide lower compensation than is allowed under European guidelines. The Netherlands and Belgium are the only two countries where the scheme is linked to participation in voluntary agreements that aim to incentivise energy efficiency improvements at the sector level. Germany also conditions the provision of a refund on energy efficiency improvements.

Two main recommendations emerged out of the 2017 evaluation that can improve the effectiveness of the Dutch ETS compensation policy. First, since the compensation value is based on an average output over 2005-2011, it is not consistent with current production data. The use of a more dynamic reference output is preferable but this change can only be implemented at the EU-wide level when negotiating for a new state-aid guideline. The second recommendation calls for a better targeting of the scheme to companies that are exposed to a high risk of carbon leakage. The report underlines that the risk of carbon leakage is the strongest in markets that face low transport costs, weak product variations and where the impact of electricity costs on added values is high. A better targeting of the subsidy towards sectors with these characteristics might increase its effectiveness.

The government might enhance the transparency by quantifying the extent to which electricity cost increases due to ETS are transmitted (i.e. cost pass-through) to sectors identified at risk of carbon leakage. Since the Netherlands applies the maximum refund levels set by EU guidelines to calculate the amount of the compensation, it would be informative to show whether the electricity cost increases are well approximated by these maximum refund values.³³

³¹ Regulation of national subsidies from Ministry of Economic Affairs and Climate Policy, *Regeling nationale EZ-subsidies*: <https://wetten.overheid.nl/BWBR0035474/2017-10-01#Bijlage4.4.1>

³² <https://www.rvo.nl/subsidie-en-financieringswijzer/subsidieregeling-indirecte-emissiekosten-ets?wssl=1>

³³ It could also be the case that the strength of the electricity cost pass-through could be affected by the generosity of the compensation scheme such that a more generous compensation would encourage a higher share of the electricity cost to be transmitted to industrial users.

Degressive structure of the energy tax (T-7)

The energy tax structures for both natural gas and electricity in the Netherlands are very degressive, sharply declining for larger energy consumers, with a four-fold decrease between the first bracket and second bracket in the tax rate on natural gas (Table 5). The lower tax rates for energy-intensive industries are further reduced through the different tax benefits granted to specific subclasses of these consumers. Other countries, like France and Germany, do not have a degressive tax structure, but replicate a similar structure through the different tax benefits they grant to their larger consumer classes (PwC, 2018^[11]).

From a budgetary perspective, France and Germany report the revenue forgone due to these tax benefits in their tax expenditure and subsidies reporting. The lower energy tax rates in the Netherlands on natural gas used by large consumers are not counted as tax expenditures and therefore there is no accounting of their fiscal cost, particularly because no established benchmark tax rate has been identified against which to measure the revenue foregone. The degressive structure results in a cross-subsidisation from household to industrial consumers and thus warrants assessing its distributional consequences against a benchmark tax rate that is yet to be clearly stated. A potential benchmark that would allow the Netherlands to track the impacts would be measuring all tax rates against the full rate that is levied on households.

Table 5. Energy tax and surcharge for renewable energy, 2019 and 2020

	2019			2020		
	Energy tax	Surcharge Renewable Energy	Total	Energy tax	Surcharge Renewable Energy	Total
Natural gas						
0-170.000 m ³	29,313	5,24	34,553	33,243	7,75	40,992
170.000-1.000.000 m ³	6,542	1,61	8,152	6,444	2,14	8,581
1.000.00 - 10.000.000 m ³	2,383	0,59	2,973	2,348	2,12	4,463
> 10.000.000 m ³	1,280	0,31	1,590	1,261	2,12	3,376
Reduced tariff horticulture						
0-170.000 m ³	4,707	0,84	5,547	5,338	1,24	6,583
170.000-1.000.000 m ³	2,469	0,61	3,079	2,432	0,81	3,239
1.000.000 - 10.000.000 m ³	2,383	0,59	2,973	2,348	2,12	4,463
> 10.000.000 m ³	1,280	0,31	1,590	1,261	2,12	3,376
Electricity						
0-10.000 kWh	9,863	1,89	11,753	9,770	2,73	12,498
10.000-50.000 kWh	5,337	2,78	8,117	5,083	3,75	8,828
50.000 - 10.000.000 kWh	1,421	0,74	2,161	1,353	2,05	3,406
> 10.000.000 kWh	0,058	0,03	0,086	0,055	0,04	0,095
Tax reduction (excl. VAT) in euro per electricity connection	257,54	0	257,54	380,68	55,00	435,68

Note: taxes are given in eurocents per m³ for natural gas and eurocents per kWh for electricity and exclude VAT
Source: Ministry of Economic Affairs and Climate Policy.

Since this tax feature does not lend itself to clear budgetary implications, it is not subjected to the periodic policy evaluations of energy tax provisions. The inclusion of the energy tax structure in the NSR is a first step towards assessing the effectiveness and efficiency of this policy in alleviating the tax burden on energy-intensive industries while placing a heavier one on households. Already, a joint PBL and CPB report finds that a uniform CO₂ price, whereby everyone pays the same for the CO₂ emission, is the most cost-effective pricing design. The analysis shows that a uniform carbon price with lump-sum transfers to

households increase overall welfare and shifts employment from energy-intensive sectors to less energy-intensive activities (Vollebergh et al., 2019^[12]).

Subsidies for electricity generation

Exemption for use of natural gas and coal for electricity generation and CHP plants (T-8)

The EU ETD imposes a mandatory tax exemption for natural gas and coal used in electricity generation. By design, the EU ETD sets tax rates for electricity output and completely exempts energy products as inputs for electricity generation to avoid double taxation and discrimination among energy sources. This feature of the EU ETD prevents the taxation of electricity generation based on its CO₂ emissions and therefore may limit the extent to which countries can incentivise the shift to lower emissions energy sources. Emissions from the electricity sector are covered by the EU ETS and therefore some of their social cost is priced therein.

Subsidies for aviation and maritime transport (T-9, T-10)

Fuels used in aviation and maritime transport are exempt from energy taxes in the Netherlands, in line with EU ETD Article 14 and international agreements such as the Mannheim Act for international shipping and bilateral air service agreements in the case of international flights. Under the EU ETD, this exemption can be waived for intra-EU transport under a bilateral agreement between Member States, but no such agreement exists to date including with the Netherlands. The EU ETD clarifies that the exemption can also be limited to international and intra-EU transport, thus allowing for taxation of fuels used for domestic flights and shipping. In both cases where exemptions are waived, tax rates can be set lower than the minimum tax rates stipulated in the ETD.

In accordance with these rules, the Netherlands does not tax fuels used in international and intra-EU air and sea navigation but did apply an excise tax for fuel used in domestic air transport between 2005 and 2012. The last review of the exemptions on air and navigation on water was carried out in a 2008 policy review cycle of excise-duty-related tax expenditures. The revenue forgone from these exemptions was reported in the tax expenditure documents until 2017.

The government has presented a draft law for a flight tax; the policy would come into force by 2021 should the EU fail to implement a community-wide policy. Already, emissions from intra-EU flights are covered by the EU ETS, limited by free allowances for this sector. But, amid rising concern on the under-pricing of carbon emissions from international aviation, a joint statement issued by Finance Ministers in nine EU Member States (Belgium, Bulgaria, Denmark, France, Germany, Italy, Luxembourg, the Netherlands, and Sweden) in November 2019 called on the European Commission “to bring the debate on aviation pricing, e.g. in the form of aviation taxation or similar policies, a step further”.³⁴

Subsidies for other end users

Refund scheme for churches and non-profit organisations (T-11)

The general fiscal reform the Netherlands implemented between 1999 and 2001 included several policy measures related to the greening to the fiscal system.³⁵ The reform translated into higher energy taxes, new environmental taxes, and indexation of all environmentally related taxes. At the same time, these tax measures generated additional revenue and provided additional fiscal space for the government to

³⁴ <https://www.rijksoverheid.nl/documenten/publicaties/2019/11/07/political-statement-joint-statement-on-eu-coordination-for-aviation-pricing-by-the-ministers-of-finance-%E2%80%93-7-november-2019> .

³⁵ http://www.rijksbegroting.nl/algemeen/gerefeerd/9/1/0/kst91064_2.html

introduce compensatory measures to lower the corporate income tax burden on businesses. Since churches and non-profit organisations do not pay corporate income tax, the compensatory measures did not apply to them. As a result, a targeted refund scheme was introduced to provide a 50% reimbursement of the energy tax paid by these entities.

A 2006 policy review found that this compensatory measure does alleviate the heavier tax burden resulting from increases in energy taxes. Though the review found that tax authorities incur heavy implementation costs, an alternative measure such as an adjusted rate or exemption would shift the administrative burden on to the energy companies. In the end, the refund scheme for churches and non-profit organisations was maintained without change and no alternative measures were suggested to alleviate the cost increase.

Differentiation of excise duty for diesel versus petrol in combination with a higher road tax (T-12)

The Netherlands, as many other OECD and G20 countries, continues to tax diesel at a lower per litre rate than gasoline for road transport (Figure 7) despite its well-established harmful environmental effects (Harding, 2014^[13]) (Transport and Environment, 2020^[14]).³⁶ Only Mexico, Switzerland and the United States charge higher taxes for diesel while Russia and the United Kingdom charge the same rates. In the NSR, the Netherlands specified that the tax rate on diesel is set at a lower rate than that on gasoline to maintain a level-playing field for their heavy transport sector relative to that of their neighbouring countries.

At the same time, the Netherlands charges a heavy vehicle tax (*belastingen zware motorrijtuigen*, BZM) in addition to the regular motor vehicle tax (*motorrijtuigenbelasting*, MRB). For passenger cars a surcharge in the MRB is applied to diesel cars to compensate for the lower excise duties on diesel fuel. The government explains that this extra charge offsets the preferential tax treatment for diesel, albeit not perfectly. Vehicle taxes are increasingly used to steer consumer choices towards the purchase of more fuel efficient and less polluting vehicles, but they can be very costly in terms of public revenue, and it is difficult to design systems so that they result in net benefits (van Dender, 2019^[15]).

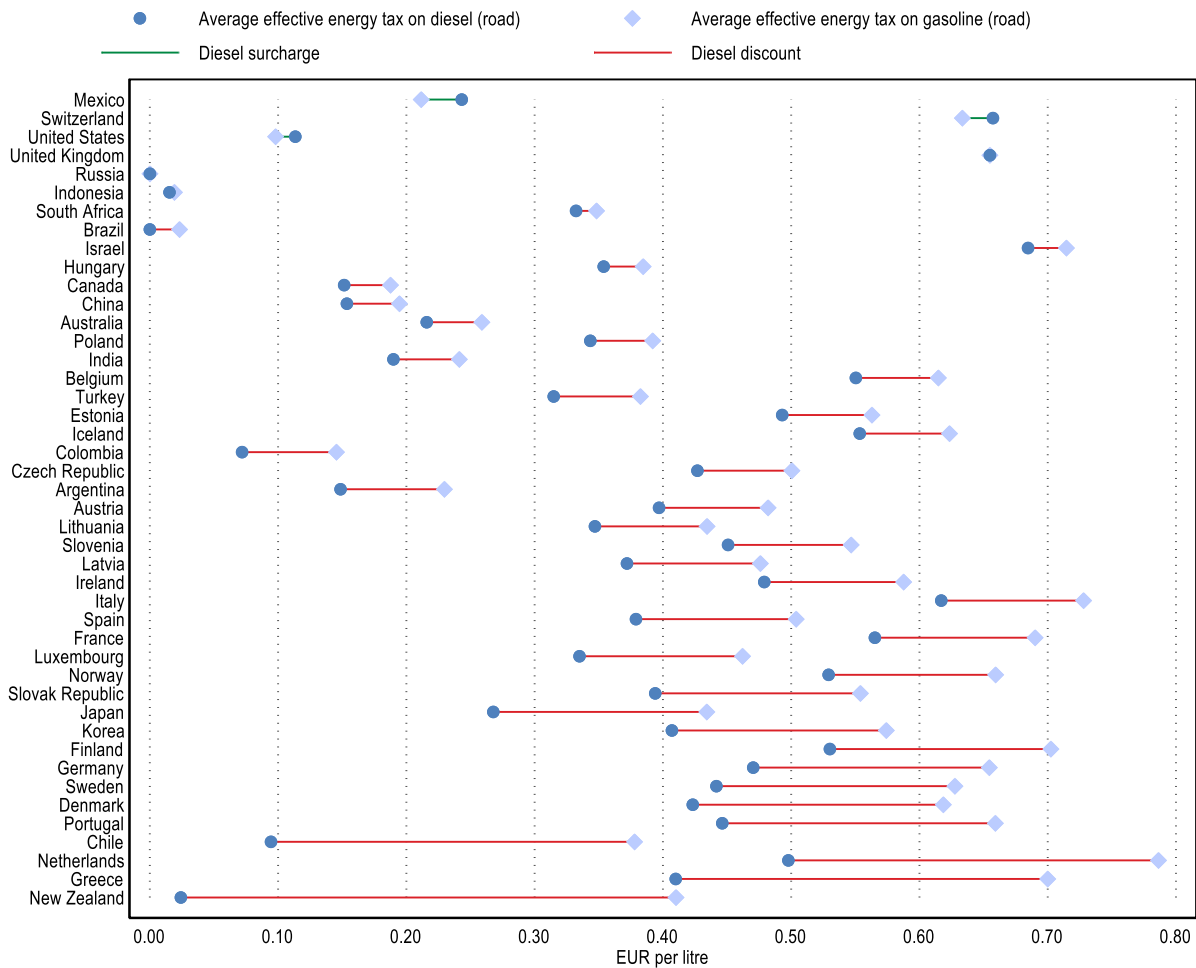
Also, as the tax rate levied on gasoline used in the road sector is the highest among OECD countries, the government argues that the gap between the two tax rates can be closed by lowering the tax on gasoline (Figure 7). In principle, reducing the differential by taxing diesel at higher rates than gasoline or simultaneously adjusting both rates, i.e. reducing the gasoline rate and increasing the diesel rate, is sound environment policy. Effectively putting a surcharge on diesel makes sense from a climate perspective, considering that CO₂ emissions per litre of diesel are higher. In addition, non-climate damage per litre of diesel use tend to be higher than for gasoline use. This damage includes externalities such as air pollution as well as congestion (Harding, 2014^[13]) (Teusch and Braathen, 2019^[16]).

Despite the higher prices and taxes on gasoline versus diesel, the majority (over 80%) of Dutch passenger cars are gasoline cars and the share of diesel cars has not increased substantially as in other EU member states.³⁷ This can be attributed to the tax on motor vehicles through which diesel cars face a high surcharge compare with gasoline cars (Vollebergh et al., 2016^[17]). This points to heavy transportation as the area for which closing the gasoline and diesel differential could have a greater impact. Since options other than diesel are limited for heavy transport, higher taxes could lead to investment in more efficient trucks.

³⁶ New EU regulation effective September 2019 mandates stricter on-road emissions testing for new cars could close the gap between gasoline and diesel cars in terms of their environmental performance, but concerns over differences between on-road performance and compliance with regulation remain very strong.

³⁷ https://www.eea.europa.eu/data-and-maps/daviz/dieselisation-of-diesel-cars-in-4#tab-chart_1

Figure 7. Diesel is taxed lower than gasoline in most countries, including the Netherlands



Note: Average tax rates are calculated based on the tax rates applicable on 1 July 2018 and energy use data for 2016 that was adapted from IEA (2018[1]), World Energy Statistics and Balances. New Zealand is a special case because diesel vehicles pay distance-based road-user charges, which are not included in TEU because they affect different behavioural margins than energy taxes. Source: (OECD, 2019_[18]).

In September 2019, the Ministry of Infrastructure and Water Management announced that an extra heavy vehicle tax will be imposed on all lorries that weigh over 3 500 kilograms used to transport goods. The amount of tax will be based on the number of kilometres driven on motorways in the Netherlands, as well as various regional and local roads. The new tax will not be charged on agricultural vehicles, fire trucks, coaches, garbage trucks, cranes, or other non-goods transporting vehicles. It will be levied from 2023, subject to its approval by the upper and lower houses of parliament.³⁸ This distance-based charge can address negative externalities such as local pollution, road wear and noise pollution and may be a better and more stable revenue-raising instrument as its tax base since driving is more inelastic than fuel use (van Dender, 2019_[15]).

³⁸ <https://business.gov.nl/regulation/bzm/>

4. Assessments and Recommendations

4.1. Recent reforms and strategies for the energy system

The periodic evaluation practice has proven to be an important driver for policy reform in the Netherlands. As the budgetary process requires an evaluation of the different schemes every four to seven years, Ministries have the opportunity to review and eventually reform those policies they deem insufficiently effective or no longer relevant. Evaluations can be carried out for a specific policy area, through an impact assessment of an individual measure or a cost-benefit analysis.

In addition to policy reviews, the government of the Netherlands has interdepartmental policy reviews (*interdepartementale beleidsonderzoeken* or IBOs). The IBOs are forward looking as they identify options for policy adjustments and unlike the periodic evaluation reviews, IBOs are not confined to a specific policy area as defined in the budget law; they can address broader policy challenges and economic problems. Some ministries can choose to combine an IBO with a policy review in which case both backward looking and forward looking evaluations are undertaken.

Several measures that provided preferential tax treatment to specific fossil fuels or end-users of fossil fuels were eliminated as a result of the policy review processes; they were found to be ineffective in reaching their policy objectives. The reforms mainly focused on removing tax expenditures targeted to certain users.

In 2008, the Ministry of Economic Affairs conducted an evaluation cycle of all excise tax related measures including fuel tax exemptions for the refinery sector, aircraft, shipping, LPG used in public transport and garbage trucks and “red diesel” used by tractors and stationary equipment. As a result of this evaluation the refund scheme on the LPG tax benefiting public transport and garbage trucks was discontinued, because it was found to be an ineffective tool in reducing emissions given the presence of alternative energy sources that can deliver better outcomes, such as natural gas, biogas and biodiesel.³⁹

“Red diesel” for tractors and stationary equipment was subject to a reduced excise tax rate relative to diesel used as motor fuel by road vehicles “white diesel”. After the evaluation of tax expenditures related to excise duties, the Ministry of Finance found that maintaining the tax differentiation between the two uses had proven to be increasingly ineffective. The monitoring of “red diesel” use was found to be labour intensive and abuse was frequently detected because vehicle and stationary engines were used for other purposes than originally intended. In view of this ineffectiveness of the scheme and for environmental reasons, the Cabinet proposed a tax plan to gradually close the gap between the two tax rates. This also included the phasing out of the refund scheme in the energy tax for large consumers of mineral oils by

³⁹ Adoption of the budget statements of the Ministry of Finance (IXB) for the year 2008 31 200 IXB Letter from the State Secretary of Finance: <https://rijksbegroting.nl/algemeen/gerefererd/1/1/7/kst117849.html>

EUR 0.03 per litre per year that cost on average EUR 170 million a year in revenue forgone between 2005 and 2012. The phase out of this scheme was completed at the end of 2012.

A 2018 evaluation of the partial refund scheme for the LNG excise duty and other excise-duty related tax expenditures, determined that the LNG scheme was only partially effective in fulfilling its objective.⁴⁰ The scheme was introduced in 2014 for a period of five years and was meant to encourage the use of LNG due to its better environmental outcomes compared with diesel. The uptake of LNG trucks was lower than expected, in large part because of the weak supply in LNG trucks and LNG infrastructure. In the cost-effectiveness analysis, the evaluation found that the social cost of driving an LNG truck including the revenue forgone from the reduced excise duty outweighs the environmental benefit and thus the government decided to discontinue this measure. The budgetary cost of this measure was an average of EUR 11 000 per truck, an approximate total of EUR 5 million over the period the scheme was in effect (2014-2018).

4.2. Evaluation of the Netherland's fossil-fuel subsidies and recommendations

The Netherlands is entering a new energy and climate policy chapter with the Climate Agreement adopted in June 2019. Among the several policy instruments envisioned to strengthen incentives for emissions reduction, the Climate Agreement requires the introduction of a carbon levy for industry by 2021 for emissions covered under the ETS and waste incineration plants. The revenue, though limited given the tax design, would be used to help companies green their activities through investments in emissions reducing infrastructure. The Climate Agreement also includes a CO₂ price floor in the electricity sector by 2020 and commits to subsidising carbon capture and storage (CCS) technologies in such a way as not to hamper the development and deployment of more cost-effective transitional technologies. In subsidising CCS technologies, the government needs to strike a balance between encouraging clean technologies and harnessing the abatement potential of CCS.

These efforts will be accompanied by changes in the energy tax rate structure with targeted increases for specific consumers groups. One of the changes is a gradual increase in the tax on natural gas for the first bracket of consumers, i.e. households that would be offset by a reduction in the electricity tax for the same group. The change reflects the ambition to incentivise households to switch from natural-gas based heating to other heating sources as the country winds down production of natural gas from the Groningen field and becomes increasingly dependent on imported natural gas. Already, the Gas Act, amended in 2018, stipulates that new buildings shall not be connected to the gas grid.

At the same time, industrial consumers will pay a larger share of the surcharge for renewable energy (opslag duurzame energie or ODE) that is added to the energy tax. Currently the burden of the ODE is equally shared between households and industrial consumers, but the change will imply that two-thirds of the tax burden will be borne by industrial consumers. Revenues raised from the ODE will be used to fund the renewable energy SDE+ subsidy and the new SDE++ subsidy scheme that will finance emissions reducing measures. The carbon levy, the increase in ODE, and the expiration of the ETS compensation scheme imply higher energy costs for industrial consumers, particularly for natural gas.

The Climate Agreement includes several mitigating measures to ensure a just transition, prevent reallocation of production and reduce the risk of carbon leakage. The Netherlands plans on building international coalitions on pricing emissions and advocating for strengthening the EU ETS as to minimise the distorting cross-border effects of unilateral climate action and ensure a level-playing field for industry.

Fossil-fuel subsidy reform can be integral to alleviating distortions that undermine efforts to transition to a low carbon economy. It is an opportunity to align incentives towards the use of and investment in cleaner energy sources and infrastructure. In this review, the government did not yet put forward any fossil fuel subsidy for reform as it views these policy instruments as part of a wider effort to realign tax policy and

⁴⁰ 32 800 Nr. 45 Letter from the State Secretary of Finance; <https://zoek.officielebekendmakingen.nl/kst-32800-45.html>

public finances with climate objectives. Besides, this report will serve as part of the government's input to a Parliamentary Letter, which will be used in deliberations on fossil-fuel subsidy reform.

The Ministry of Economic Affairs and Climate Policy jointly with the Ministry of Finance will be conducting a policy review round for its tax expenditures under the energy tax in 2020.⁴¹ The policy review round will be geared toward assessing fiscal policy as a tool for supporting the energy transition and climate ambitions, which will include discussions of the forthcoming CO₂ carbon levy and changes in the degressive structure of the energy tax and ODE. This exercise is highly welcomed as an important step towards ensuring that tax policy is effective and efficient and well aligned with the country's energy and climate policy ambitions.

The list of tax expenditures the government included for review could be more comprehensive and include all those support measures that confer a benefit to the use and production of fossil fuels. It would provide for a more complete and informed view of the situation. Several measures, particularly those related to the upstream oil and gas sector and those that fall under the purview of the EU ETD are not included in the tax expenditure reports. Tax expenditures related to fuel excise duties are under a different policy area in the budget law and therefore reviewed in a separate evaluation round. The compensation for the ETS indirect costs, S-1, goes through yet another separate policy review process dedicated to subsidy programmes. Together, both tax and non-tax measures along the fossil-fuel value chain, can have implications for energy use and thus the envisioned energy transition and therefore warrant examination conjointly.

The separation of the different policy areas and their respective instruments gives way to a fragmented policy evaluation process that does not deliver a coherent assessment of those support measures that may hinder the overall climate agenda. The last cross-cutting Energy Policy Review of 2014 touched upon three operational goals that deliver affordable, reliable and clean energy. While the 2014 review did assess the country's broader energy policy and associated instruments, including the investment allowance for marginal gas fields (S-1), the review's focus was on measures that create an enabling policy environment toward achieving the operational goal. It did not assess government policies such as fossil-fuel subsidies that can undermine efforts towards achieving these goals. In this sense, the exercise can be deemed incomplete and may benefit from greater coherence.

The 2014 Energy Policy Review brought to light the centrality of the EU ETD for energy taxation in the Netherlands. The ETD appears to be outdated. A recent report by the European Commission found that the ETD has not been effective in facilitating the transition and setting up the incentives to take up cleaner energy sources (European Commission, 2019^[3]). This report found, *inter alia*, that the ETD distorts the playing field between energy sources by design, it disadvantages lower energy content per volume, typical of biofuels, through the mechanism of taxation as "equivalent fuel", and allows the use of subsidies favouring fossil fuels over low-carbon renewable energies, hence going against EU and internationally stated objectives of phasing out fossil-fuel subsidies. Such insights and those that are more tailored to the domestic situation in the Netherlands will help drive reform both within the country and in the broader EU community.⁴²

It is recommended that the government includes the EU ETD-related tax preferences as part of its tax expenditure reporting with their associated fiscal costs and to consider them in the periodic policy review rounds. As several of the measures included in this review fall under the purview of the ETD, any reform would require a concerted EU-wide effort to revisit and modernise the ETD such that it can address today's policy environment and technological developments. The coverage of measures in the tax expenditure reports has changed over the years to exclude ETD-related measures such as fuel tax exemption in the

⁴¹ http://www.rijksbegroting.nl/2020/kamerstukken.2019/1/1/kst264817_16.html

⁴² A 2014 report from PBL found that energy taxation in the Netherlands has been designed to tax environmental damage indirectly, via taxes on motor fuel, natural gas and electricity and that the current structure does not deliver the best environment result since taxes on energy products are not in line with environmental pricing. One suggested recommendation is that energy taxation should not only reflect the climate impact but also the various effects of fuel use on air quality (Vollebergh, 2014^[28]).

refinery sector, natural gas tax exemption for CHP plants and exemptions for air and water navigation. By not reporting on these policies, they are not subjected to periodic policy evaluations. This is a missed opportunity which also reduces transparency across relevant measures.

International competitiveness is a primary reason the government evoked for maintaining tax expenditures for energy-intensive industries, yet there is no consensus in the literature on the scope and size of effects of energy prices on competitiveness and carbon leakage.⁴³ As a result of its very degressive tax structure and the tax reductions and exemptions provided to industrial energy consumers, the effective natural gas prices and electricity prices in the Netherlands are lower for large consumers when compared with France and Germany (PwC, 2018^[11]) (European Commission, 2019^[19]). This is in large part due to a lower share of energy taxes in the final price that is comprised of wholesale prices, network charges and taxes. The EU ETS indirect cost compensation scheme (S-1) can imply further reductions in the effective energy price facing industrial energy consumers.

The government's independent evaluation of the EU ETS compensation subsidy scheme shows that indeed some jurisdictions in the EU spend more to compensate their energy-intensive industries for the indirect ETS cost than others. The Netherlands' outlays per installation are average among the 10 Member States with similar schemes (Table 6). One differentiating feature in the Dutch scheme is the linking of the compensation eligibility to the energy-saving covenant agreements; only the region of Flanders in Belgium has a similar requirement. The uneven application of the scheme across the EU translates into different effective energy prices among these jurisdictions and thus may give rise to level playing field concerns.

Table 6. Indirect ETS cost compensation paid by EU Members States in 2017

	Duration of the scheme	Compensation disbursed in 2017 for indirect costs incurred in 2016 (in million EUR)	Number of beneficiaries (installations)	Average subsidy per installation (in million EUR)
The United Kingdom	2013-2020	19	95	0.20
Greece	2013-2020	12.4	52	0.24
Germany	2013-2020	289	902	0.32
Belgium (Flanders)	2013-2020	46.7	107	0.44
France	2015-2020	140	296	0.47
The Netherlands	2013-2020	53.5	92	0.58
Spain	2013-2020	84	136	0.62
Finland	2016-2020	38	55	0.69
Lithuania	2014-2020	1	1	1
Slovakia	2014-2020	10	5	2

Note: A scheme in Belgium (Wallonia) and Luxembourg were approved by the European Commission in 2018. Data is based on figures published by individual Member States.

Source: (European Commission, 2019^[20]).

⁴³ See (Flues and van Dender, 2017^[23]) and (Naegle and Zaklan, 2019^[24]) for a discussion on carbon leakage in the EU. For a literature review on the impact of environmental regulation on firm competitiveness, see (Dechezleprêtre and Sato, 2017^[27]). (Vollebergh et al., 2019^[12]) Leakage in the Netherlands can be reduced with subsidies for emissions-reducing measures and innovation and through an internationally co-ordinated carbon price.

The different subsidies benefitting energy-intensive sectors weaken the carbon pricing signal they face and result in effective carbon rates well below a benchmark for a conservative estimate of the social cost of carbon, EUR 30 per tonne of CO₂, for the bulk of emissions. The OECD's analysis in *Effective Carbon Rates 2018* shows that in the 42 OECD and G20 countries, 65% of aggregate emissions from industry were unpriced in 2015 with only a few countries pricing a significant share of their emissions above EUR 30 per tonne of CO₂, i.e. Norway, Finland and Slovenia. In the Netherlands, only 17% of industrial emissions were priced above this benchmark and only 2% above EUR 60 per tonne of CO₂ in 2015 (OECD, 2018_[21]).⁴⁴ This is in sharp contrast with the effective carbon rates in the residential and commercial sectors and the road transport sector in the Netherlands, which respectively price 90% and 100% of emissions at above EUR 60 per tonne of CO₂.

Together, CO₂ emissions pricing in the Netherlands results in a *carbon pricing gap* of 43% at EUR 30 per tonne of CO₂ and 54% at EUR 60 per tonne of CO₂; the average gap among the 22 EU Member States in the study is 52% at EUR 30 per tonne of CO₂.⁴⁵ This indicator measures the difference between a benchmark rate and the actual carbon rate for percentile of emissions, summing all the positive differences. It informs on the effort expanded by the country to implement market-based and cost-effective instruments to decarbonise their economies. At the same time, the carbon pricing gap is an indicator of the risks to long-run competitiveness with a low value suggesting that the country is willing to decarbonise at the lowest cost and that companies are incentivised to compete in a lower carbon economy. A high carbon pricing gap indicates that either the country chooses to undertake costly efforts to abate emissions or that firms are likely to forgo opportunities to decarbonise and may face high transition risks (OECD, 2018_[21]).

Nevertheless, a subsidy scheme like the ETS indirect compensation scheme can weaken the price signal of emissions for industrial users, therefore undermining incentives to investment in clean technologies and putting at risk the long-term competitiveness of these industries. The forthcoming carbon levy, effective in 2021, on industrial emissions will strengthen the country's pricing of emissions and help close the carbon pricing gap.

As multiple instruments provide support to energy-intensive industries, it becomes difficult to ascertain the net impact of these instruments and the possible redundancies and interactions among them. Having an integrated approach in the periodic policy evaluations of energy-pricing related measures can lead to delivering a clearer picture of the effects of different government support measures on the carbon price signal facing large energy consumers. For the upcoming 2020 energy taxation review, an integrated evaluation can bring greater transparency about the carbon price signals resulting from the broader energy and climate policy in the country. It would also inform on the risk of carbon leakage affecting these sectors and eventually allow for better targeting of the subsidy to those sectors that need it the most.

⁴⁴ Effective *marginal* carbon rates are the total price that applies to carbon dioxide emissions from energy use as a result of market-based instruments (specific energy taxes, carbon taxes and carbon emission permit prices). It does not include free allocation of permits nor the ETS indirect compensation. These latter changes the effective average carbon rates; the marginal rates remain unchanged.

⁴⁵ With the operationalisation of the Market stability reserve in 2019 and other reforms in phase III of the EU ETS to reduce surplus emissions, the increase of CO₂ price reduces the carbon pricing gap.

Recommendations

In the light of the discussion above, the review panel encourages the government of the Netherlands to consider the following recommendations for improving its evaluation of fossil-fuel subsidies and identifying opportunities for reform.

- The government of the Netherlands may consider maintaining a broad scope for the inventory of fossil-fuel subsidies, and consider subsidies for both production and consumption of fossil fuels, while having a transparent stakeholder consultation.
- The government may also take into account the negative externalities of the use of fossil fuels when evaluating the energy taxation and public finance supporting the use and consumption of fossil fuels. This is in the context of alignment of public financial flows with its energy and climate objectives and international commitments in the Paris Agreement, in the context of the EU NECP and the UN's SDG processes.
- More specifically, the government of the Netherlands may consider:
 - incorporating tax exemptions and refunds that are under the purview of the EU ETD in the tax expenditure reports of Netherlands, e.g. exemption to aviation and maritime transport and fuels used in electricity.
 - broadening the scope of the periodic policy reviews to include other tax and non-tax measure that can influence the use and production of fossil fuels and help the country achieve its climate targets.
 - including the impact of energy taxation, alternative measures and the reforms in its policy review of energy taxation to ascertain how the final burden is shared among consumer groups and interactions with other policy measures proposed in the Climate Agreement.

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