Effects of an EU 55% GHG reduction target

Assessment of potential impacts on Dutch climate policies

CE Delft

Committed to the Environment

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Content

Summary

Introduction

In December 2019, the European Commission published the Green Deal, an ambitious strategy to tackle the current climate and environmental challenges. The Green Deal increases the EU's climate ambition for 2030 and 2050 and lays out the path towards the transformative policies that will be necessary to meet these goals. One of the key ambitions in the Green Deal is to increase the EU's greenhouse gas (GHG) reduction target for 2030 from the current goal of at least 40% to 50% or 55%, compared with 1990 levels. It also includes a roadmap with a wide range of policy initiatives and actions needed to achieve this goal. Many of these will require changes to current directives and regulations or the initiation of new EU level legislation.

This report, commissioned by the Dutch Ministry of Economic Affairs and Climate, provides an overview of the main EU level policy changes that are currently expected, and an assessment of their potential impact on Dutch climate policies. The scope of this study is all energy and climate-related policies except the Effort Sharing Regulation, the LULUCF-Regulation and the EU Emissions Trading System.

The impact of the Green Deal

The actions and plans outlined in the Green Deal cover a broad range of topics. Many are related to current EU directives and regulations, which could be strengthened or expanded to speed up decarbonisation in the various sectors. In this study, we assessed the following directives: Renewable Energy Directive recast (RED II), Energy Efficiency Directive (EED), Energy Performance of Buildings Directive (EPBD), Energy Taxation Directive (ETD), CO_2 emission standards for cars and vans, CO_2 emission standards for heavy-duty vehicles, Fuel Quality Directive (FQD), Alternative Fuels Infrastructure Directive (AFID) and Ecodesign Directive.

We identified three key modalities of revisions that could have the largest impact:

- Directives could provide for **higher indicative or binding targets**, which call for extra policy efforts. Higher targets, most notably regarding renewable energy and energy efficiency, increase the importance of effective implementation of the policy plans outlined in the Climate Agreement and may also require additional policy efforts in the Netherlands that go beyond the Agreement. They can also help speed up technological developments, create economies of scale and encourage investments in R&D and innovations throughout the EU. This is likely to reduce cost of the technologies that will be necessary to achieve the Dutch climate targets.
- European regulations could require manufacturers to comply with more stringent **energy use or CO_2 emission requirements**. This type of EU policy will result in more energy-efficient appliances (though the Ecodesign directive) and vehicles (CO_2 and cars/vans/heavy-duty regulations) and will reduce energy use at the source. Furthermore, stricter energy efficiency standards of products and materials can help create a level playing field for Dutch industry in the EU and globally. These regulations do not require additional national efforts.
- EU directives might provide extra **financial policy incentives** like minimum CO_2 rates, abolishment of energy tax credits and financial instruments (including innovation support) that could speed up the process of national implementation.

This could make existing policies more effective, provide opportunities for introducing new policy instruments and eventually would make it easier to meet climate targets in the Netherlands. Harmonisation of these financial incentives in the EU would reduce carbon leakage and help create a level playing field for industry.

In addition, a range of other revisions could be envisaged regarding some of the supporting and facilitating provisions in the directives. Stronger enforcement of the national implementation of current EU policies also seems likely. Concrete policy proposals on these issues could not yet be identified.

Our report aims to identify the potential key revisions to a range of directives and regulations, based on recent publications and a number of interviews with experts. These developments are still very uncertain; the preparatory work to develop concrete policy proposals by the European Commission is still ongoing.

Impact on Dutch climate policies

Many of the potential revisions of the EU directives will require subsequent strengthening of national policies. This means that a wide range of actions and targets currently included in the Climate Agreement may need to be strengthened and/or accelerated.

On the other hand, the EU policy revisions may also create additional opportunities for the Netherlands. They may help to ensure a 'level playing field' for climate policies and Dutch industry, reducing carbon leakage and competitiveness issues. They can also speed up innovations and cost reduction of key technologies. Other potential impacts such as on the cost-effectiveness of Dutch climate policies and energy cost for end users were also identified but whether these will be negative or positive could not be assessed within the scope of this study.

We found that the potential revisions to the EU directives and regulations are generally in line with the actions and strategy outlined in the Climate Agreement. Some require speeding up of the developments already foreseen in the Agreement, others facilitate the national climate actions or achieve CO_2 savings in the Netherlands without the need for additional national action. However, in policy making the devil can be in the detail, and it will be important to remain closely involved in the European policy making process in the coming years.

A brief summary of the key potential revisions that were identified and their impacts on Dutch climate policies is provided in Table 1. For a more detailed assessment and explanation of these conclusions, we refer to the factsheets that were developed for this study.

Table 1 – Brief summary of key potential revisions and impacts on Dutch climate policies

	Potential revisions	Potential impacts on Dutch policies
Renewable Energy Directive recast (RED II)	– Increase of the EU renewable energy target for 2030 (Article 3), from the current 32 to 35-40%. – Increase of the minimum renewable energy in transport target for 2030, or introduction of additional targets for transport modes (e.g. maritime shipping and aviation) and fuel categories (e.g. RFNBOs) – Stricter enforcement of current provisions.	– Increase of the expected national contribution to the Art. 3 target. – This may require further accelerating the growth of renewable energy generation, beyond the Climate Agreement (depending on the EU target, additional energy efficiency efforts, etc.). – This will achieve additional CO_2 reduction, but also increases the need to remove bottlenecks in the electricity grid and speed up projects for the integration of wind energy, such as demand flexibility, electrolysers, hydrogen infrastructure and hydrogen use in various sectors (again beyond what is agreed in the Climate Agreement). – Speeding up renewable energy deployment throughout the EU is likely to further decrease cost of renewable energy generation and integration, through innovation and benefits of scale.
Energy Efficiency Directive (EED)	– Increase of the EU energy efficiency headline target for 2030 (Article 3), from the current 32.% to 35% or up to 40%, – Perhaps increase of Article 7 end use energy savings, but not considered to be very likely at the moment. – Stricter enforcement of current provisions.	– Increase of the expected national contribution to the Art. 3 target. – Effective implementation of existing energy efficiency policy and the additional energy efficiency efforts laid out in the Climate Agreement will become more important – If necessary (or desired, to achieve the higher climate target cost-effectively), further strengthening of existing polices. – These efforts will achieve additional CO_2 reduction. – Speeding up energy efficiency efforts throughout the EU is likely to further decrease cost of relevant technologies, through innovation and benefits of scale.
Regulation on CO_2 emission standards for passenger cars and LDV	– No concrete indications that standards will be tightened. However, a scenario of a strengthening of the 2030 target by 15% compared to the current target was assessed to illustrate the potential impact.	– More ambitious standards would make cost-effective technologies to reduce CO_2 emissions more widely available at lower cost. – This would result in CO_2 savings and a higher availability of ZE vehicles, and support the Netherlands in the high level of ambition of Dutch policy on electric mobility. – Energy reduction as result of higher efficiencies will also lower the efforts for other policy objectives, such as the need for renewable energy in transport. – Stricter standards or a stricter enforcement of current standards will benefit Dutch market actors involved in the EV industry.
Regulation on CO_2 emission standards for HDV	– No concrete indications that standards will be tightened. However, a scenario of a strengthening of the 2030 target by 15% compared to the current target was assessed to illustrate the potential impact.	– More ambitious standards would make cost-effective technologies to reduce CO_2 emissions more widely available at lower cost. – This would result in CO_2 savings and a higher availability of ZE vehicles. This will support the Netherlands in the high level of ambition of Dutch policy, for example regarding zero-emission city logistics. – Energy reduction as result of higher efficiencies will also lower the efforts for other policy objectives, such as the need for renewable energy in transport. – Stricter standards or a stricter enforcement of current standards will benefit Dutch market actors involved in the EV industry.

	Potential revisions	Potential impacts on Dutch policies
Energy Performance of Buildings Directive (EPBD)	– The ambition is to double the present renovation rate (0.4-1.2% per year EU-wide. This could result in (indicative or binding) targets, formulated in terms of a percentage of buildings or in terms of reduction in CO_2 emissions. – Stricter enforcement of current provisions.	– The renovation rate may need to double, compared to current ambitions. The additional requirement could lie between 0.3 and 1.9% per year, or an additional 0.4 to 2.4 million house-equivalents by 2030. – This would require considerable additional efforts across all government levels, the buildings and construction sector, building owners and users. – These efforts will achieve additional CO_2 reduction. – At the same time, an EU-wide acceleration of developments could result in lower cost, experience, new materials, etc.
Fuel Quality Directive (FQD)	– The target of Article 7a (currently a 6% reduction of the average GHG intensity of fuels by 2020 compared to 2010) could be raised to realise a higher GHG intensity reduction target, but no concrete proposals were found	– The continuation of the FQD and especially of the target for a reduction of the average GHG intensity of fuels will support the introduction of a GHG intensity unit (BKEs) in the Netherlands, which could function in the same way as the currently existing renewable fuel units (HBEs). In other words: this will help the Netherlands to steer on lifecycle emissions, which was mentioned in the Climate Agreement. – Steering the GHG intensity of fuels at the EU level will benefit the European level playing field, because all fuel suppliers fall under the obligation. – We do not expect a significant impact on Dutch CO_2 emissions within the scope of the CA: many lifecycle emissions are emitted outside the EU. The CA counts tank-to-wheel reduction.
Alternative Fuels Infrastructure Directive (AFID)	– A range of revisions are possible, such as the Introduction of national binding targets focused on exact numbers for the realisation of filling and recharging infrastructure, exclusion of targets for better performing fossil fuels (LNG/CNG), additional targets for HDV.	– Strengthening AFiD will provide opportunities for Dutch policy ambitions and the Dutch market, mainly by means of cost reductions and further contribution to a single market. – Binding targets could result in the need to accelerate the development of infrastructure for new fuels and energy carriers, or limit the choice for locations of fuelling infrastructure. This may be less in line with current national objectives and perhaps not as cost effective. – Due to the almost mature market in the Netherlands no or limited impacts are expected from higher targets for the Netherlands. There is (or we are at least close to) a business case for charging infrastructure and therefore market actors take the initiative to invest without strict targets.
Ecodesign Directive	– Broadening of the directive to cover more product groups. – Addition of other requirements, for example carbon footprint of products, enabling remanufacturing and high-quality recycling, improving product durability and reparability. – Enhancing monitoring and verification.	– These revisions will result in energy savings and CO_2 emission reductions. Impacts on 2030 emissions depends on timeline for introduction of the new standards, and their ambition levels. – They contribute to a more level (EU and global) playing field for industry, since these standards apply to all relevant products on the EU market. – The adoption of new implementing measures will affect producers since they have to comply with the standards.
Energy Taxation Directive (ETD)	– New minimum tariffs for energy products for fuel and transport, and electricity. These will be based on energy content instead of volume and will be increased based on indexation. – It is likely that a minimum rate for carbon will be introduced for non-EU ETS sectors.	– Depending on the revisions, a CO_2 tax will need to be implemented (on top of existing energy taxes) for heating and motor fuels. – This would result in CO_2 emission reductions, – This would also reduce the budget needed for existing financial support policies such as SDE++, EIA and MIA/Vamil

Based on this analysis, we estimated the impacts of the potential revisions on the national ambitions for renewable energy, energy efficiency and GHG reduction in 2030. The resulting reduction of Dutch GHG emissions in 2030, additional to current emission forecasts, is shown in Table 2[1]. This was a partial analysis per directive without taking into account the interactions between different measures and directives, the reductions can therefore not be summed. The impacts of some of the mechanisms/ directives could not be determined, these rows were left blank.

Table 2 - Impacts of revisions on achievements of Dutch climate targets in 2030, GHG emission reduction Mton-eq.

	Range of impacts (Mton CO_2-eq.)	Mechanism
Renewable Energy Directive recast (RED II), compared to KEV 2019	2.3-8.0	Renewable energy production
RED II compared to KEV 2019 and Climate Agreement**	0.0-1.7	Renewable energy production
Energy Efficiency Directive (EED)	3.6-10.9	Reduction energy demand
Regulation on CO_2 emission standards for passenger cars and LDV	0.0-0.4	Reduction energy demand and zero-emission technologies
Regulation on CO_2 emission standards for HDV		
Energy Performance of Buildings Directive (EPBD)	0.2-4.9	Reduction energy demand
Fuel Quality Directive (FQD)	0	
Alternative Fuels Infrastructure Directive (AFID)		
Ecodesign Directive		
Energy Taxation Directive (ETD)	0.0-2.6	All

[1] The definition of the scenarios, key assumptions, emission baselines etc. can be found in the factsheets.

1 Introduction

1.1 Background

In December 2019, the European Commission published the European Green Deal, a document that puts forward an ambitious strategy to tackle the current climate and environmental-related challenges. It aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use. This strategy increases the EU's climate ambition for 2030 and 2050, and lays out the path towards the deeply transformative policies that will be necessary to meet these ambitions.

The Green Deal intends to increase the EU's greenhouse gas (GHG) reductions target climate ambition for 2030 from at least 40 to 50 or 55%, compared with 1990 levels. It includes a roadmap with actions and describes a wide range of policy initiatives and actions needed to achieve this goal, many of which will require changes to current directives and regulations, or the initiation of new EU level legislation. By September 2020, the Commission intends to publish its impact-assessed plan to raise the EU's 2030 ambitions and cut greenhouse gas emissions to 50-55%. The Commission will then come forward with revisions of the underlying climate policy instruments in 2021.

In the meantime, various supporting documents have been published to further elaborate the Green Deal, including a proposal for a European 'Climate Law' (EC, 2020e), a new Industrial Strategy (EC, 2020c) and a 'Farm to Fork' Strategy for the agricultural sector (EC, 2020b).

The Dutch climate policies for 2030 and beyond, as outlined in the Climate Agreement ('het Klimaatakkoord') (2019a) and implemented in a wide range of policies, are aimed at the current ambition level of a Dutch GHG reduction target of 49% in 2030, compared to 1990 (excluding LULUCF emissions and sinks). They are also aligned with the current EU directives and regulations, as described in the Dutch National Energy and Climate Plan (NECP) (Ministry of EZK, 2019). Changing the EU level target, directives and regulations will undoubtedly require changes to the national policies and ambitions. Some of these EU level changes may create opportunities for Dutch climate policies, for example by speeding up technological innovations or by requiring manufacturers to increase the energy efficiency of their products. Other changes may require strengthening of Dutch policies, and reassessment and revision of the Climate Agreement.

The Dutch Ministry of Economic Affairs and Climate has therefore commissioned CE Delft to provide an overview of the main EU level policy changes that can be expected from the Green Deal, and an assessment of the potential impact on Dutch climate policies.

The main results of this assessment can be found in the factsheets for the key directives, added as separate documents to the report, and in Chapter 4, which provides a synthesis of the results.

1.2 Objective and scope of this report

The main objective of this study is to estimate the potential effects of a revision of the EU energy and climate directives and regulations, in line with an increase of the EU GHG reduction target for 2030 to 55%.

For the key directives and regulations, factsheets are developed that describe:
- how they may be revised, and what range of changes can be expected;
- how these changes are likely to impact the Dutch climate policies.

In addition, a brief overview of potential new directives and regulations is provided, and of new provisions that may be added to existing directives and regulations.

The scope of the study is all energy and climate-related policies except the Effort Sharing Regulation (ESR), the LULUCF-Regulation and the EU Emissions Trading System (EU ETS). The focus is on sectors included in the Effort Sharing Regulation.

1.3 Methodology

The study was mainly based on the official communications and other documents published by the European Commission, Dutch policy documents and forecasts, documents published by other stakeholders, own expertise at CE Delft, input by Dutch policy makers through targeted questionnaires and interviews with experts.
The following external experts were interviewed:
- Nienke Onnen (Natuur en Milieu);
- Laura Buffet (Transport & Environment);
- Patrick ten Brink (European Environmental Bureau);
- Herman Vollenbergh (PBL Netherlands Environmental Assessment Agency);
- Martin Mooij (Dutch Green Building Council);
- Thorfinn Stainforth (Institute for European Environmental Policy).

We assessed the EU publications related to the Green Deal, relevant public consultations and documents related to the development of the current legislation (such as Impact Assessments).

It is still early days in the EU policy developments related to the Green Deal, and the consequences of the Green Deal ambitions on the concrete EU policies are still very uncertain. This assessment can therefore only be quite speculative and high level. It provides a broad picture of the revisions to the EU policy framework that are currently considered, and how this may affect the Netherlands. The report is intended to provide a factual overview of the potential developments, and can be used to guide the policy discussions on the Dutch position in the EU negotiations of the coming months and years.

2 The Green Deal and key EU directives

2.1 Introduction

In December 2019, during its first weeks of instalment, the European Commission presented the European Green Deal (EC, 2019a). This document gives shape to what the Commission spells out as the defining task of this generation: tackling climate- and environment-related challenges.

The Green Deal is a strategic document that serves as a roadmap for the present Commission in transforming the economy for a sustainable future (EC, 2019b).
The Green Deal gives substance to the long-term ambition to achieve climate neutrality by 2050, that was embraced by the European Council in December 2019 (EC, 2018a).[2]
The first subtarget the Green Deal has in sight is set for 2030.

Currently, the Union-wide GHG emissions reduction target for 2030 is fixed at at least 40%, compared with 1990 levels. In the Green Deal, the Commission concludes that the urgency of climate change might require additional GHG reductions for 2030.
It therefore announces the proposal of the first European 'Climate Law' which would enshrine the 2050 climate neutrality objective for the EU in legislation, and therefore make it binding by law. This was published in in March 2020. It also says that later in 2020 an impact-assessed plan will be presented to increase the target to at least 50% and towards 55%. This is expected in September 2020.

2.2 The EU Green Deal: timeline

While the Green Deal is conceived as a roadmap, it gives both explicit and implicit indications as to which policies are envisaged to be strengthened in the coming years. The milestones for the further development of the strategy and policy revisions mentioned in the Green Deal are outlined on a timeline in Annex C. The Farm to Fork and biodiversity strategy were delayed somewhat due to the Corona crisis, but were published recently.

Since publication of the Green Deal, a range of follow-up actions have been initiated. Some of the key results from the Commission so far (June 2020):

- publication of a proposal for a EU Climate Law;
- the launch of a public consultation for the EU climate ambition for 2030 and for the design of certain climate and energy policies of the European Green Deal[3];
- publication of a new Industrial Strategy, a new Circular Economy Action Plan (EC, 2020a) and a Farm to Fork Strategy (EC, 2020b).

[2] In November 2018, the Commission communicated the ambition of achieving climate neutrality by 2050.

[3] Public Consultation : 2030 Climate Target Plan

The EU Climate Law
On March 4, the European Commission presented a proposal for a regulation (the 'Climate Law') (EC, 2020e), establishing the framework for achieving climate neutrality and amending Regulation 2018/1999 (EU, 2018a). The proposal stipulated that Union-wide emissions and removals of GHG regulated in Union law should be balanced at the latest by 2050. The Climate Law is about safeguarding the process in attaining climate neutrality and does not go into specific policies.

2.3 Selection of key directives and impacts to assess in this report

To achieve this higher climate ambition, the Green Deals describes a wide range of actions and ambitions, albeit still on a high level. Many of these actions can be related to current EU directives and regulations, which would need to be strengthened, expanded or otherwise revised to speed up decarbonisation in the various sectors.

To focus the study on the key potential impacts of the Green Deal on Dutch policies, a high-level assessment was carried out first of a wide range of energy- and climate-related policy areas that could be affected by the Green Deal. This assessment considered

a The potential impact of the Green Deal on the EU directives and regulations.
b Whether these effects are likely to impact Dutch climate policies, in a positive or negative way.

We then selected those directives and regulations that are likely to change and that could create either a significant risk or a significant opportunity for Dutch climate policies, and give less attention to the rest. The resulting list of selected directive is provided in Table 3, the main reasoning for this selection can be found in Annex B.

Table 3 - Directives and regulations selected for detailed analysis

Directive/regulation	DG Lead	Consolidated version
Renewable Energy Directive recast (RED II)	ENER	2018/2001
Energy Efficiency Directive (EED)	ENER	2012/27/EU, 2018/2002
Energy Performance of Buildings Directive (EPBD)	ENER	2018/844
Energy Taxation Directive (ETD)	ENER	2003/96/EC
CO_2 emission standards for cars and vans	CLIMA	2019/631
CO_2 emission standards for heavy-duty vehicles	CLIMA	2019/1242
Fuel Quality Directive (FQD)	CLIMA	2009/30/EC, 98/70/EC
Alternative Fuels Infrastructure Directive (AFID)	MOVE	2014/94/EU
Ecodesign Directive	GROW	2009/125/EC

2.4 Assessment of the key directives and regulations

The results of the analysis of the potential impact of the Green Deal on the key directives and the potential impacts of these changes on Dutch policies can be found in the factsheets, included in Annex C of this report.

Table 4 - Index of the factsheets

Directive/regulation	Annex
Renewable Energy Directive recast (RED II)	C.1
Energy Efficiency Directive recast (EED II)	C.2
Energy Performance of Buildings (EPBD)	C.3
Energy Taxation Directive (ETD)	C.4
CO_2 emission standards for cars and vans	C.5
CO_2 emission standards for heavy-duty vehicles	C.6
Fuel Quality Directive (FQD)	C.7
Alternative Fuels Infrastructure Directive (AFID)	C.8
Ecodesign Directive	C.9

A synthesis of the potential impacts of these changes on Dutch climate policies can be found in the Chapter 4.

3 New directives and developments in agriculture and industry

Due to the scoping of this report, potential new directives or regulations and the policy developments in agriculture and industry are not, or not fully, covered in the factsheets. These could, however, be very relevant for both the EU Green Deal and Dutch climate policies. At the request of the client, we have therefore added brief overviews of these three topics in the following paragraphs.

3.1 Possible new directives or regulations

In the factsheets, we focus on the existing directives and regulations, since this is the most likely route for changes to EU policy in the short term (in the coming years). However, implementation of the Green Deal does not have to be limited to current EU policies. It can also lead to new policy initiatives from the Commission. These could be implemented as new directives and regulations, or as additional provisions to the existing directives and regulations.

To ensure that policy makers are also aware of any potential new legislation that is not mentioned in the factsheets, the following list of new legislation that are not mentioned in the factsheets was compiled. This list was based on the recent Commission documents (most notably the Green Deal itself, the public consultation, the new Industrial Strategy and the new Circular Economy Strategy) and our interviews.

Carbon pricing and ETS:
- For buildings or the road transport sector: inclusion of these sectors in the EU ETS are considered. There is still a lot of debate whether this is indeed an attractive option or not.
- This could even lead to further extending the EU ETS to other sectors currently covered by the ESR, namely small industrial installations, municipal waste incineration, agriculture, etc.
- An EU-wide carbon price for the building sector and/or the road transport sector is mentioned, which could differ from carbon prices in the existing ETS sectors.
- Carbon pricing in the maritime transport sector, via a fuel levy or by including the sector in the EU ETS.

Border adjustment mechanism:
- Border adjustment mechanism, allowing EU industries to decarbonise without risk of “carbon leakage”, i.e. production shift to countries with less strict climate regulation (also mentioned in the previous paragraph).

Carbon capture and storage or use (CCS and CCU):
- Develop an EU methodology to certify carbon dioxide removal credits at the level of installations for different types of carbon dioxide removals in energy and industry, including use of bioenergy with CCS/mineralisation, air capture with CCS/mineralisation (note: probably to be used in the ETS).

Support measures:

- The Commission documents include a large number of policy ambitions and options that could be implemented through additional support measures, which may result in new requirements, increased financial support, increased development of skills, etc.
  There are too many to list here, but to give some examples:
  - support instruments providing stable incentives and increased investment certainty such as carbon contracts for difference (a contract that effectively compensates the price difference between the market price and the production cost for low-carbon electricity generation);
  - support measures that would allow closing the financing gap for the demonstration and first deployment of innovative low-carbon technologies or products, and seamless combination with other EU funding instruments, such as a strengthened Innovation Fund.

3.2 Agriculture

The European Green Deal is accompanied by the Farm to Fork Strategy (EC, 2020b); an elaboration of how the principles of the Green Deal will be integrated in the agricultural sector. It is called 'Farm to Fork' for good reason; it does not only address production, but also processing, marketing, retail and consumers.

In the Farm to Fork Strategy, a number of measures (27 in total) are elaborated on. These are categorised under different goals:

1. Ensure sustainable food production.
2. Stimulate sustainable food processing, wholesale, retail, hospitality and food services' practices.
3. Promote sustainable food consumption, facilitating the shift towards healthy, sustainable diets.
4. Reduce food loss and waste.

Certain actions/measures under Goals 2, 3 and 4 have the potential to reduce the carbon footprint of (Dutch) consumers. For example: *Initiative to improve the corporate governance framework, including a requirement for the food industry to integrate sustainability into corporate strategies* (under Goal 2), *Proposal for EU level targets for food waste reduction* (under Goal 4), and *Proposal for a sustainable food labelling framework to empower consumers to make sustainable food choices* (under Goal 3).

Certain actions/measures under Goal 1 have the potential to help reduce GHG emissions in production systems. Below we elaborate on what we have identified as the three most important ones in terms of potential for reduction, and of their influence on Dutch production and policy:

- adopt recommendations to each Member State addressing the nine specific objectives of the **Common Agricultural Policy (CAP)**, before the draft CAP Strategic Plans are formally submitted;
- proposal for the revision of the **feed additives Regulation** to reduce the environmental impact of livestock farming;
- EU **carbon farming** initiative.

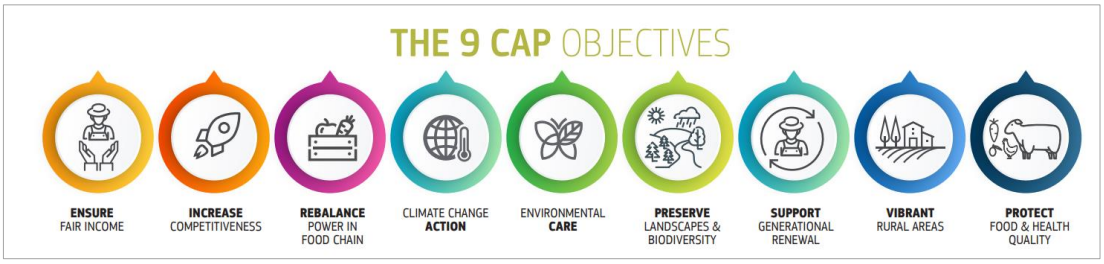
However, the Farm to Fork Strategy and the proposed actions in it have only recently been published and they have not been translated into regulations yet. The analysis below can therefore only provide an overview of the key EU policy developments that can be expected, and a first indication of the extent of its influence on Dutch climate policy.

Common Agricultural Policy (CAP)

EU Policy Development

The proposal for the new Common Agricultural Policy emphasises the importance of integrating more sustainable practices in the agricultural sector. As shown in Figure 1, of the nine CAP objectives, three focus specifically on environment: climate change action, environmental care and preserve landscapes and biodiversity. Of the CAP's overall budget, 40% is expected to contribute to climate action (EC, 2018b). This is, however, not a target or requirement and Member States are not asked to define or substantiate how financing through the CAP contributes to reduction of GHG emissions quantitatively (in terms of reduction in Mtonne CO_2-eq.). The future impact of this proposal on actual spending and subsequent GHG emission reduction is therefore uncertain.

Figure 1 - The nine CAP Objectives



Source: (EC, 2019b).

Budgets are again divided over two pillars, which may both contribute to the nine CAP objectives. The bulk of the budget is allocated to 'Pillar 1' (the European Agricultural Guarantee Fund - EAGF) which allocates direct payments to farmers. A smaller portion of the CAP budget is allocated to 'Pillar 2' (the European Agricultural Fund for Rural Development - EAFRD). Co-financing (in the Netherlands by the national government or provinces) is a prerequisite to receive EAFRD funds. Pillar 1 is basically divided into two options: direct payments and additional support through eco-schemes. Member States are free to choose how much of the funds they care to allocate to each. For the direct income support, certain mandatory environmental requirements need to be met. Eco-schemes will be developed by Member States themselves, and should be designed in such a way that they promote agricultural practices which benefit the climate and the environment. The requirements for eco-schemes will go beyond the mandatory requirements; the schemes are voluntary but the rewards can be higher, in terms of subsidy for the farmer.

In the new CAP Member States are required to make Strategic Plans. In these plans, Member States need to address how funds will be allocated, and which measures will be taken to contribute to the CAP objectives. Member States need to establish their own targets.

The Farm to Fork Strategy furthermore states that recommendations will be given to Member States, involving the nine specific objectives in the new CAP.

Impacts on Dutch Climate Policies

The Netherlands has numerous challenges when it comes to a more sustainable agriculture, many of them related to the amount of intensive animal agriculture on a small area. To reduce GHG emissions of the sector to a level in line with the longer term climate goals such as the goal of GHG emissions reductions of 95% in 2050 (included in the Dutch Climate Law 'Klimaatwet'), the agricultural sector will need to implement currently available GHG reduction measures and develop new means to reduce GHG emissions which go beyond what current technology can achieve (RLI, 2018). If the climate target is increased to 100% (in line with the EU 2050 long-term strategy, which aims for climate-neutrality by 2050), the challenge increases even further and other sectors may have to become net sinks if agriculture cannot achieve substantial GHG emission reductions as well.

Intensive animal agriculture also has a number of other environmental impacts that will have to be addressed at the same time as the climate-related challenges. The sector has a large impact on e.g. water quality and on nitrogen deposition. For example, the Netherlands Environmental Assessment Agency (PBL , 2018) estimates that in 2027, in only 55% of national waters and 15% of regional waters quality standards will be met. Also, the Netherlands is currently looking for ways to reduce nitrogen deposits, as these are too high in high value nature areas. Because of these other problems related to livestock in the Netherlands, plans to reduce the number of livestock are already in place (National Government of the Netherlands, 2017b; 2020a)[4] [5].
The recommendations made to the Netherlands for the National Strategic Plan as part of the Farm to Fork Strategy will likely address these issues as well.

The Dutch National Climate Agreement does address intensive animal agriculture. The idea of circular agriculture is central to the approach and measures listed. As stated by the Dutch Ministry of Agriculture, Nature and Food Quality: In circular production, cattle are fed primarily with grass, feed crops or crop residues from the farm where they are kept or from the immediate vicinity, as well as with residues from the food industry (National Government of the Netherlands, 2020b). If implemented completely, with feed sourced locally, regionally or nationally, and waste streams put to good use in local or regional agricultural crop production, this will radically change agriculture in the Netherlands. It will help make (animal) agriculture 'land dependent' – where the size of the sector is tailored to the land available.

[4] 200 million euro were allocated to reduce number of livestock in the Dutch 2017 coalition agreement.

[5] Since the coalition agreement, more funds have been allocated to reduce the number of livestock, e.g. 350 million euro in February.

The ambitions outlined in the Climate Agreement will be included in the Dutch CAP Strategic Plan, in which Member States are also required to define goals and targets. The CAP Strategic Plan should subsequently show that with targeted measures, the goals and targets regarding climate change, biodiversity and other environmental issues will be met. In the proposal for the new CAP, indicators on which progress should be reported are divided into categories:

- impact indicators (for climate action: reduction of GHG emissions);
- result indicators (e.g. share of livestock units under support to reduce emissions); and
- output indicators (e.g. number of hectares covered by climate commitments beyond mandatory requirements).

In the EU CAP proposal (EC, 2018), it is proposed monitoring will focus on result and output indicators. As monitoring on actual GHG emissions is not mandatory, we assess that this may not translate to a (large enough) reduction of GHG emissions by the sector overall. An example: if the share of livestock under support to reduce emissions increases, the total GHG emissions from livestock may only reduce if the total number of livestock stays the same or reduces – but the latter is not part of the monitoring.

This may change in the future, as a response to the Green Deal. In the Farm to Fork Strategy, it is stated that the EU will ask Member States to '*set explicit national values for those targets*', which refers to Green Deal targets and Biodiversity targets, which includes *'ensuring that the food chain, (…) has a neutral or positive environmental impact, (…) helping to mitigate climate change'* (EC, 2020b). This may mean a requirement to report, set targets and define a strategy and plan to reach those emissions targets in the CAP Strategic Plan on impact indicators as well. This would be in line with the Climate Agreement, where it is explicitly stated that the ambitions and actions of the Agreement will be included in the Dutch CAP Strategic Plan.

However, as the Green Deal climate ambition goes beyond what was assumed in the Climate Agreement, the targets and actions for the sector that are included in the Climate Agreement for 2030 may need to be increased as well. The extent of these revisions is still uncertain, as they will depend on the new EU climate target and the Effort Sharing Regulation (ESR) for 2030, the future implementation of the Farm to Fork Strategy and the national implementation of these new targets. It is likely, however, that the Green Deal may force the Netherlands to define (more ambitious) targets for the agricultural sector in 2030.

Feed Additives Regulation

EU Policy Development

Currently, intensive agriculture in the Netherlands is dependent on import of feedstuffs, some from countries where deforestation to clear land for agriculture is an issue. This influences (increases) the carbon footprint of animal products, and thereby of (Dutch) people's consumption patterns. The Farm to Fork Strategy proposes an action in which the EU rules for feed additives will be examined, with the goal to stimulate use of alternative feed sources (e.g. by-products from bio-economy, insects and algae) and EU-grown feed.

Impact on Dutch Climate Policies

A change in the feed additives regulation may not directly reduce the GHG emissions in the Netherlands, as the impact of import is allocated to the exporting country. However, the proposed action may be closely linked to the Dutch vision for circular agriculture, and therefore also to the national Climate Agreement focussing on circularity.

To ensure that these measures actually reduce (and not increase) GHG emissions in the Netherlands, it is important to take a systems perspective and look at the potential of the whole sector to change to a lower GHG intensive feed mix. This assessment may require life cycles assessments (LCAs) of animal products, which can help gain insight into the effects nationally and abroad. These LCAs can assess the emission reductions related to policy measures, distinguishing between national and international GHG emission impacts.

It is important to note that available EU-grown feedstuff supplemented with by-products and novel sustainable feedstuffs may not be able to feed the current Dutch livestock. Without policy and measures to decrease livestock volumes, it will be difficult to achieve a circular agriculture in the Netherlands. Furthermore, the agricultural sector may not be the only sector competing for these resources. Many of them can also be used as a (biomass) decarbonisation measure for energy production, industry and transport.

A related aspect of Dutch climate policy is that some feed additives have the potential to reduce enteric fermentation, and thereby lower the carbon footprint of milk and beef. The national Climate Agreement includes a measure related to use of additives to reduce methane emissions of livestock. The Farm to Fork Strategy does not seem to include this (yet) in their focus on feed (additives), even though such additives have the potential to reduce GHG emissions EU-wide.

EU carbon farming initiative

EU Policy Development

The agricultural and land use sectors have the potential to be a carbon sink. Examples are reforestation and afforestation, increasing the soil organic carbon in agricultural soils and reducing emissions from peatlands. In this context, one of the proposals in the Farm to Fork Strategy is the development of an EU carbon farming initiative. To ensure transparency and accountability, the Commission aims to explore development of a regulatory framework for certification of carbon removals. If carbon removals which go beyond current agreements and targets are valued financially, this may create a new business model for farmers and landowners. A carbon farming initiative will influence GHG emissions in the LULUCF sector, which is outside the scope of this study but has been included here because of the potential positive impact on the GHG emissions of the sector (see the following paragraph).

EU regulation on land use, land use change and forestry[6] (LULUCF) states that from 2021, carbon emissions from soils (i.e. agricultural soils, grassland, wetlands, forests) should not exceed emissions of the determined reference period (the no debit rule (EU,

[6] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.156.01.0001.01.ENG

2018d)). If a net debit cannot be compensated with the LULUCF sector, a net debit may be compensated by additional GHG emission reductions in other sectors (Emission Sharing Regulation sectors; transport, buildings, agriculture, non-ETS industry and waste). This means that if the estimated net debit is not compensated within the sector, targets in other (ESR) sectors need to increase.

Impacts on Dutch climate policies

For the Netherlands, most carbon emissions from soils stem from peat soils. Currently emissions from soils amount to 6 Mtonne CO_2-eq. per year (Lesschen, et al., 2020). The Dutch National Climate Agreement (2019a) has included a target on reducing emissions from peat soils by 1.0 Mtonne CO_2-eq. PBL estimates that 0.8 Mtonne CO_2 emissions reduction from peat soils in 2030 is feasible.

For the whole LULUCF sector, the PBL (2017) estimates that the Netherlands will not be able to meet the no debit target; it estimates a net debit of 2.7 Mtonne CO_2-eq. for the period 2021-2030. This will mean a higher target for the other ESR sectors, or compensating by buying net carbon removals from other Member States.

Since this initiative has not been further specified or formalised yet, a more quantitative or detailed assessment is difficult. However, as creating carbon sinks is currently not compensated for, the EU carbon farming initiative proposed in the Farm to Fork Strategy may help incentivise farmers and landowners to adopt additional measures to reduce emissions or even create carbon sinks. This can contribute to the Dutch climate ambitions.

3.3 Industry and circular economy

The main EU climate policy for the industry sector is the EU ETS, which is outside the scope of this study, with a number of supporting policy measures such as the Renewable Energy, Energy Efficiency and Ecodesign Directives. However, the Green Deal recognised that there is a need for additional policies to achieve a climate neutral and circular economy by 2050. To this end, the Commission has adopted a New Industrial Strategy for Europe (EC, 2020c) as well as a new Circular Economy Action Plan (EC, 2020a), both in March 2020. These lay out a wide range of policy topics that have the potential to impact Dutch industry and policies, but since the plans are still at a very early stage, it is too early to assess these impacts in detail. The impacts may become significant in the future, though, clearly making this important policy discussions for the Netherlands to contribute to in the coming years.
Below we provide a broad overview of the key points of these Commission publications, followed by a high-level assessment of how this may impact Dutch climate policies for this sector.

EU policy developments

The New Industrial Strategy outlines a wide range of topics and plans that indicate changes to EU policies, directives and regulations for this sector. In the context of Dutch industry policies, the following items in the strategy are worth noting:

- Increased efforts to create and **enforce a single market**, as outlined in the Single Market Enforcement Action Plan (EC, 2020d). This is aimed at removing barriers for businesses when selling goods or providing services cross-border, and enhancing tax harmonisation – notably by realising a common consolidated corporate tax base.

This has a range of potential benefits, including the potential to limit carbon leakage and reduce cost of (climate-friendly) products or services for consumers.
- The Commission is reviewing the EU competition framework, which includes the ongoing evaluation of state aid rules. The Commission will ensure **revised state aid rules** are in place in 2021 in a number of priority areas, including energy and environmental aid. This may widen the scope for potential government support for Dutch industry, for example related to investments in low-carbon processes or infrastructure.

Furthermore, the following areas of focus are also mentioned in the Industrial Strategy:
- A key aim of the new policy framework will be to stimulate the development of lead markets for climate neutral and circular products, in the EU and beyond.
- The EU Emissions Trading System Innovation Fund, that will help deploy other large-scale innovative projects to support clean products in all energy-intensive sectors. For example to support clean steel breakthrough technologies leading to a zero-carbon steel making process.
- A new chemicals strategy for sustainability will be developed.
- The sustainability of construction products needs to be addressed by the EU.
- A more strategic approach to renewable energy industries, such as offshore energy, supported by efforts to better connect Europe's electricity systems.
- Special focus on sustainable and smart mobility industries, notably for the automotive, aerospace, rail and ship building industries, as well as for alternative fuels and smart and connected mobility. Measures mentioned to achieve this are the swift rollout of the necessary infrastructure and robust incentives, including in procurement.
  A Comprehensive Strategy for Sustainable and Smart Mobility will be developed that will put forward comprehensive measures to help make the most of the sector's potential.
- A new strategy for smart sector integration is also being developed, which will include the Commission's vision on clean hydrogen.
- If differences in climate ambition around the world persist, the Commission will propose a Carbon Border Adjustment Mechanism in 2021, for selected sectors, to reduce the risk of carbon leakage (an alternative to the current measures in the ETS such as free allocation of emission allowances or compensation for the increase in electricity cost).
- A number of EU level funding mechanisms and programmes are in place that can support decarbonisation in industry. The Commission will put in place revised State aid rules for Important Projects of Common European Interest (IPCEIs) in 2021, renew the Strategy for Sustainable Finance and also expects the recent agreement on the EU taxonomy and the Climate Law to support these developments.

The new Circular Economy Action Plan (EC, 2020a), a key part of the new Industrial Strategy (EC, 2020c), aims to contribute to the aim to achieving climate neutrality by 2050 by reducing the EU's consumption footprint and double circular material use rate in the coming decade. It aimed to achieve sustainable products, services and business models, and reduce waste. The plan contains a wide range of policy ambitions, the following are the most relevant from the perspective of climate policies:
- The Commission will propose a **sustainable product policy legislative initiative** in 2021, further developing the current initiatives and legislation of the Ecodesign Directive (EU, 2009), the Ecolabel and the EU green public procurement criteria. The core of this initiative will be to **widen the Ecodesign Directive** beyond energy-related products so as to make the Ecodesign framework applicable to the broadest possible range of products and make it deliver on circularity. Reducing the energy

efficiency and carbon footprint of products are key principles of these developments, next to other sustainability principles such as enabling remanufacturing and high-quality recycling, improving product durability and reparability, providing incentives for products with high sustainability performance. Priority will be given to electronics, ICT and textiles, furniture and high impact intermediary products such as steel, cement and chemicals (other product groups may be added over time).

- A number of initiatives are also announces to **empower consumers,** including setting minimum requirements for sustainability labels/logos and information tools. The Commission will also propose that companies substantiate their environmental claims using Product and Organisation Environmental Footprint methods by 2020, possibly in connection to the EU Ecolabel system.
- Green public procurement (GPP) will also be strengthened: the Commission will propose **minimum mandatory GPP criteria and targets** in sectoral legislation and phase in compulsory reporting to monitor the uptake of GPP. These actions are planned to be implemented by 2021.
- The Commission will assess options for further promoting circularity in industrial processes in the context of the review of the **Industrial Emissions Directive** (EU, 2010), and support the sustainable and circular bio-based sector through the **implementation of the Bioeconomy Action Plan**[7]**.**
- Waste policies will be modernised and enhanced, e.g. through revision of **EU legislation on batteries, packaging, end-of-life vehicles, and hazardous substances in electronic equipment**, and **waste reduction targets.**
- The development of a regulatory **framework for certification of carbon removals** (for example in ecosystems, forests, or through long-term storage in wood construction, re-use and storage of carbon in products, etc.) will be explored.

Impacts on Dutch climate policies

Policy initiatives on these topics can all impact Dutch industry and Dutch climate policies, but since more concrete policy proposals are not yet known, it is difficult to assess their potential impact in any detail. Looking at the overall ambitions, however, we would expect that many of these EU policy initiatives are likely to support Dutch industry ambitions and policies outlined in the Climate Agreement, for a number of reasons:

- An EU-wide approach on these topics can increase the market for more sustainable products of Dutch industry, and increase research and innovation efforts, which lead to lower cost of clean technologies. Key topics of interest for the Netherlands are likely to be the EU initiatives on hydrogen (and sector coupling), sustainable and smart mobility, and the strategies that are to be developed for energy intensive industries such as chemicals, steel and construction materials.
- It will also help create a level playing field, as all EU companies will have to adhere to the same strictness.
- Product policies such as the plans for expansion of the Ecodesign regulation can even help create a global level playing field for industry, since these requirements also apply to imported products and materials.
- Expanding and strengthening the Ecodesign and Ecolabel policy framework can lead to additional CO_2 reduction due to lower energy consumption of products. Similarly, strengthening of GPP legislation will also have a positive impact on CO_2 emissions.

[7] https://ec.europa.eu/transparency/regdoc/rep/1/2018/EN/COM-2018-673-F1-EN-MAIN-PART-1.PDF

- Note that the potential impacts of a revision of the Ecodesign regulation are discussed in one of the factsheets developed in this study. Furthermore, industry is also included the scope of the RED, EED and ETD. Potential revisions of these directives are also discussed in the factsheets to this report.
- Industry in the Netherlands can benefit from EU funding mechanisms, such as the EU ETS Innovation Fund.

These EU level policies can thus support the Dutch government in their efforts to achieve the cost-effective GHG reduction levels in Dutch industry, as outlined in the Climate Agreement. They can help remove some of the existing barriers to investments in low-carbon technology, for example: EU policies that create a level playing field can reduce the risk of a competitive disadvantage when investing in low-carbon technology; EU policies that create market demand for low-carbon products and materials will increase the business case of these investments, and make it more attractive for companies to invest in R&D and in innovative technologies. Over time, this can increase the effectiveness of a financial incentive such as the national CO_2 levy that is currently under development. It can complement SDE++ subsidies required to achieve a certain level of CO_2 reduction in industry (or achieve more CO_2 reduction for the same SDE++ budget) and contribute to advancing and scaling-up of clean technology development.

As this assessment shows the implementation of plans under the Green Deal, the Industrial Strategy and Circular Action Plan can contribute to achieving the cost-effective GHG reduction levels in Dutch industry. However, the scope of this study has not taken into account whether the Dutch industry is able to reach these targets in the timeframe of 2030/2050. For example, will there be sufficient affordable renewable energy and infrastructure available for industry to decarbonise faster than currently outlined in the Climate Agreement? Another aspect that is left out of this study is the effect of these EU level policies on the competitiveness and level playing field of Dutch industries. Although EU climate policies are important for improving an EU level playing field, impacts on specific industries are likely to be complex[8]. These aspects are consequently outside the scope of this study. This could be further assessed in future studies, for example when policies are further developed.

The benefits identified above will become even more important if the climate ambition of the EU and the Netherlands for 2030 is increased, since this will require additional GHG reduction efforts in this sector as well.

The extent of these benefits will depend on the actual EU policies that will be implemented, though, and cannot yet be determined. In view of the potential importance of these policies for the Netherlands, it is recommended to closely follow the discussions and developments in the EU in the coming years, to help ensure effective implementation of these ambitions into EU level policies.

[8] For an assessment of the impacts and opportunities for the decarbonisation and climate policies on the Dutch basic industry, see (Ministry of EZK, 2020)

4 Synthesis and conclusions: Potential impact on Dutch climate policies

4.1 Introduction

The Green Deal and its following revisions of Directives and EU regulations could provide an opportunity for a more effective emission reduction in the Netherlands. These developments can create a more balanced level playing field within the EU and speed up innovations and market demand for low-carbon solutions. On the other hand, however, these revisions could require Member States, including the Netherlands, to implement additional policy measures to ensure that all revised provisions are met.

In this chapter, we present an overview of the key revisions of the directives at hand, based on the findings in the factsheets, and assess their consequences for Dutch climate policy. We conclude, in the final section, with a quantification of the implication for GHG emissions in the Netherlands 2030. More detailed results of our assessment can be found in the factsheets.

The range of possible impacts following from the Green Deal, and its revisions of relevant Directives, is at this stage (June 2020) still large. The European Commission is currently assessing how to implement the ambitions laid out in the Green Deal, including how the EU Emission Trading System (EU ETS) and Effort Sharing Regulation (ESR) should be changed[9]. Our assessment therefore remains high level, with quite large uncertainties. Nevertheless, we can draw a number of conclusions on the potential impact of the Green Deal implementation on EU level on the Dutch climate policies.

4.2 Overall impact

There are three key modalities with which the future revisions of directives and regulations may impact Dutch climate policy[10]:

- First, directives could provide for higher indicative or binding targets, which call for extra policy efforts if Dutch climate policy is to fall short. Higher targets increase the importance of effective implementation of the policy plans outlined in the Climate Agreement and may also require additional policy efforts in the Netherlands that go beyond the Agreement.
- Second, European directives could require manufacturers directly to comply with more stringent minimum energy use or CO_2 emission requirements. These standards make it easier for consumers to save energy. This type of EU policy will result in more energy-efficient appliances and vehicles and will reduce energy use at the

[9] Under the ESR, the EU-wide emissions reduction effort is shared between all the EU Member States. This is done mostly on the basis of a country's wealth as measured by GDP per capita.

[10] Directives could provide for several policy incentives, e.g. targets, requirements to certificate sustainability of fuels and financial conditions for rolling out renewables or energy savings.

source. Furthermore, stricter energy efficiency standards of products and materials can help create a level playing field for Dutch industry, in the EU but also globally.

- Third, European directives might provide extra financial policy incentives like minimum CO_2 rates, abolishment of energy tax credits (a tax exemption for a certain level of energy use), and financial instruments (including innovation support) that could speed up the process of national implementation. This could make existing policies more effective, provide opportunities for introducing new policy instruments and eventually would make it easier to meet climate targets in the Netherlands. Harmonisation of these financial incentives in the EU would reduce carbon leakage and help create a level playing field for industry.

A number of other possible changes to the directives were also identified (see the detailed descriptions in the factsheets), but these three categories are expected to have the largest potential impact on Dutch climate policies and GHG emissions in 2030.

Some of these policies are directed explicitly at GHG emission reductions (e.g. CO_2 emission standards, or CO_2 taxes). Others are aimed at increasing the share of renewable energy and reducing the share of fossil fuels, or at increased energy efficiency, resulting in reduced energy demand and production. All these mechanisms reduce GHG emissions and thereby contribute to the climate goals. In order to explore how energy efficiency and renewable energy could contribute to overall cost-effective climate efforts, fine-tuning of the proportion of both mechanisms is necessary. Table 5 presents the interactions between the directives at hand and national climate sectors.

Table 5 - Interactions between directives and Dutch climate sectors

	ETD	RED II	EED	CO_2 standards LDV	CO_2 standards HDV	EPBD	FQD	AFiD	Ecodesign
Overall									
Energy production									
Built environment									
Industry									
Mobility									

	ETD	RED II	EED	CO_2 standards LDV	CO_2 standards HDV	EPBD	FQD	AFiD	Ecodesign
Agriculture									

Clarification:

	Framework directives including several policy instruments.
	Indicative or binding targets for energy saving and renewable energy. MS need to implement policies and action plans to meet the targets.
	Supportive policies aimed at providing financial incentives and regulatory provisions.
	Directives directly targeted at producers of energy using appliances, cars and trucks, reducing energy use at the source. The directives could be aimed at labelling (to inform consumers on the choice) and/or include standards for energy use.
ETD	Energy Taxation Directive
RED II	Renewable Energy Directive II
EED	Energy Efficiency Directive
CO_2 standards LDV	CO_2 standards light-duty vehicles
CO_2 standards HDV	CO_2 standards heavy-duty vehicles
EPBD	European Building Directive
FQD	Fuel Quality Directive
AFiD	Alternative Fuels infrastructure Directive

4.3 Mechanisms: Interaction with Dutch climate policy

The Netherlands is aiming for a singular CO_2 target in 2030, but policies are also put in place to steer towards CO_2 reduction through energy efficiency and renewable energy. Increased targets within the RED II and EED can imply a restriction in attaining a cost-effective outcome of the climate policy in 2030. Furthermore, increasing targets on renewable energy will have an impact on the operation the Climate Agreement (see Paragrahp 4.5.3). In this section, we discuss the three main EU mechanisms: target setting, source policy and supportive policies, including their interaction with Dutch climate policies.

Target setting

Revisions of the EED, EPBD and RED II could call for extra policy efforts in the sectors energy production, buildings and possibly industry and mobility.

Higher EU ambitions and stronger enforcements of existing regulations would entail extra policy efforts in the Netherlands. However, as we conclude from the analysis per directive, the scope and intensity of these additional EU level policy efforts is still subject to debate. The resulting impact on Dutch policies and emissions will depend on the changes on EU level but also on the current ambition of national policies. Furthermore, the various revisions interact. For example, more energy savings will reduce the impact of an increase of the renewable energy target of the RED, since the latter is defined as a percentage of final energy consumption. In the following section, we will summarise potential impacts on energy efficiency and renewable energy.

Energy efficiency

The headline target of Article 3 of the EED may be increased when the climate ambition increases. The EC is currently considering increasing the target from the current 32.5% to 35 or 40%, the final value will follow from an Impact Assessment. The Netherlands then has to set their national energy efficiency contribution towards the target. They have some flexibility in this target (as outlined in the EED and the governance regulation) and cost-effectiveness is one of the aspects that may be taken into account, but the total contribution for all Member States must result in meeting the EU target. Current national policies are still insufficient to meet the current 2030 indicative national contribution to the headline energy efficiency target of Art. 3, or the binding target for end use energy savings of Art.7 (PBL, 2019). However, if the Climate Agreement is implemented as planned, national policies are expected to be ambitious enough to contribute sufficiently to the higher EU targets currently considered. Irrespective of any potential revisions of the EED, the Green Deal is likely to result in increased efforts by the Commission to ensure that Member States meet the trajectories for energy efficiency savings outlined in the NECPs, and implement the planned policies are reported in the NECPs. This means that in any case, these developments put additional pressure on the Netherlands to implement the ambitious energy efficiency policies outlined in the Climate Agreement effectively[11].

[11] When the Green Deal is implemented, the Commission is expected to also put more effort into increased energy efficiency of the built environment (e.g. through increased rates of renovation), of industry (e.g. increasing requirements for waste heat reuse), of appliances and of road vehicles. All may contribute to the overall EED target. It is likely that many of these policy changes will be implemented through different directives and regulations than the EED, though (the EPBD, Ecodesign, CO_2 standards for and cars/vans/HDV).

Renewable energy

A higher EU renewable energy target for 2030 could also be proposed. The range currently considered is an increase from the current 32% to 35% up to 40%, the final value will follow from an Impact Assessment. This would increase the indicative national contribution of the Netherlands from the current 25% to approximately 28% or 33% respectively, in 2030. A higher national renewable energy share would require the Netherlands to increase its already ambitious pace of rolling out renewable energy in the coming decade. Looking at all the policies up to 1 May 2019 (including the continuation of the SDE+ scheme), the KEV 2019 (PBL, 2019) projects an increase in renewable energy from 7.4% in 2018 to approximately 24.2% by 2030, excluding the Climate Agreement. When the impact of the Climate Agreement is included in the forecast, PBL estimates an additional 75–112 PJ on top of the KEV 2019, which would result in a total share of renewable energy of 30-32% in 2030. Looking at these targets alone, we can conclude that immediate action is not be needed if the EU target is increased to say 35%. However, if the EU target is increased to 40%, additional policy measures will be required. In any case, effective implementation of the renewable energy policies in the Climate Agreement will become more urgent. In the latter scenario, additional policy efforts will be necessary to meet these extra ambitious RED II targets. Examples would be additional budget for renewable energy generation in the SDE++, increasing the reduction path within ETS (in line with EU 55% target in 2030) or CO_2 minimum prices. These measures will need to be combined with intensified strategies to accommodate renewable electricity within the electricity grid and overall energy system. It is expected that an increase in the EU renewable energy target will have to be realised through a significant degree of electrification in the industry, mobility, built environment and agriculture sectors. This can also be seen as speeding up opportunities for decarbonisation in these sectors.

These developments require an acceleration of supporting developments such as demand flexibility (to adapt electricity demand to the increasingly fluctuating supply, conversion of electricity to other energy carriers (hydrogen), strengthening of the electricity grid, electricity storage in batteries, etc. It will also increase the need to look for opportunities to increase the use of hydrogen in new applications such as transport and the built environment and hydrogen for synthetic fuel production. These developments are currently still in their early stages, but they are foreseen in the Climate Agreement and both R&D and implementation projects are underway. The extent to which these actions need to be accelerated could nog be quantified in this study, but would have to be assessed in more detail.

Increasing this EU target can help speed up technological developments, create economies of scale and encourage investments in R&D and innovations throughout the EU. This is likely to reduce cost of the technologies and improve efficiencies, which will benefit the Netherlands as well. On the other hand, increasing wind and solar power production further in NW-Europe will also speed up the need for demand flexibility and energy storage solutions, to reduce price volatility and achieve a cost-effective integration of the increasing share of fluctuating electricity into the energy system.

RED II is broader than setting targets alone

The Green Deal also mentions a range of other possible revisions, from measures to increase decentralised production to provisions to ensure biomass will be sustainable. However, these other potential measures are not yet further specified, which makes it difficult to assess potential impacts. In general, it seems likely that these measures will be mainly aimed to support and facilitate the further increase of renewable energy in the EU.

The Green Deal also lays out a strategy to provide additional funding to support and speed up renewable energy deployment (e.g. via a Sustainable Europe Investment Plan, the EU budget and the InvestEU Fund). These measures can also support Dutch renewable energy projects, thereby supporting the developments in the Netherlands.

Source policy: standards for energy use and CO_2 emissions

EU standards for cars[12], trucks[13] and appliances[14] have a direct legal force and do not require additional national policies. When these standards are tightened and/or the scope is extended to incorporate more products and appliances, this will have an immediate impact on national energy saving in end use sectors such as the built environment and industry (Ecodesign), and mobility (CO_2 standards). Besides, energy savings standards will also result in a higher supply of specific technologies, such as zero-emission vehicles in case of mobility. This can increase the impact of national policies, and is likely to result in faster cost reductions of these new technologies.

Dutch climate policy and GHG reduction efforts for 2030 could substantially benefit from further strengthening of these European standards. Further tightening of existing standards and the introduction of more product groups or services under the Ecodesign directive (EU, 2009) is likely to reduce energy demand and therefore CO_2 emissions further than currently forecast in the KEV, without the need for additional Dutch policy. In an upcoming sustainable product policy legislative initiative, the Commission will propose new product groups, like electronics, ICT and textiles but also furniture and high impact intermediary products such as steel, cement and chemicals. Further product groups will be identified based on their environmental impact and circularity potential. The impact depends on the standards that will be set and the timeline of the introduction of new standards. Both are not yet known. Despite these overall climate benefits, we expect that the impact of revisions to the Ecodesign directive on Dutch CO_2 emissions in 2030 will be limited (see factsheet).

With respect to CO_2 standards for light and heavy-duty vehicles, standards will increase the availability of more efficient and zero-emission vehicles. When these vehicles penetrate in the fleet these result in energy reduction as result of their higher efficiency. A shift to renewable electricity and/or renewable hydrogen could result in further CO_2 reductions. Zero-emission vehicles also contribute to other policy objectives, for example by a reduction of air polluting emissions and noise emissions. More efficient vehicles also make that less renewable energy and fuels are required to meet the policy objectives on renewable energy in transport.
Due to the increase in availability of zero-emission vehicles, higher demand for such vehicles as result of national and local policies can be met more easily. Further cost

[12] Regulation on CO_2 emission standards for passenger cars and LDV.

[13] Regulation on CO_2 emission standards for HDV.

[14] Ecodesign regulation.

reductions as result of innovation and economies of scale further improve the total cost of ownership and will contribute to further decrease the need for national fiscal incentives and thus government expenditures.

The impacts depends on the standards that will be set and the timeline of the introduction of new standards. Because the current standards already are seen as challenging we assume a modest increase of targets under the ambitious scenario (see factsheet).

The other side of this type of policy is that Dutch manufactures must comply with these standards, although not all products being affected by energy standards are produced in the Netherlands to the same extent. Since these standards will apply to all manufacturers, including those outside the EU, these policies help to create a global level playing field. There is a possibility that monitoring and market surveillance are being enhanced, which entails additional policy efforts.

Supportive tax and financial policies

There is an important synergy between the ETD and policies aimed at improving the energy efficiency including the EED on the one hand, and the ETD and RED II on the other. Energy and CO_2 taxation are recognised as an important tool to influence behaviour regarding the use of energy products and investments in clean technologies. Possible revisions of the ETD include a further alignment of energy (energy content) and CO_2 (carbon content) of energy products and fuels. National implementation can take the form of adapting the tariffs of energy taxes and excise duties that have the effect of reducing end use energy consumption. CO_2 taxes could, if high enough, also bridge the profitability gap for investors in renewable energy. This would make it more profitable to invest in renewables, or decrease the need to subsidise the remaining profitability gap of renewable energy.

In this way, the ETD could interact with Dutch climate policy and thus improve the effectiveness of existing national fiscal and financial policy measures like SDE++, EIA, MIA/Vamil, etc. An optional elaboration of the ETD could be that minimum CO_2 tariffs will be aligned with the EU ETS[15] price, providing a more coherent CO_2 price signal to the Dutch economy. At this moment, the ETD does not contribute to providing these price signals, as tax rates fulfil the minimum taxes rates from the current ETD. The current ETD does not take into account the energy content and CO_2 emissions of energy products and electricity, and includes too low minimum levels of taxation and many exemptions[16].

The potential impact on Dutch climate policies of a revision depends on the type of implementation and the price ranges. The ETD could have an impact on energy taxation of non-ETS sectors. Our analysis in the factsheet shows the energy taxation rates (EB) for the non-ETS participants will rise to comply with new minimum EU rates[17], since they are well below the 2030 tariffs as proposed in the Climate Agreement. Revision of the ETD could have an impact on a broad range of climate sectors (see Table 5), and will provide more effective incentives for energy efficiency, in particular for mid and large range energy users. Sectors will include non-ETS energy users with low implicit CO_2 prices, like non-ETS industry and agriculture.

[15] This directive is not in scope of this study.

[16] However, pricing signals alone are not an appropriate tool to overcome market barriers, mainly because the price elasticity of energy is very low and most barriers are non-economic barriers. Specific support schemes will need to complement these financial incentives.

[17] Tariffs the third, fourth and fifth scale of the EB

4.4 Additional action required

This section presents additional policy interventions that are called for by the implementation of the Green Deal. The range of revisions of directives is still largely uncertain, which is why we present these impacts in terms of high-level descriptions. We distinguish actions to speed up a) energy efficiency efforts, b) growth of renewable energy generation and c) electrification and demand flexibility in the system.

4.4.1 Speeding up energy efficiency efforts

The Netherlands has implemented a range of energy efficiency policies throughout the economy, and many of these have the potential to be strengthened further. As mentioned above, the Climate Agreement contains further actions on energy efficiency, potentially resulting in significant additional energy savings (see the EED factsheet and (PBL, 2019)). Effective implementation of the Climate Agreement can therefore be seen as the first step in speeding up energy efficiency efforts in the Netherlands. If the government decides to increase its ambition further, to implement a higher climate target cost-effectively or to adapt to a higher EED Art. 3 target, it needs to go beyond the policies in the Climate Agreements, for example by:

- Increasing the energy tax and the surcharge for sustainable energy (ODE), increasing funding for financing instruments for sustainability investments in the different sectors, or energy efficiency investments in end user sectors.
- Expanding the budget of subsidy instruments that are not financed by the ODE surcharge, e.g. EIA, Energy Efficiency in Greenhouse Horticulture scheme (EG), subsidy for investments in innovative energy systems. Also expansion of loans issued to households from the Heat Fund ("Warmtefonds") can be considered.
- Further strengthening the monitoring and verification of the energy savings requirements of industry (Wet milieubeheer) and the voluntary agreements with industry (MJA/MEE). These voluntary agreements end in 2020.
- Increased efforts towards industrial synergy and re-use of waste heat from industry can also be considered, by speeding up beyond the plans outlined in the Climate Agreement.

The built environment accounts for at least 30% of total energy consumption in the Netherlands, so speeding up energy efficiency in that sector can result in a significant contribution towards a higher overall energy efficiency target. Renovation requirements are one of the keys potential implications of the Green Deal. For the built environment, these requirements follow the combination of the EPBD and the EED.

A key goal of the Green Deal is the acceleration of the renovation rate. The proposed range is relatively wide, between 0.8% per year and 2.4% per year. It is unclear yet what the target will be for individual Member States, and whether the target will be binding or indicative, formulated in terms of renovation rate (as is the case in the Green Deal itself), or in terms of CO_2 emission reductions. The lower end of the renovation rate, 0.8% is close to the ambitions in the Dutch Climate Agreement, the upper end is more ambitious and would require considerable additional efforts.

4.4.2 Speeding up growth of renewable energy

If the Dutch renewable energy generation needs to increase faster than currently considered in the Climate Agreement, the energy policies currently outlined in the Agreement will need to be revised and strengthened. This can impact the policies for all sectors. The current baseline in the KEV 2019 (PBL, 2019) for renewable energy (24.2% in 2030) can be considered as quite ambitious. Additional growth needs to be enabled by an increase in renewable electricity, renewable heat and motor fuels.

Renewable electricity production

A higher overall renewable energy target is likely to be achieved by increasing the budget for renewable energy in the SDE++, through prosumer policies in the built environment and/or higher tax incentives on fossil electricity use – the main renewable policy measures included in the Climate Agreement. In addition, extra SDE++ budget for renewables energy will have financial consequences through the ODE surcharge for both consumers (1/3 part) and companies (2/3 part). This will eventually increase the energy costs for end users. On the other hand, increasing EU efforts can help speed up technological developments, create economies of scale and encourage investments in R&D and innovations throughout the EU. This is likely to reduce cost of the technologies and improve efficiencies, which will benefit the Netherlands as well.

The integration of renewable energy resources in the Dutch landscape is approached through Regional Energy Strategies (RES), and (will be) supported by the Environment and Planning Act. The 35 TWh-target of the Climate Agreement could become higher following higher EU targets, thus impacting the RES as currently developed by the Dutch regional governments. Each of the 30 RES regions are thus called to put forward an increased contribution on sustainable electricity on land (wind and sun). This will result in renegotiation of these commitments with provinces and municipalities looking for support of these extra production locations.

As mentioned before, speeding up of this process will furthermore increase the need to effectively integrate the increased share of wind and solar energy into the energy system. This is discussed further below in the next paragraph.

Renewable heat and cooling

If the EU climate ambition increases, the pressure on the Netherlands to significantly increase efforts to increase the share of renewable heat is likely to increase. There is currently a large gap between the indicative target for renewable heat (Art. 23 of the RED II) and Dutch policies (according to the KEV 2019), but the contribution of actions in the Climate Agreement is not yet quantified in detail (PBL, 2019). If further acceleration of the developments is needed, this could have implications for a number of agreements in the Climate Agreement and the current Dutch policies that support the shift from fossil to renewable heating. The main policies that would then need to be revised are the Regional Energy Strategies, the SDE++ and ISDE, taxation policies and the renovation and heat transition policies in the built environment.

Renewable transport fuels

Although the Green Deal mentions the need to ramp up the use and production of renewable fuels in all transport modes, no indication is provided for a potential revision of the RES-T target. From the analysis in the factsheet, it becomes clear there might be some interactions with other aspects of the Green Deal where biomass is also part of the discussion. For example in relation to the Farm to Fork Strategy, biodiversity and deforestation. The available biomass volumes and allocation to sectors have an impact on the biomass to be used for transport fuels. This makes clear the need for Dutch and EU policies to increase the mobilisation of sustainable biomass from waste and residues and drive further technological advancement to increase advanced biofuel production capacity. For example, identify areas where the Dutch government can help make the collection and

utilisation of waste streams easier for business (including alignment of the various policy areas, such as transport policy, industry policy and waste classification and regulation). Also the potential of renewable fuel of non-biological origin (RFNBO)[18] needs to be further utilised. For example, renewable methanol produced from waste CO_2 and hydrogen where the process is powered by geothermal electricity.

Increased electrification of transport will impact the share of renewables in the energy mix. This will increase the efforts of attaining the overall RE target in 2030, but will at the same time help to decarbonise the transport sector. The same is valid for biofuels, which are allowed to count towards the RES-T target of the RED as well as to the overall RE target. Besides this, a transition towards zero-emission will also contribute to other policy objectives, such as the reduction of air polluting emissions and noise emissions.

4.4.3 Electrification and flexibility

With the cost of wind and solar energy reducing over time and the significant potential for growth of these energy sources, recent trends and forecasts (see, for example (PBL, 2019) and (EC, 2018c)) find that increasing the share of renewable energy is likely to result in increasing shares of wind (on- and offshore) and solar electricity generation and only to a lesser extent biomass energy. An increase in the level of ambition for renewables in the sectors that currently depend strongly on natural gas or oil-based fuels is therefore expected to be realised through a significant degree of electrification. This can enable them to benefit from the lower cost and increased availability of renewable electricity. This can be achieved through direct electrification (e.g. heat pumps and electric vehicles), or via a conversion step, where other energy carriers are produced from renewable electricity (hydrogen, perhaps methanol, ammonia). The national Climate Agreement already mentions the potential impact of this more ambitious climate policy, and recognises that increasing the Dutch climate ambition from the current 49% GHG reduction in 2030 to 55% reduction in 2030 would mean that electricity demand increases as electrification is an option to decarbonise in various sectors (e.g. a shift in heat pumps in the built environment, electric vehicles in transport, electrification in the greenhouse industry). In this case, renewable electricity production is expected to increase from 84 TWh in 2030 to 120 TWh, according to the KEV (55%) (PBL, 2019).

Apart from the necessary growth of renewable electricity generation, the resulting increased shares of wind and solar energy in the system require additional efforts on various fronts. Bottlenecks in the electricity grid need to be removed through actions such as congestion management, demand side response and additional infrastructure investments. Speeding up demand flexibility and energy storage projects can also help, for example through accelerated implementation of electrification in industry in combination with demand flexibility, and faster roll out of electrolysers (power-to-hydrogen) and hydrogen infrastructure. This effect is enhanced further by the developments in the rest of NW-EU: wind and solar power production will not only increase faster in the Netherlands, but also in the rest of the EU. Demand flexibility and energy storage solutions can then reduce price volatility and achieve a cost-effective integration of the increasing share of fluctuating electricity into the energy system. More flexibility can be provided in the Energy Act (Energiewet), or through amendment of other legislation (including the codes), for dynamic tariff structures in the network tariffs for transport and distribution.
These developments are currently still in their early stages, but they are foreseen in the Climate Agreement and both R&D and implementation projects are underway.

[18] A renewable transport fuel that does not have any biological content.

Apart from the RED II, other directives like CO_2 standards for LDV can have an impact on electrification. If CO_2 standards between 2020 and 2030 are tightened further (compared to the 2019 revision), more electric vehicles will be sold in the EU. This will lower CO_2 emissions, but increase electricity demand and the need for (smart) charging infrastructure.

4.5 Opportunities and risks

In this section, we analyse which opportunities and risks additional EU policy action can generate. An opportunity is defined as measures and preconditions that help accelerate the pace of implementation of national climate measures. Risks are defined as possible obstacles that might interfere with or otherwise hamper current agreements made (e.g. Climate Agreement, RES programme) and decrease the implementation pace of these measures within their economic, political and legal context.

4.5.1 Level playing field

Several revised directives at the EU level will help to ensure a 'level playing field' for climate policies, for both domestic suppliers and suppliers abroad. Harmonisation of financial incentives in the EU would reduce carbon leakage and help create a level playing field for industry. Likewise, product standards will also ensure a level playing field for industry, within the EU.

An EU approach to CO_2 taxation would create a level playing field for industry across the EU, and make cross-border activity easier. Renewables are exempted from CO_2 tariffs, providing them with a further advantage compared to the conventional fuels they are competing with. The Netherlands is one of the EU States with relative high taxes on gas and electricity, as well as motor fuels. It can thus be assumed that *substantial EU minimum rates* provide more room for the Netherlands to increase energy taxes and excises on motor fuels without the immediate fear for carbon leakage or cross-border leakages (fuel tourism in Belgium and Germany).

Strengthening standards through revision of Ecodesign, and CO_2 standards for cars, vans, trucks and transport fuels will contribute to improving the EU market for energy using appliances and will ensure a level playing field for Dutch suppliers inside and outside the EU. It will ensure equal pressure on Dutch suppliers and thus reduce investment uncertainties. The Ecodesign standards are the more effective in this respect, the standards for vehicles and transport fuels apply to average sales and leave room for variation between countries and products. This can create so-called waterbed effects per country. This implies that environmental gains from national policies can leak away as the sale of more fuel-efficient cars in a country is countered by the sale of more fuel-intensive cars in other countries.

Table 6 - Assessment of level playing field per directive

	Assessment	Clarification
ETD		Restricts room for national friendly energy charges in MS. Prevents carbon leakage and cross-border fuel tourism. Prevents different CO_2 price signals between ETS and non-ETS sectors.
RED II		
EED		
CO_2 standards LDV		Standards ensure a level playing field for purchases in the EU. Waterbed effects can however occur when national fiscal policies are put in place.
CO_2 standards HDV		Standards ensure a level playing field for purchases in the EU. Waterbed effects can however occur when national fiscal policies are put in place.
EPBD		
FQD		Standards ensure a level playing field for purchases in the EU.
AFiD		This depends on to what extent the revision of the AFiD will include binding national objectives.
Ecodesign		Standards ensure a level playing field for purchases in the EU.

	= positive impact
	= neutral impact
	= negative impact (risk)

Carbon border adjustment mechanism

A carbon border adjustment mechanism (CBAM) could complement the CO_2 price for ETS and non-ETS companies. This new mechanism would counteract the risk of carbon leakage by putting a carbon price on imports of certain goods from outside the EU[19]. The EU's climate objective is influenced by climate ambition globally, or lack thereof, in other countries. It can be concluded that CBAM will help to provide more room for the EU to increase the linear reduction factor (LRF) of EU ETS.

In practice, the EU's CBAM could be a customs duty on imported products – or a tax on selected products (foreign and domestic) – reflecting their carbon content, corresponding with the EU's internal carbon pricing. CBAM could be based on benchmarks on the carbon content of products imported. By implementing a CBAM a level the playing field for EU and non-EU producers will be established. CBAM applied in carbon-intensive sectors can only cover the emissions for the production of raw materials and does not account for the downstream emissions. CBAM is thus expected to be limited to a select few carbon-intense sectors (e.g. steel, cement, chemicals), for the Netherlands steel and chemical sector

Although design and feasibility details are still being worked out, it could be expected that such a complex proposal will face legal, economic and political constraints. It is a likely scenario that this proposal and its implementation will face serious delays.

4.5.2 Speeding up innovation and cost reductions

Energy- and eco-innovations are generally expected to play a crucial role in the transition towards a climate neutral economy. This is also realised in the EU Green Deal, which states

[19] In the case of carbon leakage, there would be no reduction of global greenhouse gas (GHG) emissions, despite EU efforts.

that new technologies, sustainable solutions and disruptive innovation are all critical to achieve the objectives of the Green Deal (EC, 2019b). Innovations are considered necessary to keep the EU's competitive advantage and to increase significantly the large-scale deployment and demonstration of new technologies across sectors and across the European market. However at the stage of drafting this report it cannot be assessed what the timeline of these innovations and scaling effects are should be.

Standards, targets, tax incentives from EU policy are key policy instruments to increase renewable energy and energy efficiency in Europe. These instruments can act as a driver for innovation and eventually lead to cost advantages of low-carbon technologies.

Ambitious standards in general make cost-effective technologies to reduce CO_2 emissions more widely available, and typically lead to cost reductions over time. Higher efficiencies will result in lower fuel and energy consumption and thus will directly result in lower operational cost for energy users. This will hold for the Ecodesign directive (energy user of appliances) and for CO_2 standards of LDV and HDV (transport users).

Energy and CO_2 taxes (within the ETD) and other fiscal and financial incentives are also effective instruments to change consumers' behaviour to a low-carbon economy. They help to internalise the external costs and affect relative prices, and thus steer innovation and technology in the direction of a low-carbon outcome.

Target setting will have an influence on the deployment and result in economies of scale that can bring costs down for low-carbon technologies.

In Table 7 we summarise the assessment per directive.

Table 7 – Assessment of innovation per directive

	Assessment	Clarification
ETD		Tax have structural impact on speeding up innovation.
RED II		Through economies of scale on EU and national level, innovation can speed up and cost can come down.
EED		Through economies of scale on EU and national level, innovation can speed up and cost can come down.
CO_2 standards LDV		Through economies of scale on EU and national level, innovation can speed up and cost can come down.
CO_2 standards HDV		Through economies of scale on EU and national level, innovation can speed up and cost can come down.
EPBD		Through economies of scale on EU and national level, innovation can speed up and cost can come down.
FQD		Through economies of scale on EU and national level, innovation can speed up and cost can come down.
AFiD		Through economies of scale on EU and national level, innovation can speed up and cost can come down.
Ecodesign		Through economies of scale on EU and national level, innovation can speed up and cost can come down.

	= positive impact (opportunity)
	= neutral impact
	= negative impact (risk)

4.5.3 Cost-effectiveness of climate policies

Revision of the directives at hand can have several impacts on cost-effectiveness of climate policies. In some cases, they will provide an opportunity for increasing the cost-effectiveness of national climate policy, which could speed up the implementation pace. In other cases, we conclude risks for increasing costs can arise from these revisions.

ETD revisions can have a significant impact on improving the cost-effectiveness of climate policies. A uniform CO_2 price, where everyone pays the same price for their CO_2 emissions, is preferable from the point of view of cost-effectiveness. Simulations of different variants (CPB; PBL, 2019) of CO_2 pricing show that CO_2 emissions can be reduced relatively cheaply in energy-intensive industry and electricity generation. Less use needs to be made of the potential of the built environment, where high implicit taxes already apply and further emission reductions are relatively expensive. This reduces the costs of climate policy, which is beneficial for prosperity.

The best design for translating the ETD into excise duties and energy taxation tariffs is a uniform tax for every ton of carbon (and every GJ of energy). This means, amongst others, aligning with the ETS price[20]. According to economic theory, the cost efficiency is the highest at a uniform rate[21]. From that perspective minimum CO_2 rates that will increase over time, possibly aligning with ETS, appears to be an economic solution.

Future revisions in terms of tightening the targets of energy efficiency and renewable energy in the EED and RED II probably will have an impact on the costs of climate policies. Greater emission reductions will increase the overall national costs of domestic climate policy, as most likely the potential of cost-effective measures in the built environment, mobility and industry will run dry. In the long run this will, however, avoid damage costs of remaining climate change.

The Netherlands is heading for a singular CO_2 target in 2030. Intensified targets within RED II and EED can imply a restriction on the degrees of freedom in attaining a cost-effective outcome of the climate policy in 2030. Including extra targets on renewable energy will have an impact on the design of the climate policies as a whole. This would result in lower CO_2 reduction per euro of climate spending for the Netherlands. Additional instrumentation of measures within the Climate Agreement should be negotiated again, risking to move away from the cost-optimal path originally opted for in the Climate Agreement.

This will have an effect on the cost of energy for end users. If future revisions of the EED were to deviate from this national cost-optimal path, the *key principal of neutrality of housing costs* ('woonlastenneutraliteit') in the Climate Agreement will need to be guaranteed by other accompanying measures, e.g. extra budgets for subsidies, soft loans, or fiscal greening to compensate for extra lifetime costs of insulation measures. A higher overall renewable energy target is likely to be achieved by increasing the budget for renewable energy in the SDE++[22], which means increasing the ODE surcharge, and higher energy bills for energy users.

[20] Or a CO_2 price reflecting the social damage caused by climate change through those emissions (100 euro/ton in 2030).

[21] In practice, consumers will act less rational when making energy choices, which may legitimate higher energy prices to influence energy saving than private companies.

[22] The singular objective of the SDE++ is reduction of greenhouse gas emissions at low costs. So additional budgeting for renewables is still necessary.

Cost-effectiveness in National Climate Agreement (CA)

The CA is based on the principle that reducing carbon emissions must be feasible and affordable for everyone. The government therefore seeks a cost-efficient transition that limits the financial impact on households as much as possible and implements measures to fairly distribute the financial burden between citizens and businesses. Measures will be introduced step by step to ensure nothing needs to be rushed. Moreover, the government will opt for the most cost-effective and future-proof approach.

On the other hand, as was mentioned in the previous paragraph, costs of renewables and related technologies such as energy storage, conversion of electricity to hydrogen etc. will benefit from increased learning and economies of scale. In the past, the increased deployment of wind and solar energy in the EU has led to significant cost reduction of these technologies, and cost are still decreasing (EC, 2018c). Biomass could be an exemption to this rule, however. Since biomass supply cannot grow sustainably without limit, it is expected that biomass scarcity will develop at a global level in time, as demand increases worldwide. This could drive up biomass prices and affect cost-effectiveness of policies

Speeding up renewable energy deployment throughout the EU is likely to further decrease cost through innovation and benefits of scale. Increased cooperation efforts to realise (and optimise) renewable energy projects, which is also encouraged in the RED II and in the Green Deal, can further reduce these cost. Determining the net impact of all these different effects requires detailed scenario analysis and is outside the scope of this project.

Table 8 - Assessment of cost-effectiveness per directive

	Assessment	Clarification
ETD		Uniform taxes will bring down cost of climate policies.
RED II		RED II might call for more (expensive) renewable energy generation, on the other hand could lead to scale advantages that can bring system cost down.
EED		EED might call for higher costs saving measures, on the other hand could lead to scale advantages that can bring system cost down.
CO_2 standards LDV		In the long-term standards bring down costs of supply.
CO_2 standards HDV		In the long-term standards bring down costs of supply.
EPBD		
FQD		FQD might call for more (expensive) renewable fuels, on the other hand could lead to scale advantages that can bring system cost down.
AFiD		Standardisation of fuel and recharging infrastructure will improve cost-effectiveness
Ecodesign		In the long-term standards bring down costs of supply.

	= positive impact
	= neutral impact
	= negative impact (risk)
	= impact positive or negative

4.5.4 Public support

Speeding up the energy transition and strengthening climate policies in the Netherlands will require public and political support. The Climate Agreement has only recently been agreed on and implementation and further development of the actions and policy measures in the Agreement is still very much ongoing. Also, as some of the actions and targets in the Climate Agreement are already considered to be quite ambitious, further accelerating these developments will be challenging. Increasing the sectoral targets and further strengthening the policies and the supporting actions will therefore not be welcomed by everyone.

However, the Green Deal, including the higher climate ambition, is supported by both the European Council and Parliament. Furthermore, the higher climate target is in line with the Dutch coalition agreement, which already explores a more ambitious EU climate policy. The Dutch government therefore supports the ambitions in the Green Deal, provided they are transformed into feasible and cost-effective policies (Ministry Foreign Affairs, 2020). The Impact Assessments that the European Commission carry out to support the concrete policy proposals will also assess the policy options against these criteria.

Strengthening the Ecodesign directive and the CO_2 standards for vehicles are not directly related to the actions and policies outlined in the Climate Agreement, but they can have policy benefits: they can facilitate implementing national climate actions (such as zero-emission vehicle policies) and contribute to the national energy and climate targets through the energy and CO_2 savings that they achieve. Public support for these EU policy revisions could therefore be high, if they are designed so that they do not limit customer choice unduly or increase total cost of ownership of the products. An impact assessment that considers cost-effectiveness of the measures (a requirement in EU policy making) should ensure feasible ambition levels of the standards, and take into account public support as well. Strengthening these policies will also affect Dutch industries and manufacturers, which will consider feasibility and cost as well as impacts on competitiveness in their assessment of the proposals.

4.5.5 Barriers to the Climate Agreement?

We conclude from our assessment that the potential revisions to the EU directives and regulations are generally in line with the actions and strategy outlined in the Climate Agreement. They require speeding up of the developments, will facilitate the national climate actions and can achieve CO_2 savings in the Netherlands without the need for additional national action.

We did not encounter any significant barriers to current climate and energy policies in the Netherlands, or to actions outlined in the Climate Agreement. The Green Deal can rather be seen as a potential driver for the Climate Agreement, since effective implementation of the policy actions will become more important if the EU targets in the various directives increase.

However, in policy making the devil can be in the details, and it will be important to remain closely involved in the European policy making process in the coming years to ensure proper alignment with the Dutch climate ambitions and policies. We refer to the factsheets for a more detailed comparison of potential EU policy revisions with Dutch policies.

4.5.6 Work force and employment

Revisions could have an impact on the social transition as well. We assess in the following section the risks and opportunities that will arise from increasing the speed of energy transition. Note that the assessment depends critically on the recovery of the Dutch economy after the current Corona crisis and the need to restrict the economy to a 1.5 meter distance.

In a fast economic recovery scenario with decreasing level of unemployment, labour market measures will soon be required in order to prevent the energy and climate transition from stalling as a result of a shortage of qualified personnel. In a scenario with more structural economic losses and unemployment, extra investments can be part of a recovery package, combining climate measures with increasing job opportunities in climate sectors. In this latter scenario, tightening the directives could provide for additional job opportunities.
In Table 9, we identify revisions that could be beneficial in terms of job opportunities in the Netherlands given a scenario of more structural recession.

Table 9 – Assessment of employment opportunities (+) per directive

	Assessment	Clarification
ETD	*	ETD will have an impact on implementation of all low-carbon technologies, as well as the employment of these activities (installation and exploitation).
RED II	*	RED II will have an impact on renewable energy technologies, as well as the employment of these activities (installation and exploitation).
EED	**	EED will have an impact on energy-saving technologies, as well as the employment of these activities (installation and exploitation). Energy-saving activities are known to be labour-intensive.
CO_2 standards LDV	*	Standards will have a positive employment impact on manufacturing and the out roll of load infrastructure. Dutch companies focus on the e-mobility components of the charging infrastructure and services, manufacturing, production of light vehicles. Electric cars require minimal scheduled maintenance to their electrical systems, which can include the battery and motor. Therefore transition could lead to job losses at dealers
CO_2 standards HDV		Neutral, some opportunities for Dutch suppliers (industry cluster in Eindhoven, around VDL).
EPBD	**	EPBD will have an impact on energy-saving technologies, as well as the employment of these activities (installation and exploitation). Energy-saving activities are known to be labour-intensive.
FQD		Neutral.
AFiD	*	Positive.
Ecodesign		Neutral.

4.6 Quantification of the impact of EU policy revisions

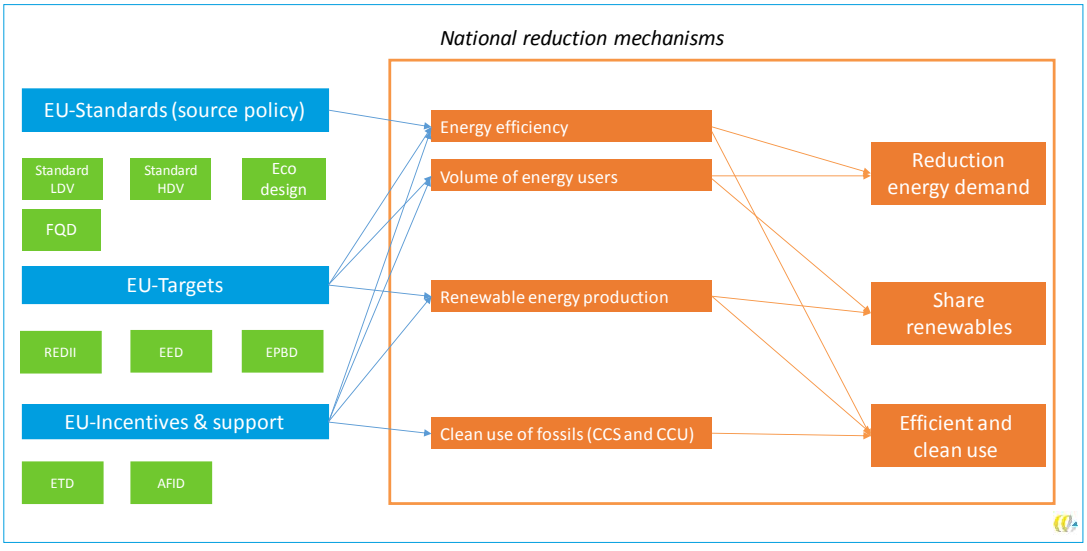
The Dutch Climate Act aims to reduce greenhouse gas emissions in the Netherlands by 95% in 2050 compared to 1990. To achieve this goal, a target of 49% reduction in 2030 has been set and a completely climate-neutral electricity production in 2050. The Climate Agreement formulates a central target - the 49% reduction in 2030 - and takes measures that will lead to this reduction. The Cabinet has kept the option open that the Dutch 2030 target will be adjusted for stricter international climate agreements. The initiatives of the new European

Commission to sharpen the EU climate ambitions towards climate neutrality in 2050 and a 55% reduction in emissions in 2030 could lead to this.

Table 10 presents the revisions that we have been able to quantify with a bandwidth of a low and high scenario. The reductions are calculated compared to the baseline of the KEV 2019 and the analysis of the Climate Agreement (PBL, November 2019). The impact analysis is a partial analysis per directive without taking into account the interactions between the different measures. This implies that the reduction cannot be summed (see text box below). To assess the total potential impact, more detailed modelling would be required. The low scenario represents the lower target of EU adaptation, the high scenario represent more ambitious EU targets.
We have not been able to quantify the impact of some of the mechanisms/directives, due to lack of concreteness of the revisions at hand and uncertainty of how this would impact greenhouse gas emissions in the Netherlands. These rows were left blank in the table.

Illustration partial analysis

A higher renewable energy target in the RED II is defined as an increase of the percentage renewable energy, compared to total energy consumption. This means ceteris paribus an additional effort required in terms of PJ renewable energy. However, in reality this additional national effort depends on whether this measure is combined with any additional energy efficiency efforts - see the sections on the EED, Ecodesign, EPBD and CO_2 and cars/vans/heavy-duty vehicles. Reducing energy demand will reduce the PJ renewable energy needed to achieve the RED target, as this is expressed in percentage of energy consumption.
If, for example, the Dutch indicative renewable target increases from the current 26% to 33%, renewable energy production will need to be about 669 PJ without additional energy efficiency measures (i.e. taking the KEV 2019 forecast for energy demand in 2030 as a baseline). If an additional 7.5% of energy savings would be achieved, in line with an increase of the overall EED target from the current 32.5% to 40% (see the factsheet on the EED), 618 PJ renewable energy will be required to meet the same RED II indicative target.
Reducing energy demand can be realised on EU level through tightening of the EED energy efficiency targets, the EPBD (renovation rate in the built environment), standards (Ecodesign, LDV and HDV). All these revisions interact and to a large extent overlap in the envisaged GHG reductions. The following figure represents an overview of these interactions.



RED II

Implementation of the Green Deal could result in an increase of the overall renewable energy target in 2030, values of 35 to 40% are explored in the Commission's public consultation (the current target is 32%). This would require a significant increase of the renewable energy generation capacity throughout the EU, as well as in the Netherlands. Increasing the overall EU renewable energy target would increase the indicative national contribution of the Netherlands from the current 26% to approximately 28% and 33% respectively, in 2030[23].

The Netherlands will then be expected to increase the Dutch ambition for renewable energy in 2030 and the indicative trajectory towards 2030, and implement policy measures to achieve these higher ambitions. With the current and planned policies, the share of renewable energy in 2030 is expected to increase to about 24% (PBL, 2019) or 490 PJ. However, this calculation does not take all policies in the Climate Agreement into account. If the Climate Agreement is taken into account the share is expected to be 30-32% according to PBL. With the current RED II target, the Dutch indicative contribution amounts to 26%, about 41 PJ more than calculated in the KEV 2019:

- If the overall EU target is increased to 35%, we estimate that the national indicative contribution increases to about 28%. If energy demand remains the same as forecast in the KEV (PBL, 2019), this increases the renewable energy generation target for 2030 by 41 PJ, to a total of 567 PJ.
- If the overall EU target is increased to 40%, we estimate that the national indicative contribution increases to about 33%. If energy demand again remains the same as forecast in the KEV (PBL, 2019), this increases the renewable energy generation target for 2030 by 142 PJ, compared to the current indicative target, up to a total of 668 PJ.

These two values represent the low and high estimates of the potential impact of a revision of the RED II. The corresponding GHG reduction is estimated to be between 2.3 and 8 Mton-eq. in 2030 compared to the baseline KEV 2019.

EED

As discussed in section 4.3 and the EED factsheet, the EED headline target (Art. 3) may be increased. An increase from 32.5% to 35% or 40% is currently mentioned but the exact value will depend on the EU Impact Assessment. National energy efficiency measures will need to be strengthened in that case, although this mainly means that the pressure will increase to implement the energy efficiency measures of the Climate Agreement as planned (see the factsheet EED and section 4.3). According to the data included in the Dutch NECP (Ministry of EZK, 2019), the government expects that this would result in a significant overshoot of the current indicative national contribution to the EED Art. 3 target, which would even be sufficient to accommodate an EU level target of 40%. Since it has proven challenging in the past to realise these kind of ambitious energy savings, however, we can also look at how the indicative national contributions would change if the EED Art. 3 target increases. In that case, the additional energy savings in 2030 would amount to about 65 PJ or 195 PJ, respectively, for a 35% or 40% EU level target in 2030[24]. The expected additional GHG reductions for 2030 are between 3.6 and 10.9 Mton-eq. GHG.

[23] The calculation methodology for this indicative target is defined in the governance directive, but resulting values for higher targets are not yet known. These values given here are first order estimates, based on an increase of the national target proportional to the increase of the EU target.

[24] For comparison, with the current EED, the Commission would expect (primary) energy savings of about 286 PJ between 2020 and 2030 in the Netherlands. The Dutch ambition included in the NECP is a reduction of 651 PJ.

EPBD

The Green Deal can lead to additional requirements for the renovation rate in the built environment, ranging from 0.8 to 2.4% of the building stock. According to the latest assessment of the Dutch Environmental Policy Agency[25], the Dutch Climate Agreement would lead to an average renovation rate of 0.73% per year (midpoint of the reported range), and a subsequent reduction in emissions of 2.15 Mton CO_2, or approximately 2 ton CO_2 per house-equivalent. An increase in renovation rate to 0.8% per year would result in an additional 85,000 house-equivalents (relative to the midpoint), or 0.2 Mton by 2030.
An increase in renovation rate to 2.4% would require an additional renovation of 2.1 million house-equivalents (also relative to the midpoint), and would result in an additional reduction emission of 4.9 Mton by 2030[26].

ETD

The ETD could be revised as indexation of minimum rates (correction for inflation), which can be considered as a minimum scenario. In that case, the Netherlands already meets the full requirements of the ETD, since energy tax rates are already corrected for inflation.
As a result, the low scenario will not result in extra reductions. This high scenario is estimated as a uniform CO_2 tax on top of the existing energy taxes for heating fuels as well as for motor fuels. This means that all Member States, including the Netherlands, react to the new minima and introduce an additional CO_2 tax in all non-ETS sectors, including in transport. This policy option includes 30 €/tCO_2 for the period 2021-2030. The estimated reduction (2.6 Mton in 2030) for the Netherlands is taken from the Impact Assessment of the previous revision[27].

Regulation on CO_2 emission standards for passenger cars, LDV and HDV

For the regulations on CO_2 emissions standards for passengers cars, LDV and HDV together the low scenario assumes no stricter standards are being introduced or that stricter standards are being introduced to correct for higher reference values (as result of the current economic circumstances reference values might be higher than expected and higher reduction percentages are required to realise the same absolute emission reduction). According to the KEV 2019 2.5 MTon of CO_2-eq. emissions reduction will be realised in 2030 as result of CO_2 standards and includes energy reduction as result of more efficient internal combustion engines and as result of electrification of the fleet. In the low scenario no additional CO_2 reduction is assumed. For the high scenario, additional CO_2 reduction is estimated to be 0.4 Mton. The estimate is based on a 15% further reduction compared to the KEV 2019 and is linked to the reductions investigated in impact assessment. Although more stringent targets have been assessed a modest increase of the targets seem to be more realistic, because current targets are already seen as challenging and because the Climate Agreement also includes many actions targeted at the transition towards zero-emission vehicles. Therefore not all reduction can be attributed to CO_2 standards.

[25] Achtergronddocument “Het Klimaatakkoord: Effecten en aandachtspunten”, 1 november 2019, PBL.

[26] Estimate based on average emission reduction calculated from Achtergronddocument “Het Klimaatakkoord: Effecten en aandachtspunten”, 1 November 2019, PBL, and Achtergronddocument “Het Klimaatakkoord Effecten Ontwerp Klimaatakkoord: Gebouwde Omgeving”, 19 April 2019, PBL.

[27] https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/sec_2011_409_impact_assesment_part1_en.pdf

Table 10 - Impacts of revisions on achievements of Dutch climate targets in 2030, GHG emission reduction[28] Mton-eq.

	Reduction 2030 - low scenario	Reduction 2030 - high scenario	Mechanism
Renewable Energy Directive recast (RED II), compared to KEV 2019	2.3	8.0	Renewable energy production
RED II compared to KEV 2019 and Climate Agreement**	0.0	1.7	Renewable energy production
Energy Efficiency Directive (EED)	3.6	10.9	Reduction energy demand
Regulation on CO_2 emission standards for passenger cars and LDV	0.0	0.4	Reduction energy demand and ZE technologies
Regulation on CO_2 emission standards for HDV			
Energy Performance of buildings directive (EPBD)	0.2	4.9	Reduction energy demand
Fuel Quality Directive (FQD)	0	0	
Alternative Fuels Infrastructure Directive (AFID)			
Ecodesign Directive			
Energy Taxation Directive (ETD)	0.0	2.6	All
	Cannot be summed	Cannot be summed	

** It is expected by PBL that an extra 75-112 PJ of renewable energy will be realised through the Climate Agreement.

[28] The impacts of some of the mechanisms/directives could not be determined, these rows were left blank.

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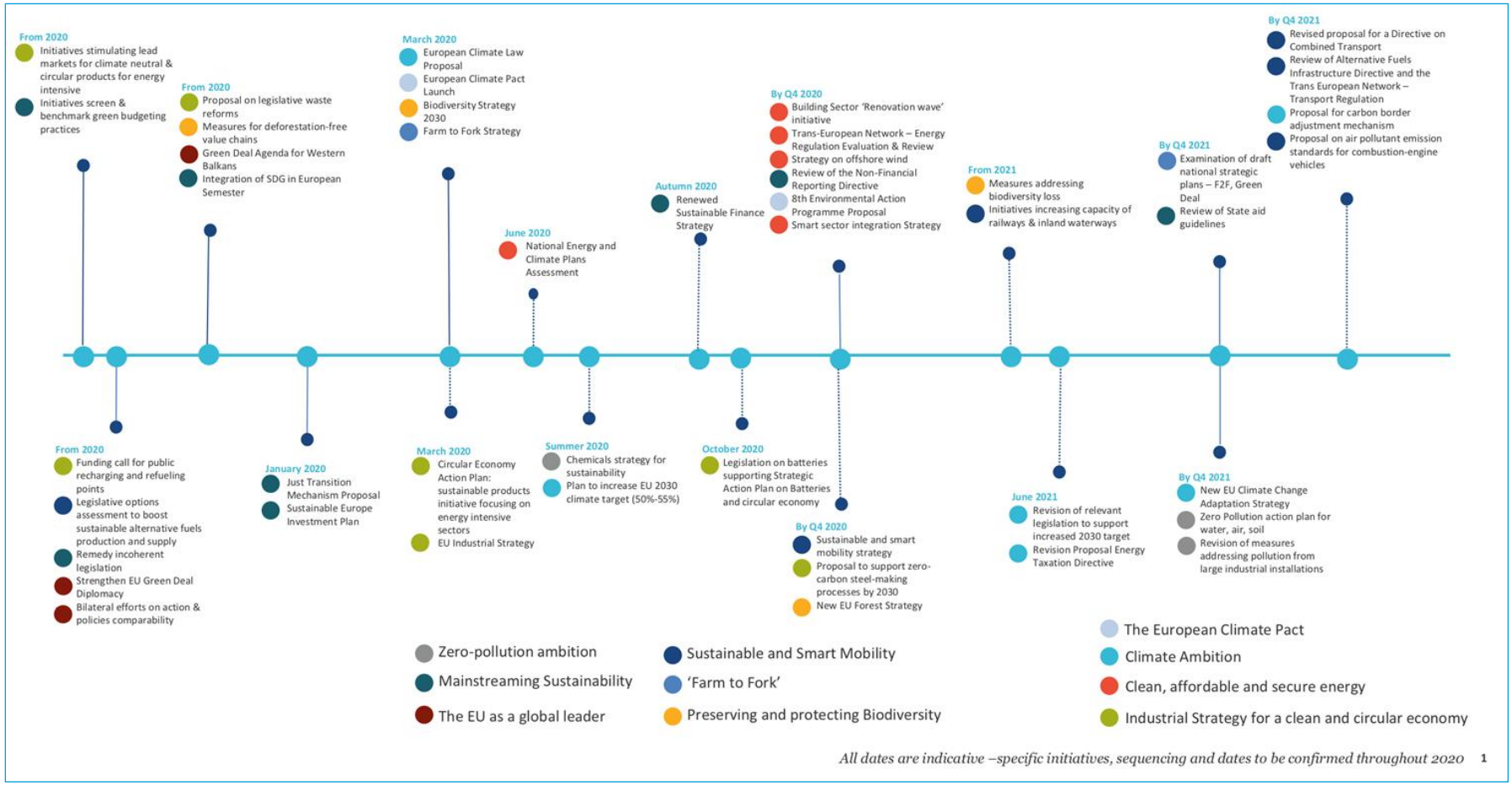
Abbrevations

AFID	Alternative Fuels Infrastructure Directive
CAP	Common Agricultural Policy
EAFRD	European Agricultural Fund for Rural Development
EED	Energy Efficiency Directive recast
EIA	Energie Investeringsaftrek
EPBD	Energy Performance of Buildings Directive
ESR	Effort Sharing Regulation
ETD	Energy Taxation Directive
EU	European Union
EU ETS	EU Emission Trading System
GHG	Greenhouse gases
HDV	Heavy-duty vehicles
IA	Impact Assessment
ISDE	Investeringssubsidie duurzame energie
LDV	Light-duty vehicles
MIA/VAMIL	Milieu-investeringsaftrek/Willekeurige afschrijving milieu-investeringen
NECP	National Energy and Climate Plan
PJ	Petajoule
RED II	Renewable Energy Directive recast
RES	Regional Energy Strategies
RES-T	Renewable energy systems in transport
SDE++	Stimulering duurzame energietransitie

A Timeline European Green Deal



Source: Fleischmann-Hillard.

B Selection of directives and regulations

The following tables provide a first draft high-level assessment of the potential impacts on a wide range of energy and climate-related EU directives and regulations. Based on this assessment, the key directives/regulations were selected for further analysis in this study: Table 11 contains the directives/regulations that were selected, Table 12 are the directives/regulations that were not selected.

The results of the more detailed assessment can be found in the factsheets included in the following Annex C to this report.

All of the directives and regulations listed here can potentially be changed to increase their CO_2 reduction potential, and almost all these topics are indeed mentioned in the Green Deal or the public consultation on the 2030 climate policies. Please note that this table is not intended to provide a detailed assessment, it focusses on the key measures mentioned in these documents.

Table 11 - First draft high-level assessment of expected key impacts, directives/regulations that were selected for further analysis

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
Renewable Energy Directive recast (RED II)	Yes. Potential key impacts/policy options: Higher EU renewable energy target for 2030 (from the current 32 to 35-40%). More efforts to increase production/demand for green hydrogen, and sustainable biomass as feedstock or fuel in industry. Stronger enforcement of the existing regulation. Additional measures to increase decentralised RES production (e.g. prosumers, energy communities), renewable heat and cold production, RES in industry, in buildings, in transport. Additional measures to ensure biomass use remains sustainable support innovation	SDE++ National CO_2 tax in addition to ETS (planned). ISDE. Renewable energy in transport obligation (incl. Renewable Fuel Units (HBE system) and potentially greenhouse gas units (BKE) Environment and Planning Act (Omgevingswet) Regional Energy Strategies (Regionale energiestrategieën).	Increasing the EU renewable energy target for 2030 will increase the pressure to increase the Dutch ambition for renewable energy in 2030, and the indicative trajectory towards 2030. These higher targets are likely to be achieved by increasing the budget for renewable energy in the SDE++. They may also lead to an increased need to remove bottlenecks in the electricity grid, and a need to speed up projects for the integration of wind energy, such as electrification of industry in combination with demand flexibility, electrolysers (power-to-hydrogen) and hydrogen infrastructure.

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
	Renewable energy in transport (RES-T): – higher minimum RES-T target – no lower minimum RES-T target in case a lower cap is applied – adjustment of the scope (nominator and denominator) – adjustment of multiplication factors – adjustment of minimum GHG emission savings (although this might not be realistic) – adjustment of how RES-T counts towards the overall target – changes in accounting of renewable electricity – separate targets for RFNBOs and RCFs – separate targets for maritime shipping and aviation – intensification of low ILUC biofuels NB. These additional measures are not yet specified.		The integration of renewable energy resources in the Dutch landscape is approached through Regional Energy Strategies, and (will be) supported by the Environment and Planning Act. The 35 TWh target of the Climate Agreement could become higher following higher EU targets, thus impacting the Regional Energy Strategies as currently developed by the Dutch regional governments. **Renewable energy in transport target** Because the level of ambition of the Climate Agreement is higher than the transport target of the RED, increasing the target might have limited impacts. However, these changes might limit the national implementation options for harmonisation reasons. This depends on the height of the increase. The question is to what extent the production capacity of advanced biofuels can be ramped up fast enough.
Energy Efficiency Directive recast (EED II)	Yes. Potential key impacts/policy options: Higher EU ambition for energy efficiency in 2030 (from the current 32.5% to 35-40%). Stronger enforcement of the existing regulation. Making the "Energy Efficiency First" principle a compulsory test in relevant legislative, investment and planning decisions. More stringent energy performance requirements for industrial processes, including	Climate Agreement (Klimaatakkoord) The Heat Act (Warmtewet) A range of energy efficiency policy measures such as the Environmental Management Act (Wet milieubeheer), Energy Investment Allowance (EIA), etc. National CO_2 tax in addition to ETS (planned). Heat Transition Visions (Transitievisies Warmte). Natural gas-free districts (Aardgasvrije wijken).	The Dutch Climate Agreement has stated the objective to make 1.5 million existing homes and buildings natural gas-free by 2030. The approach focuses on replacing gas-fired heating systems through a so-called "district-oriented approach" (wijkaanpak). This approach can materialise in district heating development and/or renovation (Klimaatakkoord, 2019b, pp. 15-44). The development and deployment of district

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
	through process integration and waste heat reuse. Standards for ICT sector to promote energy efficiency and reuse of waste heat. Making mandatory the implementation of the recommendations in the energy audits. Offer SMEs the right to free energy audits or similar support.	Environment and Planning Act (Omgevingswet).	heating does not necessarily imply renovation. The rate at which houses and buildings should be made natural-gas-free lies at around 1.2% of the building stock by district between now and 2020. The EED (and/or EPBD, see further) can be impacted in such a way that higher renovation rates are required, and/or that more strict renovation targets are set.
Energy Performance of Buildings (EPBD)	Yes. Potential key impacts/policy options: Doubling the renovation rate (currently between 0.4 and 1.2% EU-wide). Higher ambitions for energy performance of buildings. Stricter enforcement of rules on energy performance of buildings Focus on social housing, schools and hospitals. Further focus on alleviating energy poverty. Stricter rules on technical systems.	Climate Agreement (Klimaatakkoord). Heat Transition Visions (Transitievisies Warmte). Regional Energy Strategies (Regionale energiestrategieën) Natural-gas-free districts (Aardgasvrije wijken), Building Decree (Bouwbesluit),	Together with the EED, the EPBD may be impacted in such a way that it requires changes to the building renovation rate and depth targets set by the Dutch Climate Agreement, thus impacting the requirements for the Heat Transition Visions, Regional Energy Strategies, and their district-level implementation. Stricter enforcement: Synergy with Dutch ambition to stricter enforcement of office building regulations. Additional risk if this is not achieved timely. Dutch approach to energy poverty lies in cost-neutrality (RVO, 2020). Alleviating existing energy poverty could be an additional requirement from the EU.

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
Energy Taxation Directive (ETD)	The Commission will propose to revise the ETD focusing on environmental issues[29]. The EC will look closely at the current tax exemptions including for aviation and maritime fuels and at how best to close any loopholes.	Adopting minimum tariffs and including CO_2 pricing could affect energy taxation tariffs for different groups (small, medium and larger energy consumers) and excise duties on transport fuels.	Important opportunity is that CO_2 pricing and reducing tax exemptions will significantly lead to less subsidies (SDE++) in order to make business cases for energy alternatives financial viable. A risk is that certain agreements in the Climate Agreement (Klimaatakkoord) with industry and business associations could be in conflict with additional CO_2 pricing and closing exemptions.
CO_2 emission standards for cars and vans	Yes. Potential key impacts/policy options[30]: — adjust targets for 2025 and 2030 — use the same targets, but with earlier realisation — adjust incentives mechanism for zero- and low-emission vehicles (ZLEV) (target relaxation and greater weight is given to ZLEV registered in Member States with a low ZLEV uptake in 2017): • adjust pooling, exemptions and derogations • adjust provisions regarding the "eco-innovation" credits for emission savings due to the application of innovative emission reduction technologies not covered by the standard test cycle CO_2 measurement — introduction of a common methodology for life cycle emissions	Standards are for vehicle manufacturers. Related NL policies: The stimulation of electric transport (including passenger transport) aimed at 100% emission-free new sales of passenger cars in 2030. National Agenda for Charging Infrastructure (Stuurgroep NAL, 2020).	The Netherlands doesn't have a large car industry, but more stringent CO_2 emission standards will ease the realisation of zero-emission goals at the national level.

[29] The EC proposes to adopt proposals in this area through the ordinary legislative procedure by qualified majority voting rather than by unanimity.

[30] EC: CO2 emission performance standards for cars and vans (2020 onwards)

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
CO_2 emission standards for heavy-duty vehicles	Potential key impacts/policy options: — adjust targets of reduction of 30% by 2030, with a 15% benchmark as a stepping stone in 2025 — higher emissions premium penalty — adjust system of voluntary supercredits	Standards are for vehicle manufacturers. Related NL policies: — Heavy goods vehicle charge (HGVC) — ZE city logistics — ZE zones National Agenda for Charging Infrastructure.	The Netherlands does not have a large car industry, but more stringent CO_2 emission standards will ease the realisation of zero-emission goals at the national level.
Fuel Quality Directive (FQD)	Yes. Potential key impacts/policy options: — adjustments of the scope to more transport modes — reduce the options to reduce CO_2 intensity, which require more alternative fuels are used and less fossil fuels — higher minimum GHG savings (might not be realistic)	Currently the reporting requirement under the renewable energy in transport obligation (incl. Renewable Fuel Units (HBE system) and potentially greenhouse gas units (BKE).	Because the level of ambition of the Climate Agreement is higher than the RES-T target of the RED (which is closely linked to the FQD target), increasing the target might have limited impacts. However, these changes might limit the national implementation options for harmonisation reasons. This depends on the height of the increase. The question is to what extent the production capacity of advanced biofuels can be ramped up fast enough.
Alternative Fuels Infrastructure Directive (AFID)	Yes. The Commission will also review the Alternative Fuels. Infrastructure Directive and the TEN-T Regulation to accelerate the deployment of zero- and low-emission vehicles and vessels. Potential key impacts/policy options include: — higher appropriate numbers of charging and filling infrastructure — earlier realisation by adjusting the timings	Beleidskader infrastructuur voor alternatieve Brandstoffen (National Government of the Netherlands, 2017a). Besluit infrastructuur alternatieve brandstoffen (National Government of the Netherlands, 2017a). National Agenda for Charging Infrastructure (Stuurgroep NAL, 2020).	Higher appropriate numbers of charging and filling infrastructure or either earlier realisation will increase the level of ambition. This on the one hand also depends on the vehicle fleet developments: in case there is also sufficient growth in EVs, charging points might be realised without public funding. In case the level of EVs or other alternative powertrains stays behind, the business case of filling infrastructure might change in a way additional funding is required.

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
Ecodesign Directive	Potential key impacts/policy options: — More stringent energy performance standards for products		Can help reduce energy use in NL, but probably limited impact compared to some other directives.

Table 12 - First draft high-level assessment of expected key impacts, directives/regulations not selected for further analysis

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
Combined Transport Directive (CTD)	Yes. The CTD should support the realisation of a modal shift of 30 % of road freight over 300 km shifted to other modes of transport such as rail or waterborne transport by 2030, and more than 50 % by 2050. Potential key impacts/policy options: – broaden the scope of the Directive – more options for financial support/extend economic support – further eliminate authorisation procedures	The Dutch Climate Agreement focusses on a shift from a mode oriented approach to a mobility oriented approach, including regional mobility plans. Further investments to promote modal shift are necessary.	Probably a low impact, because the Directive only eases the realisation of modal shift.
TEN-T regulation	Yes. TEN-T comprises of two network 'layers': – The Core Network includes the most important connections, linking the most important nodes, and is to be completed by 2030. – The Comprehensive Network covers all European regions and is to be completed by 2050. Adjustments might ask for a larger network or earlier completion of the networks. This is also closely linked to the implementation of the AFiD. Evaluation is foreseen for 2023.	MIRT. See also AFiD for the link with infrastructure for alternative fuels	In general, the implementation of TEN-T by means of realisation of the core and comprehensive network are on track in the Netherlands. However, some larger aspects still need to be implemented such as ERTMS. Panteia recommended to follow a planning which is flexible enough and could handle with any delays (Panteia, 2014)
Industrial Emissions Directive	Yes. This Directive focusses on permit procedures and pollutant emissions, but it is being reviewed at the moment. One of the aims of the review is to better align the directive with the industry decarbonisation		Focus on pollutant emissions. Alignment with the decarbonisation efforts could help the NL climate efforts, but this will be a secondary effect, and no concrete changes can be assessed yet.

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
	efforts outlined in the EU Green Deal. Focus is regulating the permit process and pollutant emissions.		
Ecolabel Regulation			No NL action required. Limited climate impact, compared to some other directives.
F-gas regulation			Limited climate impact, compared to some other directives.
Governance Directive			
TEN-E regulation	Will be revise in Q4 2020		
Electricity Directive			
Gas Directive	Commission proposal for revision expected in 2021. This will include sector coupling and low-carbon gases.		
Carbon Capture and Storage Directive			
Clean Vehicle Directive			
Construction Products Regulation	Yes. Regulation to be reviewed as part of the Green Deal. Potential key impacts/policy options: – Requirements towards circularity of building materials – Requirements for increased digitalisation – Requirements for climate proofing of building materials – Stricter requirements for thermal insulation products	Building Decree (Bouwbesluit) (National Government of the Netherlands, 2011) and its successor, the Environmental Structures Decree (Besluit bouwwerken leefomgeving) (National Government of the Netherlands, 2018).	The revision of the Construction Products Regulation could impact the Dutch Building Decree and its successor, the Environmental Structures Decree, by posing stricter and/or more explicit environmental requirements on building materials, climate proofing and use of thermal insulation products. Currently, these requirements are very limited in the Building Decree/Environmental Structures Decree. The extent of the revisions of the CPR will determine the extent of the Building Decree/Environmental Structures Decree.
Public procurement directive			Limited climate impact, compared to some other directives.

Directive/regulation	Likely to be impacted by the Green Deal?	Link with Dutch climate policies (key policies)	Potential impact on Dutch policy (key risks, opportunities)
Waste directives	Potential key impacts/policy options: – Introduce further waste recycling targets for instance related to construction and industrial waste – Introduce overall waste prevention target – Introduce a target to reduce EU food waste – Introduce a target to ensure a certain amount of our food and animal waste is converted into biogas – Introduce legislation focussed on reducing greenhouse gas emissions from wastewater and liquid waste – Prohibit landfilling of waste that can be treated differently and limit as much as possible incineration with a view to increasing recycling – Harmonise the treatment of waste incinerators under climate legislation	Landelijk Afvalbeheersplan 3 (LAP 3) (Rijkswaterstaat, 2017)	Policy changes may impact Dutch waste policies. The main focus is not so much climate policies but rather circular economy.

C Factsheets

Table 13 – Index of the factsheets

Directive/regulation	Annex
Renewable Energy Directive recast (RED II)	C.1
Energy Efficiency Directive recast (EED II)	C.2
Energy Performance of Buildings (EPBD)	C.3
Energy Taxation Directive (ETD)	C.4
CO_2 emission standards for cars and vans	C.5
CO_2 emission standards for heavy-duty vehicles	C.6
Fuel Quality Directive (FQD)	C.7
Alternative Fuels Infrastructure Directive (AFID)	C.8
Ecodesign Directive	C.9

C.1 Renewable Energy Directive recast (RED II)

Factsheet | Renewable Energy Directive

Renewable Energy Directive

2018/2001/EU
http://data.europa.eu/eli/dir/2018/2001/oj

GENERAL

Process	– Part of Clean Energy Package. – Entered into force in December 2018. – Link Legislative Observatory. – National transposition by 30 June 2021. – The overall renewable energy target (Art. 3.1) and the renewable energy in transport target (Art. 25.1) will be reviewed by 2023, with the possibility to revise them.
Key content	– The RED II sets EU targets for renewable energy sources consumption in 2030, based on the overall EU objective (32%), and outlines the requirements for the national contributions to these targets. – Sectors: electricity generation, heating and cooling, transport. – Lays down definitions, and provisions on district heating, regional cooperation, energy communities, financial support and guarantees of origin. – EU sustainability criteria for biofuels, bioliquids and biomass fuels.

MAIN ARTICLES

– **Share of energy from renewable sources** in the Union's gross final consumption of energy in 2030 is at least 32%.
  - The Commission will assess this target by 2023, with a view to submitting a legislative proposal to increase it where there are further substantial costs reductions in the production of renewable energy, where needed to meet the Union's international commitments for decarbonisation, or where a significant decrease in energy consumption in the Union justifies such an increase (Art. 3.1).
  - Member States shall set national contributions to meet, collectively, the binding overall Union target as part of their integrated national energy and climate plans (art 3.2)
  - There is no national binding target for 2030 included in de RED, to leave greater flexibility for Member States to meet their greenhouse gas reduction targets in the most cost-effective manner. The national targets submitted by the Member States in their national energy and climate plans will then become the basis for the assessment of the Commission on the progress towards the EU's renewable energy target, in line with the governance regulation. According to Art. 32 of that regulation, If the national progress is insufficient compared to the national targets and interim reference points, the Member States shall ensure additional measures are implemented to cover the gap, or make a voluntary financial payment to the EU renewable energy financing mechanism, or use cooperation mechanisms set out in the RED II. If the overall progress in the EU is insufficient, the Commission may issue recommendations to the Member States to mitigate this.

– **Heating and cooling**: share of renewable energy to increase by an indicative 1,3 percentage points as an annual average calculated for the periods 2021 to 2025 and 2026 to 2030, starting from the share of renewable energy in the heating and cooling sector in 2020, expressed in terms of national share of final energy consumption (Art. 23.1).
  - When deciding which measures to adopt for the purposes of deploying energy from renewable sources in the heating and cooling sector, Member States may take into account cost-effectiveness reflecting structural barriers arising from the high share of natural gas or cooling, or from a dispersed settlement structure with low population density. Where those measures would result in a lower average annual increase than that referred to in paragraph 1 of this Article, Member States shall make it public and provide the Commission with reasons.

- A number of provisions to support district heating and cooling, including the requirement to lay down measures to ensure that district heating and cooling systems contribute to the target (with two options to choose from, Art. 24)

– **Transport**: set an obligation on fuel suppliers to ensure that the share of renewable energy within the final consumption of energy in the transport sector is at least 14% by 2030 with a subtarget of 3.5% for advanced biofuels (Art. 25). As result of multiplication factors, this 14% will be partly be realized in an administrative way. The actual volume and thus GHG reduction will probably be lower.
  - The Commission will assess this obligation, with a view to submitting, by 2023, a legislative proposal to increase it in the event of further substantial costs reductions in the production of renewable energy, where necessary to meet the Union's international commitments for decarbonisation, or where justified on the grounds of a significant decrease in energy consumption in the Union.
  - Article 26 describes the rules applicable to biofuels produced from food and feed crops. The sustainability requirements and greenhouse gas emissions saving criteria are laid down in Article 29.
  - By 2025, the Commission will assess whether the obligation relating to advanced biofuels and biogas effectively stimulates innovation and ensures greenhouse gas emissions savings in the transport sector. The Commission shall analyse in that assessment whether the application of this Article effectively avoids double accounting of renewable energy. The Commission shall, if appropriate, submit a proposal to amend the obligation relating to advanced biofuels and biogas produced from feedstock listed in Part A of Annex IX.

RELATIONSHIP WITH OTHER DIRECTIVES

EED: More energy savings will impact the ambition level of a RES target, since this is defined as a % of energy consumption.

FQD: While the REDII sets a target for the minimum share of renewable energy in transport, the FQD contains a reduction target for the average GHG intensity of fuels. Renewable energy in transport contributes to both targets. The FQD also prescribes fuel specifications, which determine how much biofuels can be blended with the fuel specifications of regular road transport fuels.

EPBD: Renewable energy in the built environment is also included in the EPBD (for example through zero-energy building provisions). The methodology for calculating the energy performance of buildings allows taking into account the positive influence of heating and electricity systems based on energy from renewable resources.

Governance Regulation: defines the indicative formula for the national contribution to the EU renewable energy target (Annex II), and lays out the governance mechanism for the EU's energy and climate policies from 2021 to 2030, including the RED.

RANGE OF POSSIBLE ADJUSTMENTS DUE TO THE GREEN DEAL

General renewable energy target and policies

The RED II requires Member States to set national targets for renewable energy sources consumption in 2030, based on the overall EU objective of 32%. Implementation of the Green Deal could result in an increase of this overall target, values of 35 to 40% are explored in the Commission's public consultation. The Commission is likely to aim for a level that ensures cost-effective achievement of the higher climate target, to be determined in the Impact Assessment for the Green Deal. This would require a significant increase of the renewable energy generation capacity throughout the EU, replacing fossil fuel-based energy generation (coal, natural gas, oil), thereby contributing to the EU and national climate goals. Based on recent trends and forecasts (see, for example (EC, 2018c)), this additional increase is likely to be met by increasing wind (on- and offshore) and solar electricity generation and, to a lesser extent, biomass energy.

However, what a higher renewable energy target actually means in additional effort required (PJ renewable energy) depends on whether this measure is combined with any additional the energy efficiency efforts - see the sections on the EED, Ecodesign, EPBD and CO_2 and cars/vans/heavy-duty vehicles. Reducing energy demand will also reduce the PJ renewable energy needed to achieve the RED target, as this is expressed in percentage of energy consumption.

- The Green Deal also states:
  - More efforts to increase production/demand for green hydrogen, and sustainable biomass as feedstock or fuel in industry.
  - Stronger regional cooperation between Member States to support renewable energy project such as offshore wind.
  - Stronger enforcement of the existing regulation.
    Policy options are not yet specified, but the first point could mean that a provision is added that biomass use in industry may only be supported or counted towards policy targets, if the biomass adheres to the same sustainability criteria that are implemented for biomass use in energy. Stronger enforcement could mean less flexibility in the interpretation of the provisions, more pressure on countries that do not meet interim targets to strengthen their policy framework and speed up developments, or increased use of infringement procedures.

Potential new provisions are also indicated in the Green Deal, although they are not yet further specified:

- Additional measures to increase:
  - decentralised renewable energy production (e.g. prosumers, energy communities);
  - renewable energy in industry, in buildings, in transport.
- Additional measures to:
  - ensure biomass use remains sustainable;
  - support innovation.
    The first point could imply stricter biomass criteria (e.g. by adding soil protection criteria), or stricter monitoring and enforcement of current criteria.

Furthermore, the Green Deal lays out a strategy to provide additional funding to support and speed up renewable energy deployment (e.g. via a Sustainable Europe Investment Plan, the EU budget and the InvestEU Fund).
NB. Most of the additional measures are not yet further specified.

Renewable energy in heating and cooling

- The EU could potentially increase the indicative target for heating and cooling (Art. 23.1). However, the target has only recently been introduced (there was no target in the RED I), and it seems quite ambitious already for some countries (including the Netherlands) so the Commission may decide to leave this unaltered. The EU may rather consider alternative options to support Member State's efforts in this area, for example via taxation (see the ETD) or the EPBD.
- There might be increased pressure from the EC to achieve the indicative target set in Article 23.1. This could be done via the process of the NECPs, as outlined in the governance directive. The Commission assesses the NECPs and provides recommendations, which Member States should take these into due account.

Renewable energy in transport

Based on the Green Deal and the public consultation of the Commission, the following potential revisions are being identified by CE Delft:

- A higher minimum renewable energy in transport (RES-T) target for 2030. This can be done by the introduction of a higher target, but also by the introduction of additional individual targets for transport modes, such as maritime shipping and aviation) and fuel categories (such as RFNBOs), which have been added to the scope of the overall RES-T target. Adjustments of subtargets might also help to realize the growth in energy carriers, which are preferred from a sustainability perspective. It is important that the transport sector will be held responsible for the higher cost.
- The European Commission currently investigates under ReFuelEU Aviation and FuelEU maritime the options to introduce policy measures for the uptake of renewable fuels in aviation and maritime shipping and renewable fuels and maritime shipping and aviation can contribute to the transport target of the REDII Because of the different GHG accounting method for maritime shipping and aviation, a higher share of renewable fuels in these modes might replace renewable fuels in transport modes, such as road transport. Because of the international nature of maritime shipping and aviation and different GHG accounting methodology, the design of new policy instruments at the EU-level might affect the realization of national objectives.
- The national RES-T ambition as laid down in the Climate Agreement is already almost twice as high as the current minimum RES-T target of the RED II.
- Adjustment of the calculation methodology used to calculate the contribution towards the target. Some provisions currently in place lower the actual amount of renewable energy required to comply. The following adjustments take away these options and will increase the actual share of RES-Ts:
  - No lower minimum RES-T target in case a lower cap on biofuels from food-feed crops is applied;

- Adjustment of the scope (nominator and denominator, Article 27): the formula to calculate the RES-T share can be adjusted to increase the volumes required to meet the target. The nominator takes into account all types of renewable energy, while the denominator is limited to 'the energy content of road- and rail- transport fuels supplied for consumption or use on the market, petrol, diesel, natural gas, biofuels, biogas, renewable liquid and gaseous transport fuels of non-biological origin, recycled carbon fuels and electricity supplied to the road and rail transport sectors, shall be taken into account.' By taking into account more transport sectors in the denominator more renewable energy is required to meet the same target.
- Reduction of multiplication factors (in case of an increase the RES-T target should be adjusted accordingly).

— Adjustments of minimum GHG emission savings (when realistic from a technological point of view).
— Changes in accounting of renewable electricity.

NB. Most of these additional measures are not yet further specified. Within the impact assessment the policy options that have been investigated focussed on a shift in type of biofuels (replacement of food-based biofuels) rather than a substantial increase of biofuel volumes. According to the EC, the level of ambition remains in the scope of what is considered feasible by the Sub Group of Advanced Biofuels (SGAB) of the Sustainable Transport Forum (STF) and other recent scientific work such as the report "Wasted Europe's untapped resource". This also raises the question to what extent an increase of the target in the light of the European Green Deal might be feasible. Availability of sustainable biomass should be taken into account at all times.

CONCLUSION: AMBITIOUS SCENARIO

An increase of the EU renewable energy target for 2030 (Art. 3) seems likely, if the EU climate ambition is increased to -55% in 2030. This target could increase from the current 32% to 35% or up to 40%. This would increase the indicative national contribution from the current 26% to about 28% (EU target 35%) or 33% (EU target 40%). The precise values are not yet known, these require the application of a formula by the European Commission.
Note that the RED II also recognizes that Member States should have the flexibility to meet their greenhouse gas reduction targets in the most cost-effective manner in accordance with their specific circumstances, energy mix and capacity to produce renewable energy (Recital 9). This is further reinforced in the Governance Directive (Recital 55), which states that cost-effective deployment of renewable energy is one of the key objective criteria for assessing Member States' contributions.

Additional measures to increase renewable energy in heat and cold are considered but it is not yet clear whether the indicative target for renewable heat will also increase. In any case, there might be increased pressure from the EC to achieve the indicative target set in Article 23.1., through the existing provisions in the RED II and governance regulation.

A higher minimum renewable energy in transport (RES-T) target from 2030 could be possible, but also requires a robust system to prevent fraud. Strengthening the RES-T provisions can be done by the introduction of a higher target, but also by the introduction of additional targets for transport modes (such as maritime shipping and aviation) and fuel categories (such as RFNBOs), which have been added to the scope of the overall RES-T target.

There are also indications in the Green Deal that additional measures will be implemented to increase decentralised renewable energy production and renewable energy in industry. There may be some modifications to the biomass sustainability criteria.
Details of policy revisions are not yet further elaborated, but this is likely to become clearer by June 2021, when the Commission is expected to publish proposals for revised energy legislation.

POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

The Renewable Energy Directive II is a key pillar of the EU's energy and climate package, and likely to be a key directive through which the more ambitious climate target is achieved. The main provisions that could be altered and that could impact Dutch policies and GHG emissions are the following.

General target

Increasing the overall EU renewable energy target to 35 or 40% in 2030 would increase the indicative national contribution of the Netherlands. The Netherlands will then be expected to increase the Dutch ambition for renewable energy in 2030 and the indicative trajectory towards 2030 and implement policy measures to achieve these higher ambitions.

- With the current and planned policies, but without the Climate Agreement, the share of renewable energy in 2030 is expected to increase to about 24% (PBL, 2019) or 490 PJ. This calculation does not take all policies in the Climate Agreement into account. With the current RED II target, the Dutch indicative contribution amounts to 26%, about 37 PJ more than calculated in the KEV 2019.
- If the overall EU target is increased to 35%, we estimate that the national indicative contribution increases to about 28%. If energy demand remains the same as forecast in the KEV (PBL, 2019), this increases the indicative renewable energy target for 2030 by 41 PJ, to a total of 567 PJ.
- If the overall EU target is increased to 40%, we estimate that the national indicative contribution increases to about 33%. If energy demand again remains the same as forecast in the KEV this increases the renewable energy generation target for 2030 by 142 PJ, compared to the current indicative target, up to a total of 668 PJ.

PBL (2019) estimates that the share of renewable energy will amount to 30-32% in 2030. These values suggest that in reaching the current target the Netherlands has some margin in the current and planned policies if all policies in the Climate Agreement are implemented[1]. This range is also included in the Dutch NECP (Ministry of EZK, 2019).

The regulations leave room to set the national target and trajectory (in the NECP) at a level lower than the indicative target, provided the reasons are made public. However, this will only be accepted if the renewable energy contributions of the other Member States are sufficiently high, as the Member States are required to add up to the EU's binding target in 2030 (and intermediate reference points for 2022, 2025 and 2027).
Looking at these targets alone, we can conclude that immediate action beyond the Climate Agreement is not needed if the EU target is increased to 35%. If the EU target is increased to 40%, additional policy measures will be required. In any case, the 2030 projections listed above show that effective implementation of the renewable energy policies in the Climate Agreement will become more important than with the current target in the RED II.

Note that the Dutch Climate Agreement already mentions the potential impact of this more ambitious climate policy on the energy mix. As stated in the Agreement, increasing the Dutch climate ambition from the current 49% GHG reduction in 2030 to 55% reduction in 2030 means that electricity demand increases, as electrification is an option to decarbonise in various sectors (e.g. a shift in heat pumps in the built environment, electric vehicles in transport). In this case, renewable electricity production is expected to increase from 84 TWh in 2030 to 120 TWh, to meet the higher target cost-effectively.

Furthermore, the renewable energy production needed to meet the target in 2030 depends on the energy consumption in that year, since the RED II target is expressed as a percentage of energy consumption. Therefore, other GHG reduction measures that will be implemented to achieve a higher climate target can reduce the impact of a higher renewable energy target (enhanced energy efficiency measures and reduced industrial activities based on fossil fuels, for example). This results in a strong link between the RED and the EED/Dutch energy efficiency policies: strengthening the energy efficiency ambition for 2030 limits the impact of an increase of the overall RED target for 2030.

Therefore, if the REDII overall target is increased and the Netherlands is required (or decides) to increase the national ambition for 2030 in line with a RED II revision, the renewable energy strategy and policies of the Climate Agreement will need to be revised. A strategy will have to be developed to address the following:

- Decide how much higher the national ambition should be for 2030, considering potential additional energy efficiency efforts and cost-effectiveness
- Decide where this additional renewable erg generation will be realised (e.g. offshore or onshore wind, solar, biomass energy, etc.), and implement policies to realise the new ambitions. This could, for example, result in an increase of the budget for renewable energy in the SDE++, additional policies in the built environment

and/or higher tax incentives on energy use – the main renewable policy measures included in the Climate Agreement - although other policy options are also feasible.

- If the government decides to increase the onshore renewable energy ambition (35 TWh in 2030) in response to a higher overall ambition, the Regional Energy Strategies that are currently developed by the Dutch regional governments will need to be reviewed. The integration of renewable energy resources in the Dutch landscape is approached through Regional Energy Strategies, and (will be) supported by the Environment and Planning Act. Speeding up the roll-out of renewable energy projects also requires processing of additional permitting procedures for renewable energy projects and related infrastructure and equipment.
- A higher national target will also lead to an increased need to remove bottlenecks in the electricity grid, and a need to speed up projects for the integration of wind energy, such as electrification of industry in combination with demand flexibility, electrolysers (power-to-hydrogen) and hydrogen infrastructure. It will also increase the need to look for opportunities to increase the use of hydrogen in new applications such as transport and the built environment and hydrogen for synthetic fuel production. These developments are currently still in their early stages, but they are foreseen in the Climate Agreement and both R&D and implementation projects are underway. Speeding up of these developments and the actions in the Climate Agreement seems necessary if EU-wide ambitions increase, especially if we also consider that neighbouring countries in NW-EU will also increase wind and solar power production further. The need for additional actions to resolve bottlenecks in the electricity grid and to speed up other measures to integrate the higher shares of renewable energy in the system would have to be assessed in more detail.

It can be noted that without the Green Deal, these actions would be also necessary, albeit at a later moment in time.

In the past, the increased deployment of wind and solar energy in the EU has led to significant cost reduction of these technologies, and cost are still decreasing (EC, 2018c). Speeding up renewable energy deployment throughout the EU is likely to further decrease cost through innovation and benefits of scale. Increased cooperation efforts to realise (and optimise) renewable energy projects, which is also encouraged in the RED II (EU, 2018b) and in the Green Deal (EC, 2019a), can further reduce these cost.
The same mechanisms are likely to occur for the technologies needed to integrate the increased share of fluctuating renewable electricity generation. The Green Deal will speed up growth of renewable energy generation throughout the EU, which will increase R&D and investments in solutions for demand flexibility, hydrogen production and

Changes in sustainability criteria for biomass in energy applications are implemented in the SDE++ programme and the transport obligation. Depending on the changes made to these provisions of the RED, these may need to be revised. Strengthening could have implications for biomass availability and cost.

Heating and Cooling

A higher indicative target for renewable heating and cooling is related to the Dutch heat transition policies for the built environment (most notably the objective to make 1.5 million existing homes and other buildings natural gas-free by 2030 and the Heat Act), for industry (most notably the elaboration of the regional energy strategies that should look at use of residual heat from industry), and agriculture (residual heat use and the Geothermal Heat Master Plan). The KEV 2019 forecasts a share of renewable energy in heating of 2030 of 13%, increasing from about 6% in 2017. This amounts to an average increase of 0.5 percent points per year. Clearly, there is a wide gap between the Dutch policies and the RED indicative target. The actions in the Climate Agreement will accelerate the uptake of renewable heating, but the effect has not been quantified yet in detail (PBL, 2019b).

If the EU climate ambition increases, the pressure on the Dutch government to achieve the indicative target for renewable heat (Art. 23 of the RED) is likely to increase. This could have implications for a number of agreements in the Climate Agreement and a wide range of Dutch policies that support the shift from fossil to renewable heating, most notably the Regional Energy Strategies, and perhaps also the SDE++ and ISDE, taxation policies and the renovation and heat transition policies in the built environment. See also the factsheet on EPBD.

[1] Also, the regulations leave room to set a national target (in the NECP) that deviates from the indicative target, provided the reasons are made public. Whether this will then indeed be accepted depends on the renewable energy contributions of the other Member States, as the Member States are required to add up to the EU's binding target in 2030 (and intermediate reference points for 2022, 2025 and 2027).

Transport

The national ambition of the Dutch Climate Agreement with respect to renewable energy in transport is almost twice as high compared to the RES-T provisions of the REDII. Increasing the target might therefore have limited to no impacts, as long as it stays below the ambition level of the Dutch Climate Agreement and as long as it does not affect the agreement on the maximum of 27PJ additional biofuel consumptions and the strict requirements of no further growth of biofuels from food and feed crops.
However, revisions to the REDII might limit the national implementation options for harmonisation reasons. This depends on the height of the increase. The question is to what extent the production capacity of advanced biofuels can be ramped up fast enough, especially when all Member States will have to realize higher ambition levels. On the other hand, an increase in EU-wide demand for advanced biofuels could also increase investment security and boost the developments in innovation and production capacity as also has occurred after 2009, when the RES-T target was introduced for the first time. Changes of the multiplication factors might impact current market dynamics, because the double-counting provision has been very successful in the Netherlands since its introduction. With respect to feedstock use and sustainability, the Climate Agreement states that no growth of biofuels from food and feed crops will take place above the level of 2020, which is stricter than the provisions of the REDII. The use of low-ILUC biofuels will depend on the outcomes of the national overall sustainability framework for all type of biomass to be used in the various sectors. Currently no palm oil and soy-based biofuels are used in the Netherlands: the Climate Agreement prescribes a continuation of this situation.

The role of aviation and maritime shipping within the REDII is also relevant for the Netherlands given the high share of (international) bunkering compared to national fuel consumption and the differences in scope between the REDII and the national climate objectives. This would create an additional market for biofuels, and contribute to decarbonisation of these sectors. However, GHG reduction in these sectors does not count towards the national climate target. The government will need to find a balance between these different effects when implementing this policy.

Similarly, if the REDII is adjusted in a way that biofuels with a better Well-To-Wheel-performance will be promoted this will have limited impact on the volumes and contribution to the national objectives, because national objectives only take into account the tank-to-wheel emissions of biofuels (0 for all biofuels). The impacts will also be limited, because of the early introduction of the double counting provision in the Netherlands, which is in a way already an incentive for biofuels with a better WTW-performance. Only increased shares of biofuels will have a direct impact on national GHG emissions. However, this measure would increase demand for better performing biofuels throughout the EU, which is likely to reduce availability and increase cost of this policy (depending on whether supply can be increased in time).

Interactions with implementation of other directives and policies

As noted before, the impact of higher renewable energy targets in the RED II on the Dutch climate policies depends on the other measures that will be implemented to meet a higher GHG reduction target in 2030, since the RED II target is expressed as a percentage of energy consumption. Therefore, other GHG reduction measures such as enhanced energy efficiency measures and reduced fossil-fuel based industrial activities can reduce the renewable energy generation and biofuel consumption needed to meet a higher renewable energy target. This effect can be estimated using the KEV 2019 results and the calculations mentioned above. If, for example, the Dutch indicative renewable target increases from the current 26% to 33%, renewable energy production will need to be about 669 PJ without additional energy efficiency measures (i.e. taking the KEV 2019 forecast for energy demand in 2030 as a baseline). If an additional 7.5% of energy savings would be achieved, in line with an increase of the overall EED target from the current 32.5 to 40% (see the factsheet on the EED), 618 PJ renewable energy will be required to meet the same RED II indicative target.
In other words, strengthening of the EED and possibly the EPBD, tightening of the standards in the CO_2 and cars/vans/HDV regulations, strengthening and expansion of the Ecodesign regulation and more ambitious industry decarbonisation policies can reduce the potential impacts of a higher renewable energy target in the RED II.

The RES-T target of the REDII is closely linked to the target of the Fuel Quality Directive: the uptake of renewable fuels in the transport sector both contributes to the RES-T target which is formulated as percentage of final energy consumption as well as the FQD target to reduce the average CO_2 intensity of fuels. A higher RES-T target will automatically ease the realisation of the FQD target, at least in case this higher target is met with an actual increase of renewable energy rather than in an administrative way. Because the about twice as high ambition of the Dutch government with respect to renewable energy in transport, this is not likely to have any impact.

C.2 Energy Efficiency Directive recast (EED II)

Factsheet | Energy Efficiency Directive

2018/2002
https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32018L2002

GENERAL

Process	– Part of Clean Energy Package (2019) – Revision of Energy Efficiency Directive 2012/27/EU – Link to the official text – National transposition by 25 June 2020
Key content	– An EU headline target on energy efficiency in 2030. – A binding cumulative end-use energy-savings target for each Members State. – Provisions on renovation requirements for government buildings and energy audits. – All sectors included.

MAIN ARTICLES

- The EU headline target on energy efficiency in 2030 target is at least 32.5 % (Art. 1). Each Member State shall set indicative national energy efficiency contributions towards this target (Art. 3.5). The target will be assessed and may be raised by 2023 (Art. 3.6).
- Each Member State shall ensure that 3% of the total floor area of heated and/or cooled buildings owned and occupied by its central government is renovated (or equivalent) each year to meet at least the minimum energy performance requirements (Art. 5.1).
- Member States shall encourage public bodies and social housing bodies governed by public law to: (a) adopt an energy efficiency plan, (b) put in place an energy management system, including energy audits, (c) use, where appropriate, energy service companies, and energy performance contracting to finance renovations and implement plans to maintain or improve energy efficiency in the long term (Art. 5.7).
- Member States shall ensure that central governments purchase only products, services and buildings with high energy efficiency performance, insofar as that is consistent with cost-effectiveness, economical feasibility, wider sustainability, technical suitability, as well as sufficient competition – and will encourage other public bodies to follow this exemplary role (Art. 6).
- Member States shall achieve cumulative end-use energy savings at least equivalent to: 0.8 % of annual final energy consumption as of 2021 (Art. 7).
- Member States shall promote the availability to all final customers of high quality, cost-effective energy audits, shall develop programmes to encourage SMEs to undergo energy audits and the subsequent implementation of the recommendations from these audits, shall develop programmes to raise awareness among households about the benefits of such audits and shall ensure that non-SME companies are subject to regular energy audits (Art. 8).
- Member States shall evaluate and if necessary take appropriate measures to remove regulatory and non-regulatory barriers to energy efficiency, in particular as regards the split of incentives owners and tenant (Art. 19.1).
- By 28 February 2024, and every five years thereafter, the Commission shall evaluate this Directive …. That evaluation shall include: (a) an examination of whether to adapt, after 2030, the requirements and the alternative approach laid down in Article 5; (b) an assessment of the general effectiveness of this Directive and the need to adjust further the Union's energy efficiency policy in accordance with the objectives of the 2015 Paris Agreement on climate change … and in the light of economic and innovation developments. That report shall be accompanied, if appropriate, by proposals for further measures (Art. 24.15).
- …

RELATIONSHIP WITH OTHER DIRECTIVES

RED II: More energy savings will impact the ambition level of a RES target, since this is defined as a % of energy consumption.

EPBD: The EED and the Energy Performance of Buildings Directive (EPBD) are complementary in multiple ways. The directives support, from different starting points, a move towards an energy efficient and decarbonised building stock by 2050.

ETD: Increasing energy taxes will result in energy savings of end users.

CO_2 standards for cars, vans and heavy-duty vehicles: Strengthening these standards can result in energy savings in the transport sector and thus contribute to the overall target of the EED. It will not, however, count towards the binding national target of Art. 7 of the EED.

Ecodesign Regulation: Expanding the Ecodesign regulation to more product groups and strengthening the energy efficiency requirements for the products will contribute to the overall EED target. It will not, however, count towards the binding national target of Art. 7 of the EED.

Governance Regulation: the governance mechanism for the EU's energy and climate policies from 2021 to 2030. This includes governance of the EED provisions.

EU ETS: a higher CO_2 price in the ETS will result in additional energy savings in industry.

RANGE OF POSSIBLE ADJUSTMENTS DUE TO THE GREEN DEAL

- Higher EU ambition for energy efficiency in 2030: from the current 32.5% to 35-40% (revision of Art. 1 and 3). These are the values explored in the public consultation. The Commission is likely to aim for a level that ensures cost-effective achievement of the higher climate target, to be determined in the Impact Assessment for the Green Deal.
  - This would require Member States to set higher national indicative energy efficiency targets in their NECPs, and perhaps also higher indicative milestones for the long-term renovation of national stock of residential and non-residential buildings (see EPBD), and of the floor area of central governmental buildings to be renovated under Article 5 of the EED.
- The Green Deal, the new Industrial Strategy and/or the public consultation also mention:
  - Stronger enforcement of the existing regulation (although the current regulation is already enforced quite strongly, this could mean more focus on monitoring and verification of various provisions, for example)
  - Making the "Energy Efficiency First" principle a compulsory test in relevant legislative, investment and planning decisions. This could have a significant impact on policies, but it is currently unclear if and how this principle will be developed further.
  - More stringent energy performance requirements for industrial processes, including through process integration and waste heat reuse
  - Standards for the ICT sector to promote energy efficiency and reuse of waste heat
- A higher overall target could be supported with an increased target for end-use energy savings, in Art. 7.
  - There a several options to realise this, including an increase of the energy savings obligation itself (from the current 0.8% of annual final energy consumption, to 1% or 1.2%, for example), or by changes to the provisions (e.g. of the provisions in Art. 7.4 and 7.5) that would lead to higher savings. However, since the new target for 2021-2030 has only just been set, it would does not seem likely that this article will be reopened at this stage.
- Making mandatory the implementation of the recommendations in the energy audits
- Offer SMEs the right to free energy audits or similar support. An EU-requirement for this seems unlikely (due to the subsidiarity principle), but the EED may encourage Member States to support energy efficiency in SMEs.
- The Green Deal proposes a renovation wave of public and private buildings. Therefore, a higher percentage of floor area of public buildings may need to be renovated each year (Art. 5.1).
  - However, the current policies are considered to be quite ambitious, making it less likely that these ambition levels are increased further before the current policies are implemented throughout the EU.

- Art. 19.1 focuses on the need for Member States to take away the barriers to energy efficiency, in particular as regards the split of incentives between owner and tenant. The Green Deal mentions that the Commission is going to work on lifting regulatory barriers that inhibit energy efficiency investments in rented and multi-ownership buildings.
- The Green Deal reiterates the importance of the energy efficiency first principle, and will provide guidance on how this may be applied to investment decisions.
  - It is not clear yet what how this can be achieved and whether this will result in binding EU policies, but the EED would be a good platform to bring together the energy efficiency policy efforts of the various directives and regulations.

NB. Most of these measures are not yet further specified.

The Commission is expected to publish proposals for revisions of the directive in June 2021.

CONCLUSION: AMBITIOUS AND REALISTIC SCENARIO

An increase of the EU energy efficiency target for 2030 (Art. 1) seems likely, if the EU climate ambition is increased to -55% in 2030. This target could increase from the current 32.5% to 35% or up to 40%, based on current information (see above). This would require an increase of the national contributions to the target, i.e. of the national target for energy efficiency as reported in the NECP. Member States have some flexibility in setting their national target (as outlined in the EED and the governance regulation) and cost-effectiveness is one of the circumstances that may be taken into account, but the total contribution for all Member States must result in meeting the EU target.

The ambition level of Article 7 on end-use energy savings could also be increased to further strengthen energy efficiency efforts throughout the EU, but this seems unlikely in the coming years.

A Commission proposal for the revision to the EED may be expected in June 2021. However, since it has only recently been revised, significant changes to the targets and other key provisions of the EED seem unlikely at this stage. Concrete proposals for significant changes to this directive can rather be expected in 2024, after the Commission's scheduled review.

In the meantime, the Commission could resort to stricter assessments and enforcement of the Member States implementation of the current provisions in the EED, to ensure energy efficiency efforts are sped up throughout the EU.

It is also likely that the EU will put more effort into increased energy efficiency of the built environment (e.g. through increased rates of renovation), of industry (e.g. increasing requirements for waste heat reuse), of appliances and of road vehicles. All may contribute to the overall EED target. It is likely that many of these policy changes will be implemented through different directives and regulations, though (the EPBD, Ecodesign, CO_2 standards for and cars/vans/HDV). In addition, higher energy tax rates (through ETD) or a higher CO_2 price in the ETS can also contribute to the target.

POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

The Energy Efficiency Directive is a key pillar of the EU's energy and climate package, and likely to be a key directive through which the more ambitious climate is achieved. The main provision that could be altered is the overall EU energy efficiency target of Art. 3, which would also require an increase of the Dutch contribution to the target. If the Climate Agreement plans to strengthen the Dutch energy efficiency policies are implemented as planned, Dutch policies are expected to be sufficiently ambitious to also contribute sufficiently to a higher EU target.

PBL concluded in the KEV 2019, that adopted and proposed policies are insufficient to meet the 2030 indicative national contribution for the current EU target of Art. 3 or the binding target of Art.7. However, the government expects to implement additional policies that fill these gaps, according to the Dutch NECP: the Netherlands aims to achieve a primary energy consumption of 1,950 PJ by 2030, almost 19% lower than forecast for 2030 in the KEV 2019 (2397 PJ), and 25% lower than expected primary energy consumption in 2020 (2601 PJ). This national indicative target for 2030 was deemed sufficiently ambitious by the Commission: it significantly exceeded the

overall EU-level target of 11% primary energy reduction between 2020 and 2030 that the Commission uses as a benchmark in their assessment of the national contributions (SWD(2019) 212 final (EC, 2019c)).

The ambition to reduce primary energy consumption to 1,950 PJ in 2030 would be sufficient to also meet the indicative national contributions to the more ambitious targets for Art. 3 that the Commission considered in the public consultation (35% and 40%). However, not all of these policies are implemented yet, and many still need to be developed further. A more stringent EU-level target for Article 3 will make implementation of the additional energy efficiency efforts laid out in the Climate Agreement and in the NECP more important, besides effective implementation of existing policies (most notably for the built environment, industry and greenhouse horticulture). Examples of key additional policy efforts that need to be implemented are (source: Climate Agreement and the NECP): sliding-scale energy taxation, availability of appealing financing instruments (for example the Heat Fund, subsidy for Energy Savings at Home (SEEH), expanding the ISDE to include insulation, Energy-saving Measures Programme (PRE)).

Many of these policy options would also contribute to meeting the binding target of Article 7 of the EED in 2030, since they go beyond other EU directives and regulations[1]. Since revision of the Art. 7 does not seem likely in the short term, this is not further discussed here.

Irrespective of any potential revisions of the EED, the Green Deal may result in increased efforts by the Commission to ensure that Member States meet the trajectories for energy efficiency savings outlined in the NECPs, and implement the planned policies are reported in the NECPs. This increases the pressure on the Netherlands to implement the plans outlined in the Climate Agreement.

Furthermore, again irrespective of any revisions of the EED, it is worth noting that the Climate Agreement is aimed at achieving the energy efficiency level that corresponds to the cost-effective achievement of a -49% climate target. Cost-effective implementation of a higher climate target is likely to require even more additional energy efficiency efforts than currently agreed on in the Agreement. An assessment of this effect is beyond the scope of this report, this requires extensive modelling.

As discussed in the report and in other factsheets, Implementation of the Green Deal may also result in strengthening of related energy efficiency directives and regulations, such as the EPBD, the Ecodesign regulation, CO_2 standards for cars/vans/heavy-duty vehicles, the EU ETS, etc. This can support the Netherlands to achieve their overall energy efficiency ambitions, linked to Art 3 of the EED, and thus contribute to Dutch GHG reduction (see the other factsheets for more information on these impacts). Their contribution to meeting the binding target of Art. 7 will be limited, though, because of the additionality requirement.

If the Netherlands decides to further increase energy efficiency policies, for any of the reasons mentioned above, many of the current and proposed policies have the potential to be strengthened further. Key policy options are, for example, increasing the energy tax and the surcharge for sustainable energy (ODE), increasing funding for financing instruments for sustainability investments in the built environment, further strengthening the monitoring and verification of the energy savings and energy audit requirements of industry. Increased efforts towards industrial synergy and re-use of waste heat from industry can also be considered, by speeding up the relevant plans outlined in the Climate Agreement.
Furthermore, it can be expected that the energy efficiency developments outlined in the Green Deal and in this factsheet promote innovation and result in cost reduction of relevant technologies: increasing energy efficiency efforts EU-wide will increase demand for energy efficient processes, products and services, which will result in increased R&D efforts, and in speeding up large scale production and supply of the relevant technologies and products.
The potential risks of these developments are lack of skilled workers, for example for renovation, and of the necessary materials and other resources.

The built environment accounts for at least 30% of total energy consumption in the Netherlands, so speeding up energy efficiency in that sector can result in a significant contribution towards a higher overall energy efficiency target. Renovation requirements are one of the keys potential implications of the Green Deal. For the built environment, these requirements follow the combination of the EPBD and the EED. As the EED is broader in scope

[1] The additionaility principle of Art. 7.

than the built environment, we refer to the fact sheet of the EPBD for the analysis of the effects of the Green Deal on the built environment.
Likewise, energy efficiency policies in transport are mainly discussed in the transport-related factsheets.

C.3 Energy Performance of Buildings (EPBD)

Factsheet | Energy Performance of Buildings Directive III

Directive (EU) 2018/844
http://data.europa.eu/eli/dir/2018/844/oj

GENERAL

Process	– Part of Clean energy for all Europeans package (2019) – Revision of Energy Performance of Buildings Directive 2010/31/EU and Energy Efficiency Directive 2012/27/EU – Entered into force in July 2018, transposition by 10 March 2020 – Link Legislative Observatory – Will be reviewed by 1 January 2026 at the latest
Key content	– EPBD III promotes policies that contribute to a decarbonised building stock by 2050 – Sectors: built environment – Aims to create economic opportunities in the construction industry – Enables consumers and businesses to make more informed choices to save energy and money

MAIN ARTICLES

- EU countries must establish a long-term renovation strategy, aiming at decarbonising the national building stocks by 2050 (Art. 2a)
- EU countries must set cost-optimal minimum energy performance requirements for new buildings, for existing buildings undergoing major renovation, and for the replacement or retrofit of building elements like heating and cooling systems, roofs and walls (Art. 4, 6, 7, 8)
- New buildings are required to be equipped with self-regulating devices for separate regulation of the temperature in each room (Art. 8)
- Electro-mobility is supported by the rollout of e-mobility infrastructure such as e-charging points in buildings (Art. 8)
- An optional European scheme for rating the 'smart readiness' of buildings is introduced (Art. 8)
- All new buildings must be nearly zero-energy buildings (NZEB) from 31 December 2020; since 31 December 2018, all new public buildings need to be NZEB (Art. 9)
- EU countries consider the most relevant financing and other instruments to catalyse the energy performance of buildings and the transition to NZEBs (Art. 10)
- Energy performance certificates must be issued when a building is sold or rented (Art. 12)
- Inspection schemes for heating and air conditioning systems must be established (Art. 14-15)

RELATIONSHIP WITH OTHER DIRECTIVES

EED: The EPBD and the Energy Efficiency Directive (EED) are complementary in multiple ways. The directives strive towards a common goal: an energy efficient and decarbonised building stock by 2050. The EU countries' long-term renovation strategies (EPBD Art. 2a) should contribute to the energy efficiency targets set out in their National Energy Efficiency Action Plans (NEEAPs). Furthermore, the EED requires EU countries to carry out energy efficient renovations to a least 3% of buildings owned and occupied by central governments to meet at least the minimum energy performance requirements as laid down in the EPBD (Art. 4).

RED: The RED requires a 1.3% annual increase in the share of renewable energy for heating and cooling. Transitioning to renewable heating and cooling (RED) and renovation of buildings towards higher energy-performance standards (EPBD) are complementary.

AFID: The mobility part of the EPBD (on electric vehicle charging) is linked to the AFID.

Governance directive: lays out the governance mechanism for the EU's energy and climate policies from 2021 to 2030, including the EPBD.

***Note**. The implementation of directives relevant for the built environment is interwoven. As the EPBD primarily focuses on buildings, while other directives (EED and RED) have a broader scope, this factsheet takes a broad perspective and discusses the effects of the Green Deal on the EPBD, also taking into account the parts relevant to the EED and the RED.*

RANGE OF POSSIBLE ADJUSTMENTS

Renovation Rate

The Green Deal stresses that the present renovation rate (0.4-1.2% per year EU-wide) is insufficient to meet the goals for 2050. The present renovation will have at least to double, according to the Green Deal. The Green Deal therefore proposes a renovation wave of public and private buildings. Member States' renovation strategies (Art. 2a) may need to become more ambitious in order to set in motion the renovation wave called for by the Green Deal. Milestones for 2030 may have to be increased as the Green Deal proposes to change the CO_2 emission reduction target to 55%. The extent of this increase depends on the division of emission decreases between sectors and countries.

Supporting measures

In addition, the Green Deal delineates possible supporting measures. These include the creation of an open platform for the construction sector, innovative financing schemes, lifting of regulatory barriers, possible inclusion of emissions from buildings in the European Trading Scheme (out of scope in this study), and a review of the Construction Products Regulation (also out of scope in this study).

Stricter enforcement of existing regulations

The Green Deal calls for a strict enforcement of legislation related to the energy performance of buildings. What "strict enforcement of legislation" exactly entails remains to be seen.

Focus on Social Sectors: Social Housing, Schools, Hospitals, Government Buildings and Multi-Owner Buildings

The Green Deal stresses the importance of renovation in the social sectors: social housing, schools, hospitals and government buildings. It considers money saved by lowering energy bills to be money available for social purposes.

Financing Instruments

Lack of attractive financing products is considered an important reason for limited renovation rates.
The Green Deal states that the prices of different energy sources should incentivise energy-efficient buildings. This can be done by implementing a carbon tax (see also ETD). The Green Deal and the public consultation consider including the buildings sector in the EU emissions trading system. Furthermore, financing schemes that are directly attached to the property rather than the person renting are considered.

Digitalisation

The Green Deal stresses the importance of increased digitalisation. Following EPBD III Art. 8.10, a smart-readiness indicator for buildings is being developed. Smart-readiness goes further than only smart meters; it can entail smart control of building energy consumption. In addition, the performance of smart-ready buildings could be remotely monitored, for instance by authorities. Furthermore, multiple articles in the EED II address the need for (smart) meters that accurately reflect energy consumption.

Mobility

The Commission has announced that funding for charging infrastructure will be doubled, with the aim of reaching 2 million public charging and alternative refuelling stations by 2025. For charging infrastructure, the AFID is the main directive and the mobility part of the EPBD will follow the adjustments made in the AFID. Additional funding for recharging infrastructure might entail higher requirements for existing buildings since the requirements for new buildings are already quite advanced.

CONCLUSION: AMBITIOUS AND REALISTIC SCENARIO

At the heart of the Green Deal is the "renovation wave" of public and private buildings. Its goal is to increase the pace of energy efficiency improvements and accelerate the decrease of fossil fuel demand in the built environment. According to the Green Deal, the renovation rate will at least need to double compared to current rates. The renovation wave in the Green Deal itself is formulated as a percentage of buildings to be yearly renovated. Translation of the Green Deal into directives could result in (indicative or binding) targets, which are also formulated in terms of a percentage of buildings, or in terms of reduction in CO_2 emissions. Depending on the formulation, Member States could have more or less freedom for implementation. It is unclear yet how the target will be formulated, and what the target will be for individual Member States. The renovation wave range in the Green Deal, 0.8% to 2.4%, is broad.

POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

Possible impacts on the Dutch Climate Agreement

- The Green Deal proposes increased renovation of buildings, between 0.8% and 2.4% per year. The Dutch Climate Agreement sets the goal at 1.5 million house-equivalents by 2030. This would equal a transition rate of 1.2% per year. The Dutch Environmental Policy Agency estimates the transition rate for the set of policy instruments in the Climate Agreement to be between 0.5% and 1% per year, with a midpoint at 0.73% or approximately 1 million house-equivalents by 2030. As these values are below the range in the Green Deal, it could lead to a requirement for the Netherlands to accelerate the transition rates in the built environment. The additional requirement could lie between 0.3% and 1.9% per year, or an *additional* 0.4 to 2.4 million house-equivalents by 2030.
- In addition, there may be some discrepancies between the terms "renovation" and "transition", which are linked to the concept of "cost-effectiveness"[1]. Possible discrepancies in understanding between renovation (to achieve more energy efficiency) and transition (to replace gas-fired heating by an alternative heating system) need to be brought to light and resolved.
- The Green Deal considers "buildings" jointly as housing and non-housing buildings. In the Dutch Climate Agreement, housing and non-housing buildings are considered separately. The approach for housing has been consolidated in programmes including the "District Approach", the "Starter Motor" and the "Renovation Accelerator". For non-housing buildings the approach is being further consolidated and unified. The Green Deal could result in additional requirements or supporting measures for this consolidation.

If an additional acceleration would be substantial, it would require considerable efforts across all government levels, the buildings and construction sector, building owners and users. To effectuate the energy transition in the built environment, the national government has asked local governments, municipalities and regions, to set up

[1] In the current estimates, the Dutch Environmental Policy Agency assumes "regret-free" insulation, which is – by definition – technology agnostic. Cost-effectiveness of insulation depends on its combination with a given heating technology. The choices for alternative heating technologies are not known yet, and the cost-effective level of insulation can therefore not be determined. The regret-free option is not necessarily the cost-effective one.

plans: Transition Visions for Heating and Regional Energy Strategies. Both require extensive local consultation. This is a process that is championed by the European Union. It a sensitive process, and substantial goal changes midway as a result of the Green Deal could lead to local friction. It could entail considerable legislative, practical, organisational, and financial challenges for all the parties involved, which would need to be resolved jointly and resolutely.

At the same time, EU-wide acceleration could provide additional support – financial, knowledge, experience, materials and approaches, etc. Acceleration would lead to an additional CO_2 emission reduction of 0.2 Mton to nearly 5 Mton[2]. The assessment of the Dutch Environmental Policy Agency estimates that the current range of emission reductions for the built environment lies between 1.3 and 3.8 Mton, with a midpoint at 2.55 Mton[3]. The goal of 3.4 Mton lies within this range, but might not be achieved given the existing pathway[4]. Additional requirements and support measures stemming from the Green Deal can help to achieve the Climate Agreement goal, or a more ambitious goal formulated based on a 55%-emission reductions aim. It could thus bolster the achievement of the Climate Agreement goals, and, possibly, put the Netherlands in a frontrunners position given the existing efforts stemming from the Climate Agreement.

Possible impacts on policies regarding the social housing sector

The European Green Deal and the Dutch "Starter Motor" and "Renovation Accelerator" programmes are in line with each other in their emphasis on the social housing sector. An important difference is the post-renovation financial expectations. The Dutch approach assumes *cost neutrality*, while the European Green Deal sees the renovation of social housing to *reduce* total bills. The Green Deal could lead to possible financial support for these programmes.

Possible impacts on the energy transition in schools and hospitals

The Green Deal emphasises the importance of energy transition in schools and hospitals. The Green Deal asserts that savings through energy efficiency measures can be used for education or care. The Dutch education and care sectors have proposed (partial) Road Maps for the energy transition. Their view is opposite to that of the Green Deal: energy transition requires money at the expense of education and health care, at least in the short term.

Possible impacts on the energy transition in government-owned buildings

The Netherlands uses an alternative approach to reduce energy use in government-owned buildings. Its current goal to save 1.3 PJ energy by 2030 lies far above the 0.2 PJ required by the European Union. Even tighter requirements for government-owned buildings can be expected to be met following the existing route.

Possible impacts on the energy transition in multi-owner buildings

There are relatively few policies specifically targeting multi-owner buildings in place in the Netherlands. There are however national calls to develop such policies. Possible specific requirements from the European Union could overlap with these national calls.

Possible impacts on financial support schemes

The Netherlands already has policies aimed at taking away split incentive barriers, such as the "Stimulation arrangement for No-Gas Rental Housing" and the "Regulation Reduction Landlord Levy". The Netherlands also considers "building-based financing schemes" for houses of homeowners. The financial instruments proposed by the Green Deal are largely in line with the Dutch route and could provide additional means of support.

Possible impacts on digitalisation

The Netherlands is one of the leaders in the deployment of smart-meters. Further smart-readiness measures and a platform for the construction sector could bolster and support programmes aimed at generating and sharing expertise, such as the Dutch Starter Motor and Renovation Accelerator.

[2] Estimate based on average emission reduction calculated from Achtergronddocument "Het Klimaatakkoord: Effecten en aandachtspunten", 1 november 2019, PBL, and Achtergronddocument "Het Klimaatakkoord Effecten Ontwerp Klimaatakkoord: Gebouwde Omgeving", 19 april 2019, PBL.

[3] Achtergronddocument "Het Klimaatakkoord: Effecten en aandachtspunten", 1 november 2019, PBL.

[4] Achtergronddocument "Het Klimaatakkoord: Effecten en aandachtspunten", 1 november 2019, PBL.

Possible impacts on physical and environmental legislation

- **Building Decree and Environmental Structures Decree**: It is within reason to expect that further tightening of requirements for new and existing buildings could lead to further changes to the Environmental Structures Decree. One possible adjustment is the tightening of requirements for existing buildings. It is yet unclear whether this tightening would require near-zero emissions.
- **Buildings Energy Performance Decree**: The European Union considers the implementation of a "renovation passport" which could supplement the energy performance certificate. It is yet unclear if and how this passport would be implemented.
- **Transition Visions for Heating**: Local governments are required to present so-called Transition Vision for Heating by end of 2021. These visions describe the location and pace of the energy transition away from gas-fired heating, which can include demand reduction through renovation. Drafting the Transition Visions requires extensive local consultation. Additional requirements arising from the Green Deal could be an opportunity but also a threat to these local processes.

Interaction with other directives

Three directives - the EPBD, EED the RED – are jointly influencing the energy transition in the built environment. The three directives seek to increase the energy efficiency and energy performance in the building stock and decrease its fossil energy use. All three directives contain articles relevant to these goals. They cover indicative and binding targets (such as targets for nearly zero-energy buildings, EPBD III 9.2; and targets for renovation in government-owned buildings, EED II 5.1) and supporting measures (such as reporting through the long-term renovation strategies, EPBD III, 2a; and smart readiness of buildings, EPBD III 8.10). This is a broad range of instruments, which can be expected to be expanded as a result of the Green Deal.

C.4 Energy Taxation Directive (ETD)

Factsheet | Energy Taxation Directive (ETD)

2003/96/EC
http://data.europa.eu/eli/dir/2003/96/oj

GENERAL

Process	– Restructuring the Community framework for the taxation of energy products and electricity. – Link to legislation. – Agreement was reached on 20 March 2003, formal compliance: 1 January 2004. – In 2010 the European Commission presented a revision. However, after inconclusive discussions the Commission withdrew the proposal in 2015. – A revision of the Energy Taxation Directive is scheduled for 2021.
Content	– The ETD establishes the minimum excise duty rates that Member States must apply to energy products for fuel and transport, and electricity. – Member States are free to apply excise duty rates above these minima, according to their own national needs. – Aircraft fuel is exempt from this excise duty.

MAIN ARTICLES

- Member States shall impose taxation on energy products and electricity in accordance with this Directive (Art. 1).
- The level of taxation which Member States shall apply to the energy products and electricity may not be less than the minimum levels of taxation prescribed by this Directive (Art. 4.1).
- The 'level of taxation' is the total charge levied in respect of all indirect taxes (except VAT) calculated directly or indirectly on the quantity of energy products and electricity at the time of release for consumption (Art. 4.2).
- In addition to the general provisions set out in Directive 92/12/EEC on exempt uses of taxable products, and without prejudice to other Community provisions, Member States shall exempt the following from taxation under conditions which they shall lay down for the purpose of ensuring the correct and straightforward application of such exemption and of preventing any evasion, avoidance or abuse:
  - Energy products and electricity used to produce electricity and electricity used to maintain the ability to produce electricity. (..)
  - Energy products supplied for use as fuel for the purpose of air navigation other than in private pleasure-flying. (..)
  - Energy products supplied for use as fuel for the purposes of navigation within Community waters (including fishing), other than private pleasure craft, and electricity produced on board a craft. (..) (Art. 14).
- Without prejudice to other Community provisions, Member States may apply under fiscal control total or partial exemptions or reductions in the level of taxation (Art. 15).
- When taxation rates are changed, stocks of energy products already released for consumption may be subject to an increase in, or a reduction of, the tax (Art. 22).
- Member States shall inform the Commission of the levels of taxation which they apply to the products on 1 January each year and following each change in national law (Art. 25.1).

RELATIONSHIP WITH OTHER DIRECTIVES

The **Renewable Energy Directive** sets rules for the European Union to achieve its renewables targets for 2030. Also, the **Energy Efficiency Directive** establishes measures to reach the EU energy efficiency targets by 2030. To achieve these targets the Energy Taxation Directive is important, because the ETD sets the taxes for all energy sources. If the tax for renewables is lower than conventional energy sources, the incentive to invest in renewables is higher and it is more likely that the EU achieves the target.

Currently, the rules from the ETD[1] do not contribute to the new EU regulatory framework and policy objectives in the area of climate and energy. For example, no link exists between the minimum tax rates of fuels and their energy content and CO_2 emissions.

The evaluation also points out that the high divergence in national energy tax rates is not in line with other policy instruments (e.g. Energy Efficiency Directive). This problem is exacerbated by the widespread use of optional tax exemptions from MS. Even at least 40 % compared to 1990 levels, the EU's energy taxation framework has not kept pace, let alone the 55% reduction ambition in the Green Deal. With regard to the Energy Efficiency Directive, the evaluation concluded that there is room to further align the ETD to it. This could be in the form of (minimum)rates for energy products. New policy measures may include consistent tariffs for energy (based on energy content instead of energy volumes) that have the effect of reducing end-use energy consumption and restriction of the use of specific tax credits. Taxation is a powerful tool to steer consumers towards a more resource-efficient use of energy. Taxing energy products according to their energy content is the most efficient approach to incentivising a more efficient use of energy as it gives the user a clear price signal linked to the real "energy value" of the product he consumes.

Regarding the relation between the ETD and the EU ETS, the two sets of rules exhibit a lack of coherence, along with differences in their logic and scope. This creates inconsistencies and overlaps between the two instruments. Possible measures reforming the ETS may include aligning the CO_2 prices with the ETS, so as to provide a coherent price-signal to non-ETS sectors.

RANGE OF POSSIBLE ADJUSTMENTS DUE TO THE GREEN DEAL

Key impacts:

- Aligning the minimum tax rates to the EU's climate and energy policies by taking various aspects into account which impact the excise rates, such as inflation in the European Union and energy content.
- Introducing a link between a minimum tax rate and greenhouse gas emissions
- Considering sectoral tax differentiation, such as motor fuel vs. heating fuel differentiation.
- Reconcile the energy and climate objectives with the objective of generating tax revenue (greening of taxes), which encourage the use of a number of new renewable energy products. Using new energy products are at the moment discouraged, because new products can be taxed in the same way as traditional products.

Potential policy options:

- Increasing or decreasing the minimum (historical) rates based on the current or future rates, based on an indexation of inflation/deflation mechanism. The Netherlands is one of the few countries to index its taxes on energy products every year, therefore they can serve as an example. This potential adaption will as expected not impact Dutch policy.
- Changing the minimum tax rate for energy based on volume into a tax rate based on the energy content of a fuel. 'Mirroring' plays an important role in this. This means that the national rates must have the same proportions as the minimum rates.
- Introducing a single minimum rate for CO_2 emissions for sectors which are not covered by EU ETS. Currently the envisaged price range is not known. We will include a price range of € 45-100 tCO_2 in our analysis. The lower limit is based on a European climate policy (-30% scenario). The upper limit is the price per tonne CO_2 which is required to achieve the two-degree target from the Paris Agreement.
- End tax exemptions for aviation and maritime sectors, e.g. taxation for aircraft fuel used for flights within European Union.

[1] https://ec.europa.eu/taxation_customs/sites/taxation/files/energy-tax-report-2019.pdf

- Creating an EU framework that allows Member States to apply a CO_2 tax, which avoids a patchwork of tax policies amongst Member States. Due do the framework, all Member States operate with the same interpretations and assumptions of the CO_2 tax. This avoids double taxation and high compliance costs for businesses which operate cross-border. Also, there will be a distinction between EU ETS sectors (ETS-Directive) and non-EU ETS sectors (ETD). The government will determine the price for the non-ETS sectors, while in ETS sectors the price is based on the market.

Several measure packages are possible. This gives a range of the measurements:
1. Indexation of the minimum rates.
2. Tax rate based on energy content.
3. Tax rate based on energy and carbon content.

Possibilities for interim revisions:
The proposal for a revision of the Energy Taxation Directive is scheduled for June 2021. The Commission is ongoing with consultation of the stakeholders in spring 2020. The impact assessment is expected end of 2020. This describes the baseline and possible measurements. There will also be a separate proposal for a tax for aviation.

CONCLUSION: AMBITIOUS AND REALISTIC SCENARIO

A revision of the Renewable Energy Taxation seems likely. The revision will probably lead to new minimum tariffs for energy products for fuel and transport, and electricity. The tariffs will be based on energy content instead of volume and will be increased based on an indexation mechanism. Also, it is likely that a minimum rate for carbon will be introduced for non-EU ETS sectors.

However, the feasibility of a revision depend critically on decision-making process within the Council. In April 2019, the Commission published a Communication on how a move to qualified majority voting decision-making amongst Member States could help to unlock progress in this area. This strand of work builds on the Commission's blueprint for a gradual transition to qualified majority voting decision-making in all areas of taxation, first published in January 2019.

These changes might affect the Dutch tax rates for coal tax, excise duty on fuels and the energy tax which applies to natural gas and electricity consumption. The higher taxes, as a result of the indexation mechanism, will be an incentive to invest in renewables. A broad package of policy instruments will be needed to ramp up renewable energy, amongst others subsidies, CO_2 incentives and other accompanying measure that help the implementation in the landscape.

POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

The revision will most likely lead to a change of the tax and excise duty tariffs and the implementation of a CO_2 tax. The potential impact of these changes on Dutch climate policies depends on the type of implementation and the price ranges. Nevertheless, the change of ETD has some potential impacts:

- The energy tax should be at least the minimum tariff and the minimum carbon price. Figure **1** and Figure **2** shows the difference between the energy tax tariffs in 2030 based on the Dutch Climate Agreement and a scenario with a carbon price of € 45/tonne. A distinction has been made between ETS and non-ETS. Such a distinction is not necessary for the current energy tax rates, as there is currently no differentiation into whether or not to participate in the ETS. The minimum tax rate for the first two scales and for the natural gas consumption by ETS participants are below the rates for 2030. The rates in the third, fourth and fifth scale for the non-ETS participants will rise, since they are below the 2030 tariffs. Note that these changes are only for the gas sector. Figure **2** shows that the possible revision of the ETD has no consequences for the Dutch energy tax tariffs for electricity. Electricity is covered in EU ETS and therefore is electricity exempt from a CO_2 tax within the ETD, only the E-component will apply to this form of energy.
- Figure **3** shows that the excise duty on gasoline drops significantly, while the excise duty on diesel is increasing. The excise duty for diesel will be higher than the excise duty rate for gasoline, which reflects that diesel has a higher energy and carbon content.
- The excise duty on LPG will increase compared to the current tariffs.

- Due to the CO_2 benefits, biodiesel is cheaper than conventional diesel. For the same reason, bio-ethanol is also cheaper than gasoline.
- With biofuels, the excise duty on bio-ethanol in particular is falling sharply. The difference between bio-ethanol and biodiesel can be explained by the higher energy content of the latter fuel. Therefore, the E-component of the excise duty for this fuel is higher.
- The excise duty on kerosene is also increasing significantly. International flights are currently exempt from excise duty, so this only applies to domestic flights.

Figure 1 – Comparison energy tax tariffs of gas in 2030 based on the Dutch Climate Agreement and a scenario with a carbon price of € 45/tonne[2]

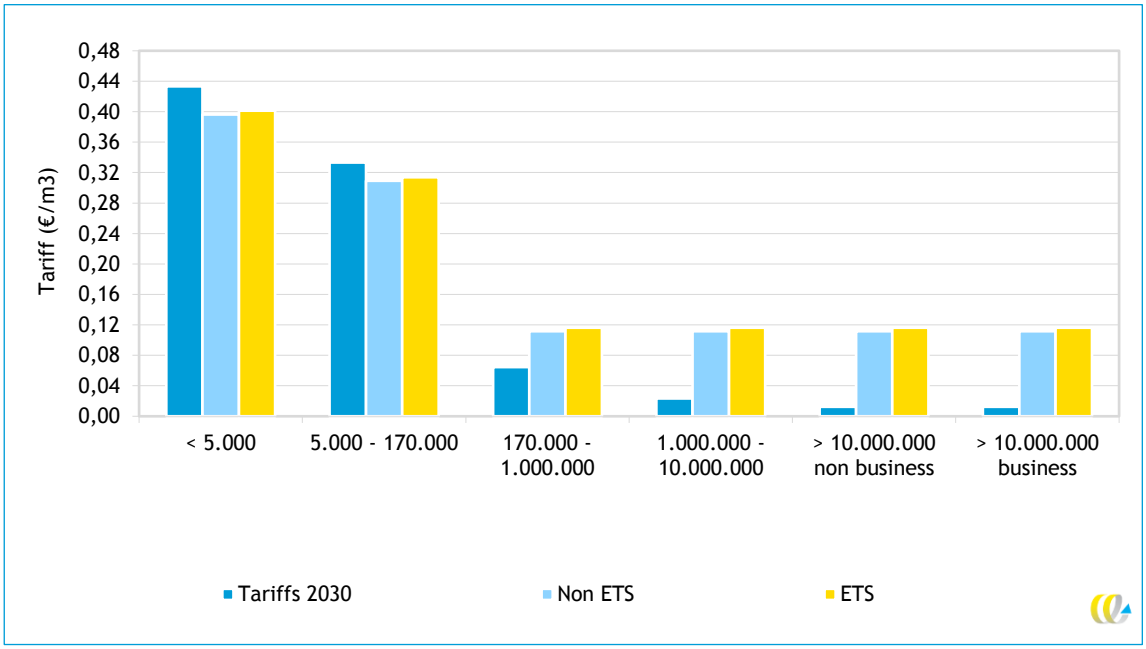
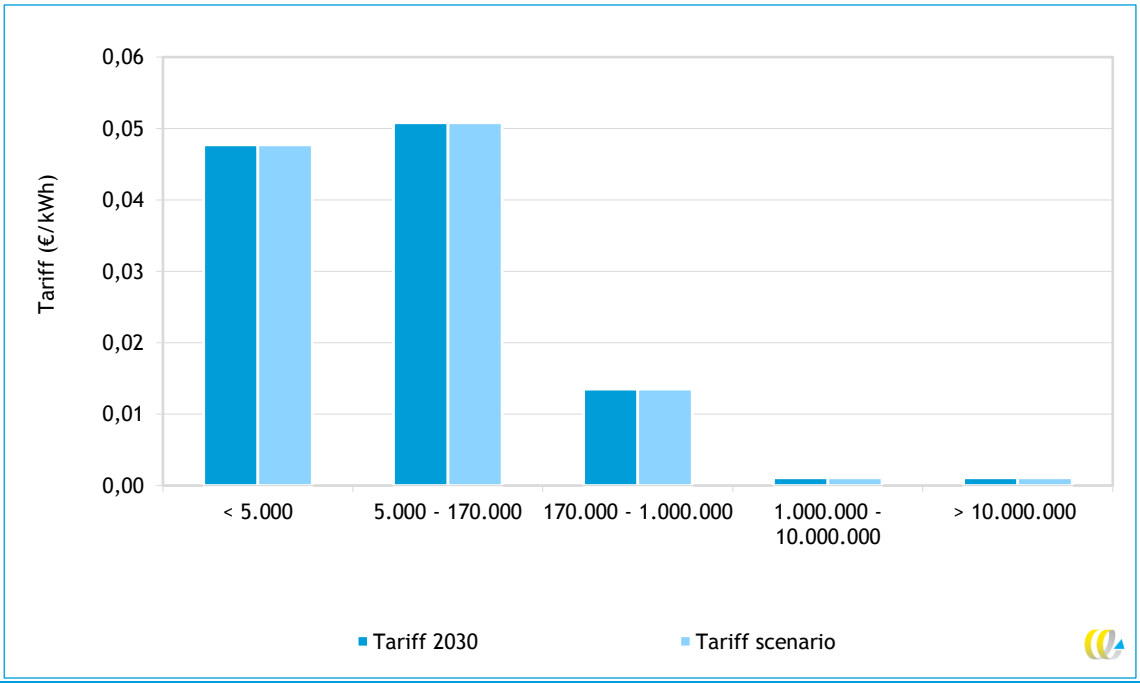
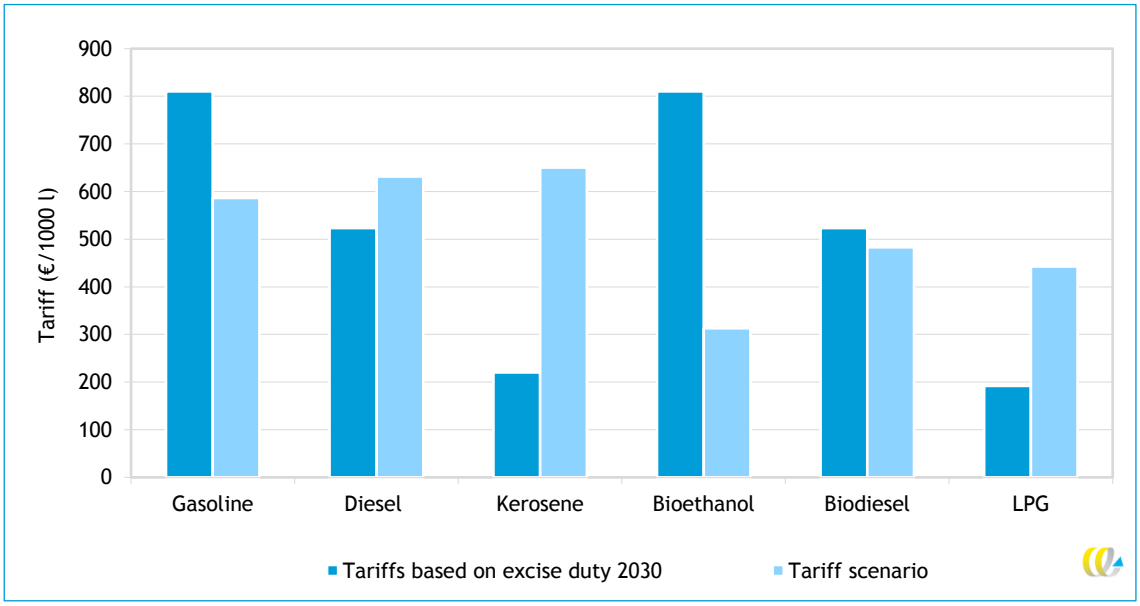


Figure 2 - Comparison energy tax of electricity in 2030 based on the Dutch Climate Agreement and a scenario with a carbon price of € 45/tonne



[2] The carbon price of € 45/tonne is for the non-ETS sectors. In the ETS sector there is a market-based carbon price of of € 47/tonne (PBL, 2019).

Figure 3 – Comparison of excise duties for motor fuels and a scenario with a carbon price of € 45/tonne



Currently, the Netherlands does not have a CO_2 tax. However, the Dutch government has multiple financial instruments for climate policies, such as SDE++, EIA and MIA/Vamil. SDE++ is a subsidy for renewable energy and techniques that generates CO_2 reduction. It covers the profitability gap of these techniques. The EIA is a tax deduction scheme with the aim of stimulating investments in renewable energy and energy-savings assets. The MIA/Vamil is also a fiscal instrument based on environmental tax investment deduction / environmental investment depreciation. A change of the ETD will lead to different tariffs and therefore a change in the profitability gap. It is possible that due to a lower profitability gap, less budget is needed for financial instruments such as SDE++, EIA and MIA/Vamil. This means that the ODE in the period until 2030 will decrease compared to the baseline.

The changes of the ETD might lead to a higher incentive to invest in renewables, which makes it more likely that the targets for greenhouse gas reduction and renewable energy use (RED) will be reached. The revision of ETD will give an extra boost to renewable energy sources and an incentive for energy-saving measurements. The profitability gap for renewables will decrease. Therefore it is likely that the Dutch government needs less subsidy, such as SDE(++), to invest in renewable energy production.

C.5 CO_2 emission standards for cars and vans

Factsheet | CO_2 standards new cars and vans

2019/631
http://data.europa.eu/eli/reg/2019/631/2020-01-21

GENERAL

Process	– Entered into force in April 2019 – Started applying on 1 January 2020 – Replaced and repealed Regulations (EC) 443/2009 (cars) and (EU) 510/2011 (vans) – Link Legislative Observatory
Content	– Targets for the EU fleet-wide average emission performance (CO_2 per kilometre) of new passenger cars and new light commercial vehicles. – An excess premium if an emissions target is not met. – Incentives for the uptake of zero- and low emission vehicles (ZLEV).

MAIN ARTICLES

- The regulation sets targets for the EU fleet-wide average emission performance (CO_2 per kilometre) of new passenger cars and new light commercial vehicles registered in the Union respectively. 2020 NEDC-based targets are defined (cars: 95 g CO_2/km; vans: 147 g CO_2/km), and will be converted into WLTP-based targets to be applied from 2021 on. The targets will be tightened from 2025 and 2030 on, applying the following reduction percentages to the 2021 reference values (to be determined): 2025: -15% for cars and vans; 2030: -37.5% for cars and -31% for vans (Art. 4).
- Manufacturers may form a pool for the purposes of meeting their obligations (Art. 6).
- An excess premium is imposed on manufacturer/pool manager if an emissions target is not met (Art. 8).
- The performance of the manufacturers is published.
- To incentivise the uptake of zero- and low emission vehicles (ZLEV), a crediting system is introduced for cars and vans from 2025 on: lower targets (up to a specific credit cap) will hold for manufacturers whose share of ZLEV is higher than a certain benchmark (2025: 15%; 2030: cars: 35%; vans: 30%).
- Until 2023, ZLE-passenger cars are rewarded by means of super-credits, allowing them to be accounted for as more than one vehicle when calculating the fleet average emission performance.
- The Commission shall, in 2023, thoroughly review the effectiveness of this Regulation and submit a report to the European Parliament and to the Council with the result of the review (Art.15).

RELATIONSHIP WITH OTHER DIRECTIVES

Regulation 2018/842 on binding annual GHG emission reductions by MSs from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement.

REGULATION (EU) 2018/858 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles.

DIRECTIVE 2014/94/EU on the deployment of alternative fuels infrastructure (AFID).

DIRECTIVE 1999/94/EC relating to the availability of consumer information on fuel economy and CO_2 emissions in respect of the marketing of new passenger cars.

RANGE OF POSSIBLE ADJUSTMENTS DUE TO THE GREEN DEAL

From Commission Communication on The European Green Deal (COM(2019) 640 final):
The Commission will propose to revise by June 2021 the legislation on CO_2 emission performance standards for cars and vans, to ensure a clear pathway from 2025 onwards towards zero-emission mobility.

In general:
- target levels: reduction percentages defined for 2025 and 2030 could be tightened;
- timing of targets: after 2025, targets could be tightened again before 2030;
- limitation of pooling.

From the regulation:
- metric of target: life-cycle CO_2 emissions of vehicles might be used instead of TTW emissions.

From 2017 impact assessment (IA):
Target levels: 2030 reduction percentages could be tightened. The following stricter relative 2030 targets (related to 2021) are considered in the 2017 IA
- cars: -40%, -50%;
- vans: -36%, -40%, -50%.

ZLEV definition: the threshold value (currently 50 g CO_2/km for cars and vans) may become stricter
ZLEV incentive:
- Two-way crediting system: So far, manufacturers performing better than the ZLEV benchmark are rewarded by means of a less stringent target, whereas manufacturers performing worse than the benchmark are not affected, as long as they meet the emission performance target. Alternatively, manufacturers performing worse than the benchmark could also be required to comply with a more stringent emission performance target.
- Mandatory ZLEV share: each manufacturer's new vehicle fleet would have to include at least a given share of ZLEV.

Governance:
- beyond WLTP test: standardised on-board fuel sensors, use of other data sources, like e.g. self-reporting platforms.

Eco-innovations: cap for eco-innovations (7 g CO_2/km cap for the CO_2 savings that may be taken into account for innovative technologies whose CO_2 reducing effect cannot be demonstrated through the official test procedure) might be adjusted

From 2018 Non-paper:
The following four additional scenarios, have been considered, all a combination of alternative CO_2 targets and ZLEV incentives for cars and vans:

CO_2 Targets		**ZLEV Incentive**		
		Type	**Mandate/Benchmark level**	
2025	2030		2025	2030
20%	45%	Two-way crediting system	20%	40%
25%	50%		15%	30%
25%	50%		25%	50%
45%	75%	Mandatory ZEV share	15%	-

From news articles:
Agora Verkehrswende, a German think tank promoting sustainable transport systems, considers the Green Deal revision of the regulation as an opportunity to improve the regulation in such a way that a higher share of ZEVs will not allow the non-ZEVs' CO_2 performance to deteriorate over time (EURACTIV, 2020).

Other parties are concerned that, due to the COVID-19 crisis, the Green Deal revision of the regulation might lead to weaker targets. This has been expressed in a letter to the European Commission signed by several members of the EV100 initiative, the European Association for Electromobility, AVRE, and NGO Transport & Environment.

During interviews with experts and stakeholders the following points have been raised (so far):

- The current standards are already seen as ambitious and it will already be challenging to meet these targets (interview Natuur & Milieu). Therefore, much stricter standards are not expected.

CONCLUSION: AMBITIOUS AND REALISTIC SCENARIO

So far, no quantification of proposed changes to the standards in relation to the Green Deal have been found or have been raised during the interviews.

More ambitious scenarios have been considered in the 2017 impact assessment and in the 2018 non-paper (see above). However, the current standards are already considered ambitious by the interviewees and there are concerns that, due to the COVID-19 crisis, targets might be weakened in the course of the Green Deal revision of the regulation.

For a rough estimate of potential impacts, we therefore assume a realistic scenario of no changes to the regulation and an ambitious scenario of a further strengthening of 15% of the 2030 target. This 15% reflects the somewhat stricter options included in the impact assessments for CO_2 Regulations for road vehicles (taking into account passenger cars, vans and truck provisions). This ambitious scenario does not include the most stringent options from the impact assessment, because based on expert judgment the current ambitions already seem to be challenging. In case recovery plans strongly focus on the production of ZE HDVs, resulting in higher investments, a more ambitious scenario will be possible, although these investments also have to correct for the current economic circumstances.

POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

When we assume strengthening of CO_2 targets by 15% compared to the current target, this will result in 0.4 Mt additional CO_2 reduction (for cars, vans and trucks together). This is based on the estimate of 2.5 Mt CO_2 reduction in the KEV 2019 for the current regulations.

With respect to CO_2 standards for light (and heavy duty) vehicles, standards will increase the availability of more efficient and zero-emission vehicles. Any changes to the CO_2 standards for cars vans are relevant for Dutch climate policies: CO_2 standards at the EU level are an important driver for supply of zero-emission vehicles and support the Netherlands in the high level of ambition of Dutch policy, being one of the frontrunners in electric mobility. Ambitious standards in general make cost-effective technologies to reduce CO_2 emissions more widely available at lower cost. Higher efficiencies will result in lower fuel consumption. When these vehicles penetrate in the fleet these result in energy reduction as result of their higher efficiency and lower operational cost for transport users. A shift to renewable electricity and/or renewable hydrogen could result in further CO_2 reductions.
Zero-emission vehicles also contribute to other policy objectives, for example by a reduction of air polluting emissions and noise emissions. Vehicles that are more efficient also make that less renewable energy and fuels are required to meet the policy objectives on renewable energy in transport.

The ambition of the cabinet is that, no later than 2030, all new cars are zero-emission vehicles; fiscal stimulation of zero-emission cars will therefore be phased-out accordingly (Coalition Agreement, 2017).
In its letter to Parliament (22 112; Nr. 2440), the Working Group for the Assessment of New Proposals of the EU Commission comes to the conclusion that the EU regulation on CO_2 performance standards for cars and vans – still a proposal at that time – is not ambitious enough and that additional national measures would be required to meet the national ambition. More stringent EU targets and/or a scale-up of the stimulation of the production of ZLEV could thus facilitate the achievement of the national ambition with less additional national measures.

On the national level, fiscal policies are designed to stimulate the uptake of (plug-in) electric vehicles (BPM, Motorrijtuigenbelasting, Bijtelling Inkomstenbelasting). The VAT revenues are expected to increase if more of the more expensive ZLEV vehicles are sold and national fiscal stimuli are already planned to be reduced/phased-out until 2026..

CO_2 standards are also linked to the AFiD, because the uptake of ZE-vehicles and infrastructure developments need to go hand in hand. The “Nationale agenda laadinfrastructuur” already aims at achieving the national 2030 goal,

and may not be sufficient then. This makes there is a clear link with the realisation of infrastructure. At the EU level the revision of the AFiD, now or in the future, could address this issue.
If the Green Deal led to an increased production and use of ZE-vans, the costs for these vehicles might decline, potentially facilitating the implementation of the zero-emission zones in cities.
Seen from an economic perspective stricter standards or a stricter enforcement of current standards will also benefit Dutch market actors involved in the EV industry.

Vehicle standards are used in some policy instruments, which might be revised, too, if more stringent EU targets were implemented. This might require some additional time and efforts from governments.

C.6 CO_2 emission standards for heavy-duty vehicles

Factsheet | CO_2 standards new HDV

2019/1242
http://data.europa.eu/eli/reg/2019/1242/oj

GENERAL

Process	– Entered into force in August 2019 – Started applying on 20 June 2019 – Link Legislative Observatory – Impact Assessment (May 2018) 1, 2
Content	– Targets for the average emission performance (CO_2 per tonne kilometre) of new heavy-vehicles (rigid lorries, tractors) registered in the EU. A system of emission credits and debts allows for a certain flexibility over time and rewards early movers. – Manufacturers not complying with the targets are subject to an emissions premium. – Incentives for the uptake of zero- and low emission vehicles (ZLEV).

MAIN ARTICLES

Article 1: Subject matter and objective

The Regulation aims to contribute to the Union's target of 30% GHG reduction below 2005 levels in 2030 and to the objectives of the Paris Agreement and to contribute to the internal market. The Regulation sets therefore CO_2 emission performance requirements for new heavy-duty vehicles (HDVs) consisting of: 15% for 2025 and onwards and 30% for the year 2030 and onwards. Reference CO_2 emissions shall be based on the emission reported in the reference period 1 July 2019 to 30 June 2020.

Article 5: Zero- and low-emission HDVs

In the super-credits phase (2019-2024), ZLEVs, which are certified with 0 gCO_2/km, are double counted in the averaging set. LEVs are counted as up to 2 vehicles, but this depends on their CO_2 emissions.[1]
From 1 July 2020 onwards the Commission shall determine zero- and low-emission factors for each manufacturer for the preceding reporting period. For the reporting period 2019-2024, a zero-emission heavy-duty vehicle shall be counted as two vehicles; and a low-emission heavy-duty vehicle shall be counted as up to two vehicles according to a function of its specific CO_2 emissions and the low-emission threshold of the vehicle sub-group to which the vehicle belongs. For the reporting periods from 2025, onwards the zero- and low-emission factor shall be determined based on a 2% benchmark. The zero and low emission factor shall reduce the average specific CO_2 emissions of a manufacturer by a maximum of 3%.

Article 6: Specific CO_2 emissions targets of a manufacturer

From 1 July 2026 (and for each subsequent reporting period) the EC shall determine for each manufacturer a specific CO_2 emission target for the preceding period, taking into account:

a the CO_2 emissions reduction target referred to in point (a) or (b) of the first paragraph of Article 1, as applicable;
b the reference CO_2 emissions;
c the manufacturer's share of vehicles in each vehicle sub-group;
d the annual mileage and payload weighting factors applied to each vehicle sub-group.

Article 7: Emission credits and emission debts

From 2025 to 2029, after an early credit accumulation period, manufacturers can generate credits if the manufacturer's average CO_2 emissions are below the linear CO_2 reduction trajectory between the 2025 and 2030 emissions targets. On the other hand, manufacturers accumulate debt if their average CO_2 emissions are above the

1. https://theicct.org/sites/default/files/publications/CO2%20HDV%20EU%20Policy%20Update%202019_04_17.pdf

respective CO_2 target. Emissions credits can only be used for compliance up to 2029. Any emission debts must be resolved by then.[2]

Article 8: Compliance with the specific CO_2 emissions targets

The Commission will calculate any excess CO_2 emissions premiums per manufacturer based on the excess CO_2 emissions. The excess CO_2 emissions premiums shall be considered as revenue for the general budget of the European Union.

Article 15: Interim assessment and revision

By 31 December 2022, the Commission shall submit a report to the European Parliament and to the Council on the effectiveness of this Regulation on the CO_2 emissions reduction target and the level of the incentive mechanism for zero- and low-emission heavy-duty vehicles applicable from 2030, on setting CO_2 emissions reduction targets for other types of heavy-duty vehicles, …, and on the introduction of binding CO_2 emissions reduction targets for heavy-duty vehicles for 2035 and 2040 onwards. The 2030 target shall be assessed in accordance with the European Union commitments under the Paris Agreement." "The report … shall, where appropriate, be accompanied by a legislative proposal to amend this Regulation."

RELATIONSHIP WITH OTHER DIRECTIVES

Regulation 2018/842 on binding annual GHG emission reductions by MSs from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement.

Regulation (EU) 2018/858 on the approval and market surveillance of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles.

Directive 2014/94/EU on the deployment of alternative fuels infrastructure (AFID).

Directive 2019/1161/EU amending Directive 2009/33/EC on the promotion of clean energy efficient road transport vehicles.

Regulation (EC) No 595/2009 on type-approval of motor vehicles and engines with respect to emissions from heavy-duty vehicles (Euro VI) and on access to vehicle repair and maintenance information.

2. https://theicct.org/sites/default/files/publications/CO2%20HDV%20EU%20Policy%20Update%202019_04_17.pdf

RANGE OF POSSIBLE ADJUSTMENTS DUE TO THE GREEN DEAL

In the Commission Communication on The European Green Deal (COM(2019) 640 final) an adjustment of the CO_2 standards for new HDVs is actually not mentioned. Rather a potential new proposal for a 'Eurovignette' Directive (Directive 1999/62/EC on the charging of heavy goods vehicles for the use of certain infrastructure COM(2017) 275) as well as an increase of the capacity of railways and inland waterways to allow for a substantial part of inland road freight to shift onto rail and inland waterways are mentioned.

From regulation (Article 15 Review and report):
- change of scope, by including other types of HDVs, such as smaller lorries, vocational vehicles, buses, coaches or trailers;
- change of incentive for the production of ZLE-HDVs ("assessment of appropriateness of different elements");
- methodological changes: account for the contribution of CO_2 emissions reductions of the use of synthetic & advanced alternative renewable fuels.

Other possibilities as given in the 2018 impact assessment (IA):
- Scope: standards for additional vehicle types could be set and other vehicle types could be considered for the ZLEV incentive scheme.
- Target levels: reduction percentages defined for 2025 and 2030 could be tightened. The following stricter options are considered in the IA: 1. 2025: -17.5% & 2030: -32% and 2. 2025: -20% & 2030: -35%.
- Metric of target: instead of Tank-to-Wheel-, Well-to-Wheel- or full life-cycle emissions could be used.
- Distribution of targets across HDV groups and manufacturers: instead of a single target per manufacturer, targets could be set that hold for each of the sub-groups and would apply for each of the manufacturers; this would be stricter if pooling of manufacturers was not allowed.
- Banking/emission credits could be limited.
- change of incentive for the production of ZLE-HDVs:
  - only ZEVs and not both ZEVs and LEVs could be incentivised;
  - instead of the one-way crediting system, a two-way crediting system or a mandatory share of ZLEV could be applied from 2025 on, flexibility: banking & borrowing could be restricted.

Other possibilities:
- timing of targets: after 2025, targets could be tightened again before 2030;
- the ZLEV benchmark could be increased and the benchmark cap decreased.

From interviews with experts and stakeholders:
- a binding ZE targets might be an option and/or a light increase of the targets to for example 5%.

CONCLUSION: AMBITIOUS AND REALISTIC SCENARIO

The Regulation entered into force only recently and the actual 2025 targets (in absolute terms) are still to be determined. The Regulation will be assessed in detail in 2022, including a review of the 2030 target. Given that the regulation as such is still associated with a high degree of uncertainty, an adjustment of the regulation in 2022 in line with Green Deal targets can be considered as being part of the default process, not requiring additional national amendments.

It also remains to be seen whether the Green Deal will have an impact on the Regulation at all, since an adjustment of the regulation so far has not been communicated in this context.

For a rough estimate of potential impacts we assume a realistic scenario of no changes to the regulation and an ambitious scenario of a further strengthening of 15% of the 2030 target. This 15% reflects the somewhat stricter option included in the impact assessments for CO_2 Regulations for road vehicles (taking into account passenger cars, vans and truck provisions). This ambitious scenario does not include the most stringent options from the impact assessment, because based on expert judgment the current ambitions already seem to be challenging. In case recovery plans strongly focus on the production of ZE HDVs, resulting in higher investments, a more ambitious scenario will be possible, although these investments also have to correct for the current economic circumstances.

RELATIONSHIP WITH DUTCH POLICIES AND TARGETS & POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

If, due to the EU Green Deal, more CO_2 efficient new HDVs will come on the market and will be used in the Netherlands, the target set for the sector mobility in the Dutch Climate Agreement (-7.3 Mt CO_2 reduction in 2030) might be easier to achieve. However, this effect could be rather low unless also the timing of the requirements would be changed and targets would already hold before 2025. When we assume strengthening of CO_2 targets by 15% compared to the current target, this will result in 0.4 Mt additional CO_2 reduction (for cars, vans and trucks together). This is based on the estimate of 2.5 Mt CO_2 reduction in the KEV 2019 for the current regulations.

The Climate Agreement focusses for HDV mainly on the realisation of 30-40 zero-emissions zones in cities based on the Green Deal Zero Emissie Stadslogistiek (ZES) (Zero Emission City Logistics). These zones will enter into force from 2025 onwards and require sufficient availability of vehicles. The Climate Agreement also states that various partners of the sector are going to work on trajectories towards ZE for subsectors to see what agreements and support measures are required.

CO_2 standards for HDV could potentially play a vital role in the realization of these zones, because these will increase vehicle availability at the supply side, while the ZE zones result in the demand for these vehicles. However, the timing of the CO_2 standards could be problematic: it would be more beneficial for the Netherlands when specific actions will take place earlier. For example the introduction of specific CO_2 emissions targets of a manufacturer per January 2026. If the scope of the regulation is changed to also include small lorries, the implementation of zero-emission zones in the cities (as agreed upon in the Dutch Climate Agreement) may become easier as well. Besides stricter standards will also be beneficial for some other transport related Green Deals including trajectories for zero-emission uptake.

The Dutch cabinet has the ambition to introduce by 2023 a road charge for lorries. Some design elements of this road charge might have to be changed if the EU CO_2 performance standards would change due to the EU Green Deal. Sufficient availability of ZE and more efficient trucks will enable transport users to adjust their vehicle fleet and are likely to include the road charge in their business case.

Due to CO_2 standards cost effective technologies are likely to become available to the market and will result in lower cost. This will be the result of economies of scale, innovations in engine technology, battery technologies and charging solutions. In case of EU-wide standards development cost are more likely to be shared among the various Member States, while the Netherlands as a front runner now pay a large part of the higher cost associated with the current status of technologies. On the other hand, being a frontrunner now also makes that Dutch market actors are in a good position to benefit from stricter CO_2 standards when they can export their expertise and knowledge to other European countries.

A higher share of ZE trucks also requires an increase in charging infrastructure for HDV and might ask for grid adjustments. Many studies already take this into account and charging infrastructure needs are covered by the Nationale Agenda Laadinfrastructuur and might also be included in the revision of the AFiD.

A more detailed assessment of the impacts on Dutch policies cannot be made, because the 2025 targets (in absolute terms) are not known yet. It will also require further analysis of cost and technological developments to predict how the market will respond to a higher target. This was not possible within the scope of this assignment.

C.7 Fuel Quality Directive (FQD)

Factsheet | Fuel quality directive

2009/30/EC
http://data.europa.eu/eli/dir/2009/30/2016-06-10

GENERAL

Process	– Entered into force in June 2009 – Link Legislative Observatory – National transposition by December 2010 – Amended in 2016
Key content	– The FQD sets standards for fuels used in road transport. – The FQD (Article 7a) sets a reduction target for the reduction of the average GHG intensity. of fuels by 6% by 2020 compared to 2010 levels.

MAIN ARTICLES

- Article 7a of the FQD requires fuel suppliers to report and reduce the life cycle GHG emissions of energy supplied for road transport. The goal is a reduction of life cycle greenhouse gas emissions by 6% (or up to 10% if the EU country chooses) per unit of energy from fuel supplied by December 2020.
- Biofuels should be produced sustainably. In order for a biofuel to count towards the greenhouse gas reductions in this directive, it must fulfil the sustainability criteria, which require biofuels to not be produced on land with high biodiversity value, or to be made from materials with high carbon stock. The sustainability criteria of the RED and FQD are similar. However, the double counting provisions of the RED are not included in the FQD.
- Harmonisation of the rules for fuels, setting technical specifications on health and environmental grounds, in particular reducing the sulphur content of diesel and petrol to 10 mg/kg max.
- The directive facilitates the blending of bio components in fuel (for example, up to 10% ethanol in petrol), EU countries must ensure that petrol and diesel placed on the market should comply with the requirements set out in Annex I and Annex II to the directive respectively.

RELATIONSHIP WITH OTHER DIRECTIVES

REDII (2018/2001/EU): The REDII sets a target for the minimum share of renewable energy in transport. The main difference between the REDII and the FQD is the focus on shares of final energy consumption in the REDII and the focus on CO_2-intensity of the fuels in the FQD. Both Directives apply the same minimum sustainability requirements.

Directive 2014/94/EU on the deployment of alternative fuels infrastructure (AFiD). This Directive facilitates the developments of alternative fuels infrastructure and includes various provisions for the various fuels, including biofuels and information on blends to be provided at filling stations.

RANGE OF POSSIBLE ADJUSTMENTS DUE TO THE GREEN DEAL

Currently, it seems the FQD, including the Article 7a target, will also be maintained for the period 2020-2030 with the same target in place (6%). However, no statements of the European Commission could be found on the future of the FQD. Currently a consortium investigates the implications of the new REDII provisions in relation to the FQD provisions.

Specifically looking at the Green Deal no clear references have been made to the FQD itself. Any changes as result of the Green Deal will be closely linked to any changes to the REDII partly because both directives include the same sustainability framework.

Potential revisions are similar to the potential revisions of the REDII. Note that these are own ideas based on the design of the Directive. Those points have not been raised in the discussion yet. The target of Article 7a could be raised to realise a higher GHG intensity reduction target. During the interviews, the point was made that many Member States currently do not comply and are not likely to reach the 6% target in 2020. Therefore, more focus on a higher level of compliance in all Member States seems to be more likely on the short term rather than an increase of the target. It is also unsure to what extent a higher target will result in GHG reduction in the EU, because the scope of the FQD focuses on the emissions over the entire supply chain EU will not benefit of all emission reductions, because feedstocks and fuels are also being imported. The GHG emission reductions relevant for the Green Deal depend on the extent to which the higher target is realised by fuels with a lower intensity or by higher volumes of fuels with a similar intensity.

The sustainability criteria of the RED include minimum GHG emission savings. These requirements for minimum GHG emission savings can be adjusted. Although this might not be realistic from a technological point of view: given the current pathways, these technologies are unlikely to deliver higher GHG emission savings. This also involves production pathways for advanced biofuels, which are still under development. Further efficiency measures might be possible in the long term when economies of scale have been reached, but not on the short term. It also depends where these emissions savings occur, because it involves lifecycle emissions along the supply chain of biofuels, while national objectives are focussed on tank-to-wheel emissions, where biofuels count as zero-emission according to the IPCC definition.

Potential new provisions could focus on an extended scope to more fuels and more transport mode. Currently, the FQD is targeted at road transport and diesel and petrol. Extending the scope might, however, be complicated and it could be questioned what the added value will be of 'moving' most fuel specifications to one directive. Often fuel specifications for other modes are already included in other EU directives or regulations.
The need for changes to fuel specifications and the introduction of blend options depend on the levels of renewable fuels to be expected and how the fuel mix will develop in the future. For example, in case high blends of biofuels will not be needed to meet the targets, there is no need to include specific provisions in the FQD.
Within the impact assessment of the RED the policy options that have been investigated focussed on a shift in type of biofuels (replacement of food-based biofuels) rather than a substantial increase of biofuel volumes. According to the EC, the level of ambition remains in the scope of what is considered feasible by the Sub Group of Advanced Biofuels (SGAB) of the Sustainable Transport Forum (STF) and other recent scientific work such as the report "Wasted Europe's untapped resource. The SGAB for example has looked into the cost and other deployment related aspects of advanced biofuels. This also raises the question to what extent an increase of the target in the light of the European Green Deal might be feasible. These conclusions apply to the FQD as well.

CONCLUSION: AMBITIOUS SCENARIO

The target of Article 7a could be raised to realise a higher GHG intensity reduction target. However, so far, no quantification of proposed changes to the targets in relation to the Green Deal have been found or have been raised.

Increasing the Article 7a ambition faces the same challenges as raising the RES-T target of the REDII and in a way could be seen as more stringent, because the FQD does not allow for double counting.

There is also a challenge in maintaining the same level of average GHG intensity, because fossil fuels could also become more GHG intensive as result of more intensive extraction methods being used (such as shale oil and gas). Therefore, more renewable fuels are required to compensate for this effect.

The fuel baseline standard of the FQD for 2010 has also been updated in 2015 from 88.3 gCO_2e/MJ to 94.1 gCO2/MJ based on UNFCCC data over 2010[1].

The annual report as published by EEA in 2018 over the 2017 data provided by 22 Member States shows that the average GHG intensity of the fuels consumed in these Member States have been reduced by 3.4% compared to 2010 levels. The FQD enables Member States to apply an intermediate reduction target of 4% for the year 2017. When 4% is applied as a reference towards the target of 6% by 2020, the fuel suppliers in the reporting Member States were on average lacking behind in the realization. The Netherlands reported a reduction of 3.0% There is also a large variety across Member States: only 4 of 22 reporting Member States met or exceeded the 4% with only Sweden already exceeding the 6% target.[2]

Given these developments, we assume that in a realistic scenario the FQD target will be maintained. In an ambitious scenario, a modest increase might be possible, but due to the complexity it is not possible to quantify this within the scope of this study. In the next section, we also describe why it is not likely that the FQD will result in any additional impacts beyond the impacts as result of the far higher ambition for renewable energy in transport as laid down in the Climate Agreement.

1 https://eur-lex.europa.eu/legal-content/NL/TXT/PDF/?uri=CELEX:32015L0652&from=nl
2 https://www.eea.europa.eu/publications/quality-and-greenhouse-gas-intensities-1

POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

First of all, it has to be mentioned that the FQD focuses on a better Well-To-Wheel (WTW)-performance of fuels. Increasing this target will have limited impact on the volumes and contribution to the national objectives, because national objectives only take into account the tank-to-wheel emissions of biofuels (0 for all biofuels).

A potentially higher target of Article 7a can be met in two ways: by higher volumes of renewable fuels with the same WTW-performance, the same volumes of renewable fuels with a higher WTW-performance or better performing fossil fuels (such as LNG). Only increased shares of renewable fuels (the first option) will have a direct impact on national GHG emissions. The current focus of the REDII is however to improve the quality of the biofuels by moving away from biofuels from food and feed crops to advanced biofuels, which is more in line with the second option.

With respect to increased volumes, the national level of ambition of the Dutch Climate Agreement for renewable energy in transport is almost twice as high compared to the RES-T provisions of the REDII. Increasing the target might therefore have limited to no impacts, as long as it stays below the ambition level of the Dutch Climate Agreement. This high national level of ambition also implies that a higher target for the FQD could be easily met, because most biofuels/renewable fuels to be used to comply with the REDII could also be used to comply with the FQD.

Because the FQD does not allow for the use of multiplication factors and thus requires higher actual volumes, the FQD target can be experienced as a more stringent target than the RES-T target of the RED II. This might also result in a higher incentive for advanced biofuel production, although this depends on the height of the target in relation to the height of the RES-T target and to what extent fuel suppliers make use of 'better performing' fossil fuels to realise the target.

With respect to feedstock use and sustainability and a lower GHG intensity of fuels, the Climate Agreement states that no growth of biofuels from food and feed crops will take place above the level of 2020, which is more strict than the provisions of the REDII. The use of low-ILUC biofuels will depend on the outcomes of the national overall sustainability framework for all type of biomass to be used in the various sectors. Currently no palm oil and soy-based biofuels are used in the Netherlands: the Climate Agreement prescribes a continuation of this situation. This focus on a shift to 'better' feedstocks benefits the realisation of the FQD target, especially when ILUC emissions are taken into account

These points show how Dutch policy ambitions will help to realise the target of the FQD. The other way around: the continuation of the FQD and especially the target of Article 7a will support the introduction of a so-called GHG intensity unit (BKEs) in the Netherlands, which could function in the same way as the currently existing renewable fuel units (HBEs). This option of BKEs is currently being investigated. This is in line with the Climate Agreement, which states that the obligation for renewable transport fuels will be included under the Wet milieubeheer, and that any new legislation will also include provisions on how to regulate the emissions in the entire supply chain. Steering the GHG intensity of fuels at the EU level will benefit the European level playing field.
The incentive for advanced biofuel production and other types of renewable fuels will depend on the extent, which BKEs can also be received for 'better performing' fossil fuels. During one of the interviews the point was raised that it would be better to make a split between fossil fuels and renewable fuels in a way that volumes of renewable fuels are not impacted by higher volumes of better performing fossil fuels.

During the interviews, the point was also raised that some aspects of the Green Deal will impact the general role of biomass (regarding biodiversity, deforestation, the decarbonisation of maritime shipping and aviation and the Farm to Fork strategy). This might impact the use of biomass for transport fuels, but because the exact implications are still unclear, no further conclusions can be drawn yet.

C.8 Alternative Fuels Infrastructure Directive (AFID)

Factsheet | Alternative Fuels Infrastructure Directive (AFID)

2014/94/EU
http://data.europa.eu/eli/dir/2014/94/oj

GENERAL

Process	– Entered into force in November 2014 – Link Legislative Observatory – National transposition by 18 November 2016 – Review scheduled for December 2020
Key content	– A common framework of measures for the deployment of alternative fuels infrastructure in order to minimise dependence on oil and to mitigate the environmental impact of transport. – Minimum requirements for the building-up of alternative fuels infrastructure, including recharging points for electric vehicles and refuelling points for natural gas (LNG and CNG) and hydrogen, to be implemented by means of Member States' national policy frameworks.

MAIN ARTICLES

- Each Member State shall adopt a national policy framework for the development of alternative fuels in the transport sector and the deployment of the relevant infrastructure including national targets (art. 3).
- An appropriate number of recharging points accessible to the public are put in place by 31 December 2020, in order to ensure that electric vehicles can circulate at least in urban/suburban agglomerations and other densely populated areas. The number of such recharging points shall be established taking into consideration, inter alia, the number of electric vehicles estimated to be registered by the end of 2020 (art. 4).
- **Electricity**: targets for recharging points accessible to the public, to ensure that electric vehicles can circulate in agglomerations by 31 December 2020 as well as on the TEN-T core network by December 2025.
- Furthermore, Member States shall ensure to assess the need for shore-side electricity supply for both inland navigations and maritime shipping in ports. Shore-side electricity shall be installed as a priority in ports as part of the TEN-T Core Network by 31 December 2025. Only in case there is no demand and the costs are disproportionate to the benefits (incl. environmental benefits) shore-side electricity does not have to be installed. Member states are requested to assess the needs for electricity supply for stationary airplanes by 31 December 2025.
- **CNG:** ensure a sufficient number of publicly accessible refuelling points, with common standards, to be built to allow the circulation of CNG vehicles, both in urban and sub-urban areas by 31 December 2020 as well as on the TEN-T core network by 31 December 2025.
- **LNG:** ensure a sufficient number of publicly accessible refuelling points along the existing TEN-T Core Network by 31 December 2025. The Directive also requires an appropriate number of refuelling points for LNG to be put in place at maritime ports TEN-T Core Network by 31 December 2025 and in the inland waterways TEN-T Core Network ports by 31 December 2030.
- **Hydrogen**: The Directive aims at ensuring a sufficient number of publicly accessible refuelling points, with common standards, in the MS who opt for hydrogen infrastructure, by 31 December 2025.

RELATIONSHIP WITH OTHER DIRECTIVES

FQD: The FQD contains a reduction target for the average GHG intensity of fuels. The FQD also prescribes fuel specifications, which determine how much biofuels can be blended with the fuel specifications of regular road transport fuels.

EPBD: The EPBD has provisions on charging infrastructure at buildings.

Clean Vehicle Directive: the CVD sets targets for public procurement of service vehicles and mobility services.

REDII: the RED establishes the overall targets of renewable energy, including in transport.

TEN-T Regulation: will also be reviewed.

RANGE OF POSSIBLE ADJUSTMENTS DUE TO THE GREEN DEAL

Green Deal:

- As announced in the Green Deal, the AFID will be reviewed.
- The Commission will adopt a strategy for sustainable and smart mobility in 2020.
- The EU plans to ramp-up the production and deployment of sustainable alternative transport fuels. By 2025, about 1 million public recharging and refuelling stations will be needed for the 13 million zero- and low-emission vehicles expected on European roads.
- A new funding call to support the deployment of public recharging and refuelling points for long-distance travel and in less densely populated areas,
- Other legislative options to boost the production and uptake of sustainable alternative fuels for the different transport modes will be considered.

Probable adjustments (Green recovery plan)[1]:

- Investment on electric car recharging infrastructure is probably to be doubled, with the objective of reaching 2 million public charging and alternative refuelling stations by 2025. This might involve higher targets of infrastructure for member states.

Further possible adjustments (based on own research, interviews and estimates):

- further prioritisation of zero-emission options;
- more attention for heavy transport;
- elimination of LNG/CNG from one or more applications as counting as alternative fuels;
- inclusion of rail/aviation;
- setting of more specific and binding targets.

CONCLUSION: AMBITIOUS SCENARIO

We assume the following revisions under the ambitious scenario:

- introduction of national binding targets focused on exact numbers rather than on ‘an appropriate number’, which is based on the number of vehicles in a country;
- exclusion of targets for better performing fossil fuels (LNG/CNG);
- additional targets for HDV;
- inclusion of infrastructure to foster the electrification of activities at main ports;
- inclusion of various types of charging and thus more focus on fast charging and other more innovative charging solutions.
- more efforts put into standardisation, interconnectivity and interoperability.
- more attention and even requirements with respect to the location of infrastructure.
- funding options for countries where there is not yet a business case for charging infrastructure without public funding.

[1] https://www.euractiv.com/wp-content/uploads/sites/2/2020/05/Green-Deal-Recovery-Package.pdf

A quantification of these revisions is hard to make. It is not solely an increase in the number of charging points, but more a shift in scope and solutions to align the AFiD with the higher ambitions for the uptake of low carbon fuels and alternative drivetrains.

POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

The Climate Agreement refers to the AFiD as important driver for the realisation of infrastructure in the Netherlands. The development of a national agenda for charging infrastructure (Nationale Agenda Laadinfrastructuur – NAL) is also closely linked to the AFiD. The Climate Agreement further refers to the monitoring activities related to the Directive.

The AFiD provides an incentive for the uptake of the fuels covered by the Directive by means of targets for the realisation of the infrastructure for these alternative fuels. Currently, the AFiD leaves many choices open to national implementation, but the introduction of national binding targets could have the following implications in terms of risks and opportunities.

Opportunities

- Binding targets will ensure other Member States to invest in refuelling infrastructure as well. This will help to lower cost and reach economies of scale;
- It will also contribute to interoperability, which is an advantage for the Dutch transport businesses that operate on the international market. For example, the Climate Agreement mentions for inland shipping the need to research a) the charging infrastructure requirements in relation to pilots with battery and hydrogen electric inland shipping vessels and b) how the strategy for infrastructure to deliver the required onshore power supply should look like with respect to these developments. Because the transboundary aspect of inland navigation, the Dutch sector will benefit from a revision of the AFiD when more refuelling options will become available abroad.
- Harmonisation and standardisation will enable market actors to work more efficiently and thus at lower cost. This benefits drivers who travel internationally.
- Cost reduction as result of an improved single market and economies of scale will further lower the need for fiscal policies.
- A mature and dense network will pave the way for vehicle sales and thus will contribute to the realisation of national objectives and Green Deal objectives to realize a certain share of zero emission vehicles.
- By taking away the barrier for zero emission solutions, the AFiD indirectly contributes to the reduction of air polluting emissions and noise emissions and will ease the introduction of ZE zones.
- Higher demand for refuelling infrastructure abroad provides economic opportunities for Dutch market actors.
- Inclusion of aviation in the AFiD might require additional policy efforts in terms of implementation, but is likely to be beneficial for the Netherlands because it will support ongoing efforts to electrify ground activities at airports, such as Schiphol.

Risk

- Binding targets might result in the need to accelerate the development of infrastructure for new fuels and energy carriers, which will be less in line with current national objectives and perhaps not as cost effective
- The same is valid for requirements related to the location of infrastructure and transport mode. For example, the Dutch strategy to realize hydrogen infrastructure is to develop infrastructure nearby demand from hydrogen vehicles, while the AFID strongly focusses on the TEN-T network. Therefore, there is a risk that the strategy of AFiD is not in line with national strategies and therefore might require additional efforts without knowing whether this will beneficial for the vehicle fleet. Similar questions could be raised with respect to the realisation of CNG and LNG infrastructure, which has up until now been realized through private sector funding. This will also depend on the extent to which fossil fuels will remain within the scope of the revised AFiD.

Additional impacts on vehicle sales and realisation of infrastructure are assessed to be limited for electric vehicles (EVs), because the Dutch market is already moving towards a mature market where there is a business case for charging infrastructure without many government incentives. This has also been the case without binding targets and is mainly driven by the Climate Agreement and initiatives by the sector itself. When looking at European countries EV uptake is likely to occur in countries with a higher GDP, such as Denmark, Sweden, Finland,

Netherlands, Belgium, Luxembourg, Austria, Germany, UK, Ireland and France. These countries are also likely market leaders. In other European countries, markets are expected to mature a couple of years later.[2]
The European Alternative Fuels Observatory shows the current progress of Member States and the number of charging points for EV for 2020 has already been achieved. Many Member States have realized their ambitions as included in their national plans submitted to the Commission, but because Member States could determine the appropriate level themselves it can be questioned to what extent that will sufficient to meet the objectives of the Green Deal. For example: some countries could have met objectives, which were based on a low uptake of EV.

Overall, we conclude that strengthening the AFiD will provide opportunities for Dutch policy ambitions and the Dutch market, mainly by means of cost reductions and further contribution to a single market. This will be mainly the result of investments in other European countries. Due to the almost mature market in the Netherlands no or limited impacts are expected from higher targets for the Netherlands. In line with the KEV2019, we do not attribute an additional emission reduction to the AFiD alone, because the risk of double counting of emission reductions and because infrastructure alone will not result in emission reduction.

[2] https://www.transportenvironment.org/sites/te/files/publications/Emobility%20Platform%20AFID%20analysis.pdf

C.9 Ecodesign Directive

Factsheet | Ecodesign

2009/125/EC
http://data.europa.eu/eli/dir/2009/125/2012-12-04

GENERAL

Process
- Adopted by EP on 24/04/09, adopted by Council on 24/09/09
- Entered into force in November 2009
- Link Legislative Observatory
- National transposition by 20 November 2010

Key content
- Establishes a framework for the setting of Community Ecodesign requirements applicable to energy-related products in order to guarantee the free circulation of these products in the internal market. Ecodesign requirements are standardised in Regulations.
- Currently, 31 product groups are regulated, the regulation does not apply to transport.
- The implementing measures require manufacturers of energy-related products to take into consideration from the design stage the environmental impact that these products will have throughout their life cycle, thus facilitating cost-effective environmental improvements.

MAIN ARTICLES

- The Directive provides for the setting of requirements which the energy-related products covered by implementing measures must fulfil in order to be placed on the market and/or put into service. It contributes to sustainable development by increasing energy efficiency and the level of protection of the environment, while at the same time increasing the security of the energy supply (Art. 1).
- Where a product meets the following criteria, it shall be covered by an implementing measure:
  - a the product shall represent a significant volume of sales and trade, indicatively more than 200,000 units a year within the Community according to the most recently available figures;
  - b the product shall, considering the quantities placed on the market and/or put into service, have a significant environmental impact within the Community, as specified in the Community strategic priorities as set out in Decision No 1600/2002/EC; and
  - c the product shall present significant potential for improvement in terms of its environmental impact without entailing excessive costs, taking into account in particular:
    - the absence of other relevant Community legislation or failure of market forces to address the issue properly; and
    - a wide disparity in the environmental performance of products available on the market with equivalent functionality (Art. 15).
- There are currently around 31 product groups covered by implementing measures (regulations).

RELATIONSHIP WITH OTHER DIRECTIVES

The Directive was designed in direct relation to the **Energy Labelling Directive** (2010/30/EU). Whereas the Ecodesign directive allows the Commission to set minimum performance standards, the Labelling Directive classifies all products according to their performance on an A to G scale. Both directives have the objective – by pulling and pushing – to contribute to the energy efficiency target, set in the EED.

EED: The EED also aims to reduce energy demand. The savings due to Ecodesign will contribute towards the overall energy efficiency target of the EED (Art. 1), but not towards the end-use savings target of Article 7 of the EED. Energy savings can only be counted towards the Art. 7 target if additional to other regulations, including the Ecodesign directive (Annex V(2)(a) EED).

Low voltage Directive: covers health and safety risks on electrical equipment for both consumer and professional use.

RANGE OF POSSIBLE ADJUSTMENTS DUE TO THE GREEN DEAL

The Ecodesign directive is considered to be a very successful policy instrument in increasing the energy efficiency of energy-related products. The new Circular Economy Action Plan therefore considers widening the scope of the Directive to other types of products and broaden it to deliver more on circularity. It can then become the core of its circular economy plan, and the sustainable product policy legislative initiative that the Commission plans to propose in 2021.

The Ecodesign Directive is a framework directive, meaning it fixes the overarching legal framework and opens possibilities for underlying regulations to establish mandatory standards. The current directive is aimed at energy-related products and mainly focused on energy efficiency. Several stakeholders, including the European Parliament have called to broaden the product groups and widen the scale to circular economy considerations as well.

- The Green Deal announced the adoption of an EU industrial strategy together with a new circular economy action plan, of which the key aim is stimulate markets to move to climate neutral and circular products.
- Adjustments might focus more on a systems' approach and not only on product efficiency. Circular economy requirements, like material and resource efficiency, have not been fully developed in the directive and are likely to be included when the directive is revised. The new circular economy strategy lists a wide range of principles that the Commission want to include besides energy efficiency. Examples are carbon footprint of products, enabling remanufacturing and high-quality recycling, improving product durability and reparability, providing incentives for products with high sustainability performance.
- In an upcoming sustainable product policy legislative initiative, the Commission will propose new product groups, like electronics, ICT and textiles but also furniture and high-impact intermediary products such as steel, cement and chemicals. Further product groups will be identified based on their environmental impact and circularity potential. Comprehensive strategies for separate products groups will follow.
- The Commission will also increase the effectiveness of the current Ecodesign framework for energy-related products, including by adopting and implementing a new Ecodesign and Energy Labelling Working Plan 2020-2024.
- Reviewing the Ecodesign Directive will build on criteria and rules established under the EU Ecolabel Regulation, the Product Environmental Footprint approach and the EU GPP criteria.
- The Commission will consider the introduction of mandatory requirements to increase the sustainability not only of goods, but also of services.
- Possibly introduction of requirements linked to environmental and social aspects along the value chain, from production through use to end-of-life, will also be assessed.
- Windows, insulation materials, and certain water using products like showerheads or taps might be covered as well.

When a new product group is suggested, a product study is done followed by a proposal from the Commission, which is discussed with experts and stakeholders. The technical level of judging certain product groups prevents swift decision making processes, and therefore establishing implementing measures is a time-consuming procedure.

Considering the proven effectiveness of the Ecodesign measures in combination with the challenges that exist for other climate policies for the internal market, the Ecodesign directive might in practice acquire a more fundamental function than it has now, and become a key pillar in enforcing the climate ambitions of the Green Deal.

CONCLUSION: AMBITIOUS AND REALISTIC SCENARIO

The Ecodesign directive will be broadened to cover more product groups, resulting in additional end-use and industry energy savings. In addition, other requirements are likely to be added, aimed at further speeding up developments towards the circular economy. This will entail implementing measures that set product standards by which producers have to comply.

The product groups that are likely to be included first are:
- electronics, ICT;
- textiles;
- furniture;
- high-impact intermediary products such as steel, cement and chemicals;
- other product groups based on their environmental impact and circularity potential.

There might also be an effort to increase the effectiveness of the directive, for example by enhancing monitoring and verification.

The legislative proposal for this framework is expected in 2021. It is too early to estimate the level of energy savings that can be expected from the revisions of the directive; this will depend on the details of the standards that are set for the various product groups and the level of efforts that the Commission and stakeholders will dedicate to developing new and more ambitious standard. The latter will be relevant for the timeline of the changes, and therefore for the additional energy savings and CO_2 reduction that can be achieved by 2030.

POTENTIAL IMPACTS OF THESE CHANGES ON DUTCH CLIMATE POLICIES

The regulations that are introduced under the framework of the Ecodesign directive have direct legal force, without the need of transposition.

According to the KEV 2019, there is a structural decrease of electricity use by households, mainly caused by efficiency gains. Tablets, smartphones and screens are on the rise but mainly replacing electrical cooking products. Overall, there is a downward trend of electricity use. The KEV has taken into account the current Ecodesign standards, and estimates for the effects of new Ecodesign standards for dishwashers, washing machines, refrigerators, freezers, displays (television and computer) and lightning. In the calculations, also the updates of the energy efficiency index-scales was taken into account.

The introduction of more product groups under the Ecodesign directive is likely to reduce energy demand slightly, without the need for additional policies. The impact depends on the standards that will be set and the timeline of the introduction of new standards. Both are not yet known.

If standards are set for CO_2 footprints of products and materials, these standards will impact the CO_2 emissions along the whole value chain of the product (both inside and outside of the Netherlands).

Expansion of the product standards to circular economy criteria can also have an impact on CO_2 emissions, but this effect is likely to be smaller, since the aim of these will be resource efficiency rather than energy efficiency.

The adoption of new implementing measures will first of all affect producers; they have to comply with the standards. However, there is a possibility that monitoring and market surveillance is being enhanced, which entails certain policy efforts.

According to the Climate Agreement, the Dutch government supports and will pursue the introduction of CO_2 footprint labelling and CO_2 standards of products. This is in line with the EU ambitions outlined in the Industrial Strategy.

Considering the relatively updated state of current implementing measures, resulting in the overall trend of decreasing energy use by household appliances, one can conclude that the emissions currently related to products that are regulated under the Ecodesign directive will not change significantly in the near future. Already adopted Ecodesign regulations do play a role in the downward trend of energy demand of households, but mainly by replacement of pre-Ecodesign products.

It is unlikely that possible new product groups that might be regulated will have a significant impact on Dutch GHG-emissions in the coming decade. The textile and furniture industry is responsible for a limited amount of emissions that is counted on the Dutch balance sheet. Considering that the ETS is the main instrument for decarbonisation of the cement, chemicals and steel industry, it seems unlikely that Ecodesign in those sectors will have additional effects. It is more likely that Ecodesign measures will introduce certain circular economy requirements and/or set minimum requirements for those products that come from outside the ETS zone. The GHG impacts of these measures will be relatively limited.

In general, it can therefore be concluded that Ecodesign review will be supportive of the Climate Agreement, since it aims to enhance energy efficiency and contributes to a more level (EU and global) playing field. However, despite its general benefits, the impact on Dutch emissions in 2030 is expected to be relatively limited.