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Final update of Dan mark's National Energy and Climate Plan for the period 2021-2030

June 2024

Content

SECTION A: NATIONAL PLAN

1. Overview of the procedure for-completing the plan

1.1 Summary

(i) Political, economic, environmental, and social context of the plan

The adoption of the Climate Act in 2020 set an ambitious direction for Danish climate policy and Denmark's role in climate diplomacy in the world. Central is the objective of reducing Danish greenhouse gas emissions by 70 % by 2030 compared to 1990 levels, and climate neutrality by 2050 at the latest. The new government of Social Democracy, Venstre and Moderates has brought the climate neutrality target forward to 2045 and has set a target of 110 % reduction by 2050 compared to 1990 levels. Since the Climate Law, over 75 green deals have been reached, prioritising more than EUR 129 billion for major climate agreements. For example, agreements have been reached on a high and more uniform level of CO_2e-tax for industry, etc., a significant increase in Denmark's existingenergy production and set a binding reduction target for the agriculture and forestry sectors, which will contribute significantly to the achievement of the 70 % target.

The green transition takes into account the guiding principles of the Climate Law, which provide, inter alia, that theclimate challenge is a global issue. Therefore, Denmark must be a pioneer country that can inspire and affect the rest of the world. In addition, the achievement of Denmark's climate targets must be achieved as cost-effectively as possible, with a focus on both the slowgreen transition, sustainable business development and Danish competitiveness, sound public finances and employment, and that Danish business needs to be developed and not wound up. In particular, Denmark must demonstrate that a green transition can be made while maintaining a strong welfare society in which cohesion and social balance are ensured.

The Government *Basis Responsibility for Denmark* of December 2022 underlines the key to keep pace and ensure a thorough implementation of the many politically agreed climate actions. As the targets are met, the government iscommitted to setting new, ambitious targets.

It is particularly important for Denmark to move away from fossil fuels rapidly, both because of the climate and also in terms of contributing to a more energy-independent Europe. Faster action on green challenges requires focused and coordinated action. Therefore, the Government has set up the National Energy Crisis Cell (NEKST). NEKST's task is to identify solutions to remove the barriers to a rapid green transition, so that the green solutions are implemented quickly. To date, the Government has set up three NECSC *working groups, namely Farvel for gas in Danish homes, Mere sol and wind onshore*, *and Hurtiere distributionof the electricity grid,* of which the first two NECSC working groups have already made their recommendations. The last NEKST working group *Accelerating electricity network development will* make their recommendations at the end of 2024.

In June 2022, the Social Democrats, the Venstre, the Socialist People's Party, the Radikale Venstre and the Conservative People's Party concluded an agreement on *Green Tax Reform for Industry, etc.*, whereby the parties agreed to introduce a new, ambitious and more uniform CO_2tax for companies in most sectors. The long-term decision on the new CO_2tax creates predictable framework conditions and provides incentives and time for businesses to adapt. In addition, with the agreement, the parties allocated a billion-billions to support the green transition of the companies most affected by the CO_2tax, so that it is also worthwhile for those with the highestCO_2footprint. In particular*, the 2024 agreement on the implementation of the greening aid for industrial tax reform* etc. has set the framework for the funds allocated for conversion aid to enterprises overa period of time as the CO_2tax is phased in from 2025 until 2030.

In June 2022, the Social Democrats, the Venstre, the Socialist People's Party, the Radikale Venstre, the Enhedslisten, the Conservative People's Party, the Danish People's Party, the Liberal Alliance, the Alternative *and the Kristendemokraterne Climate Agreement on Green Power and Heat 2022*, which aims, inter alia, to ensure framework conditions that will allow a four-fold increase in total electricity generation from solar and landwind by 2030. As a follow-up, in December 2023, a broad majority of the Danish Parliament reached *the Climate Agreement on greener energy from sun and wind on land*, where it was decided to enable the state to play a more active role in planning major energy parks on land, thereby supporting the ambition of a four-fold increase. In the same agreement, it was decided to increase the rates for the two RES schemes RES bonus and green pool, ensuring that the owners of the RES installations share a larger proportion of the windfrom the operation of the RES plants with neighbours and local communities respectively, with the aim of ensuring a higher degree of local acceptance of the RES plants. In addition, with *the Climate Agreement on Green Power and Heat 2022*, the Parties agreed to offer at least 4 gigawatts (GW) of additional sea wind for realisation by 2030, on the understanding that the ocean wind can be realised free of support. In total, tenders for, permits or political agreements have been opened for the launch of tenders for offshore wind farms and the Bornholm energy island, which support the creation of a total offshore wind capacity of around 19 GW by 2030 if the market wants. But opportunities are far from being exhausted and are currently being pursued, inter alia, to realise the political ambition of establishing an energy island in the North Sea with direct links to neighbouring countries and 10 GW of sea wind in the long term. The significant expansion of renewable energy (RES) can contribute green power to both direct electricity consumption in Denmark, exports to the rest of Europe and green power to PtX and the production of green fuels for, for example, aircrafts, ships and heavy transport. Looking at supporting the deployment of power-to-X plants and the production of hydrogen from renewable energy jetsthere, Denmark has signed an agreement on 5 April 2024 on economic *framework conditions for hydrogen infrastructure*, which is an important step towards the realisation of a Danish hydrogen infrastructure for Germany that can contribute to CO_2reductions and supplysecurity in Europe.

On 30 May 2023, the Government (Social Democrats, Venstre and Moderaterne), together with the Socialist People's Party, the LIBE ralAlliance, the Conservative People's Party, the Enhedslisten, the Radikale Venstre, the Danish People's Party and the Alterntet *Supplementary Agreement on a tender framework for 6 GW of offshore wind and energy island of Bornholm.* While the previous agreements set high ambitions, this agreement sets out the concrete procurement framework. The agreement has the potential to secure green electricity for 14 million Danish and European households or more, and for the first time there will be state co-ownership of the 6 GW of offshore wind farms. A number of new mini mum-requirementsare also introduced to participate in the tenders to help raise the bar for sustainability and social responsibility inline with previous tenders. The agreement also contributes to security of supply, and the establishment of a Marine Nature Fund will contribute, inter alia, to environmental and nature-effects of renewable energy development at sea and to cost-effective restorationof marine nature and biodiversity in order to improve the state of the marine environment. Since the political agreement, the Danish Energy Agency has been in dialogue with the market on the specific tender specifications. The tenders for 6 GW of offshore wind were launched in April 2024 and the Danish Energy Agency is currently preparing the tender documentation for the sea wind associated with the Bornholm Energie.

Denmark is looking into a future with continued sea level rises, more storm and extreme weather events, heat waves, droughts and heavy rainfall, the magnitude of which depends on global emissions and resulting temperature increases. Even in a low emission scenario, climate adaptation is needed. The government therefore launched a National Climate Change AdaptationPlan in October 2023. The plan is a follow-up to the government *base Responsibility for Denmark* of December 2022, which states that the government will draw up a National Climate Adaptation Plan to support the timely implementation of the necessary actions, as wellas the best possible organisation of the response. Adapting to future weather and the consequences of climate change requires long and

sustained efforts. The Climate Adaptation Plan is therefore a first step.

In December 2023, the government also set up a green tripartite to make recommendations and solutions for a green on theposition of Danish agriculture. A green tripartite has submitted an agreement on 24 June 2024, which the government will subsequently bear into the Danish Parliament in autumn 2024. The agreement meets the 70 % target in 2030, as well as Denmark's commitments in the EU burden sharing agreement and LULUCF regulation. To this end, the agreement implements the EU Water Framework Directive.

(ii) Strategy on the five dimensions of the Energy Union

Greenhouse gas reductions and RES

With the adoption of the Klimal Act in 2020, Denmark set the line for an ambitious Danish climate policy and its role in climate policy in the world. Not least with the objectives of reducing Danish greenhouse gas emissions by 70 % in 2030. 1990 and that Denmark must be climate neutral by 2050 – a target the government has brought forward to 2045 with the government base. Desuden has put forward a new target of 110 % reduction in greenhouse gas emissions by 2050 relative to%. 1990.

Denmark has ambitions for large-scale renewable energy production. In the field of offshore wind, a political agreement has been reached which sets the framework for the largest expansion of marine wind in Denmark, amounting to 6 GW of radial sea wind and 3 GW for Bornholm energy island, which could potentially reach 14 GW or more if the offshore wind contributors make use of the freedom provided for in the agreement to build as much capacity as possible on the land (overplanting). In addition, work is underway to establish an energy island of the North Sea, for which the ambition is a capacity of 10 GW of sea wind in the long term. In addition, with *the Agreement on Green Power and Heat 2022*, Denmark has the ambition to allow for a four-fold increase of electricity production from renewable energy onshore, equivalent to approximately 50 TWh. In viewof this, in December 2023, the Government reached a *Climate Agreement on greener energy from sunshine and wind on land,* setting a framework that helps to enable a four-fold increase of electricity output from solar and wind on land. Among other things, the agreement paves the way for the state to play an active role in planning major energy parks on land.

The NECSC Working Group *Mere solar and onshore wind* has been working to identify and remove barriers that currently stand in the faster deployment of renewable energy onshore to enable, among other things, the agreed ambition to quadruple thepower generation from solar and onshore wind. The working group has delivered 27 concrete recommendations to the government on how to, among other things, strengthen local support, speed up processes and better interaction between authorities, and use theland smar when installing wind turbines and solar cells on land. *The NECSC Working Group Accelerating Electricity Network Deployment* will identify solutions and remove barriers to the roll-out of the electricity grid in order to streamline, shorten processes, find grid flashing actions and ensure closer and faster cooperation between all relevant actors with a role in deployment. The working groupis waiting to deliver its recommendations to the government at the end of 2024.

Energy efficiency

The Government *Basis Responsibility for Denmark* of December 2022 underlines that the government will ensure a strong focus on improvingthe efficiency of private homes, businesses and public buildings alike. The existing Danish energy efficiencyefforts today consist of a wide range of initiatives, which can be divided into three main types of initiatives;

1) Economic instruments (e.g. CO2 taxesinindustry, energy taxes, subsidy pools for energy savings and convertingcalls)
2) Regulatory instruments (e.g. energy performance requirements for buildings)
3) Information instruments (e.g. information campaigns)

In Denmark, a number of political agreements have been concluded in recent years that contribute to significant energy savings spread across sectors. This includes the Energy Agreement (2018), the Green Tax Reform Agreement (2020), the Climate Agreement for Energy and Industry, etc. (2020), Agreement on Green Transformation of Road Transport (2020), Climate Agreement on Green Power and Heat (2022), Agreement on Green Tax Reform for Industry, etc. (2022), Agreement on Winter Aid (2022), Inflation Assistance Agreement (2023), and miscellaneous Finance Acts, etc.

Denmark is internationally committed to energy efficiency and advocates a high priority for energy efficiency at global level. Denmark has bilateral cooperation on energy efficiency with authorities around the world (ten countries across four continents, including, for example, Mexico, the United Kingdom, Indonesia, the United States and Ukraine) and Danish industry has a strong position in energy efficiency, with around 48.000 Danes employed in the field. Danish companies are market playersin, inter alia, pumping technology, district heating solutions, insulation materials and energy-efficient windows. In 2023, Danish exports of energy efficient technologies

amounted to DKK 41.3 billion. Exports have increased by 27 % since 2020.

Denmark has also worked to raise the level of ambition in the negotiations on the 2023 recast Energy EfficiencyDirective (EED) and on the EPBD recast. Denmark is in the process of implementing the 2023 Omarwound up EED, including the relevant articles, as explained in more detail in Chapters 2 and 3. Denmark notes with peacethat the recast EPBD entered into force on 28 May 2024 and must be implemented by 29 May 2026.

On 11 June 2024, the Government published a roadmap for energy efficiency outlining the government's further work on energy efficiency. The roadmap and its energy efficiency framework will be used to look forward andsupport the rethinking, expansion and adaptation of energy efficiency efforts in line with the green transition. This means that energy efficiency efforts need to be seen more from a system understanding of how *much, when* and *what* energy is used, for which energy efficiency needs to be considered more broadly than exclusively energy savings. Instead, energy efficiency should be seen as a range of supporting instruments in which: *energy behaviour and energy renovations, electrification, con verns and waste heat*, as well as *flexibility* underpinned by digitalisation and competences, together need to support making the most of the overall energy system.

Security of supply

Denmark and Europe need to move away from fossil fuels. This is both good for climate and security of supply. Denmark's security of energy supply is closely linked to European security of energy supply. The energy supply situation depends on a number of unpredictable factors, including weather conditions and geopolitical events. In addition, the functioning of the European energy-markets is key. Denmark's energy supply situation is still assessed to be stable for gas, electricity, oil and biomass (including wood pellets). In addition, Denmark is well equipped, the current stable supply situation should change. In recent years, the Danish authorities have made a thorough effort to update preparedness and draw up emergency plans to ensure that societal critical functions can continue to function if a crisis – contrary to expectations – were to occur.
Russia's invasion of Ukraine highlighted the EU's dependence on Russian energy, but since then it has succeeded in diversifying Europe's energy supply and reducing energy imports from Russia. In order for Denmark and the rest of the EU to be in the best position to address the challenges of the energy system of the future, it is important to continue to ensure the momentum of the green transition and strengthen the EU's energy independence.

Among other things, the government has set up NEKST to support the green transition away from fossil energy and to ensure a-thorough reflection of the politically agreed measures to make Denmark independent fossil fuels, among other things. *The NECSC working group Farvel for gas in Danish homes* has worked, among other things, to identify and remove the barriers that prevent the roll-out of green heating solutions. Switching to green heat is an essential parameter for Denmark to meet the green for jobs, and with the uncertainty ofsupply in recent years and consequently high energy prices, the pace and effective transformation is key to strengthening the resilience of citizens' heating prices and heat supply. The working group has delivered 10 recommendations and 30sub-recommendations to the government to remove barriers so that green heating solutions can be rolled out quickly and efficiently in Denmark.

Internal energy market

Denmark is one of the best connected countries in the EU, with an interconnectivity exceeding the EU target for 2030. At the same time, reinvestments in existing international connections and analyses and possibly the creation of new international connections remain a highpriori. Denmark will maintain and increase interconnectivity through projects coordinated with neighbouring countries, for example through the planned energyislands in the North Sea and Bornholm with an expected offshore wind capacity of over 13 GW. Denmark also has a strong focus on maintaining strong cooperation with neighbouring countries in developing and integrating different markets.

Denmark is working to develop a free and competitive market to support the continued high integration of renewable energy, flexible-resources on both the consumption and the production side, the facilitation of new players and technologies, and with a strong sector-cob. In order to respond to these developments, in 2021 the Danish Energy Agency published a series of analyses and recommendations for the electricity market – 'market model 3.0.' – which aim, inter alia, to support the objective of climate neutrality. Market Option 3.0 also aims to support increased electrification of both industry, heat and transport, and a balanced energy system where the pro rata reductionof RES is used most efficiently.

Research, innovation and competition

In order to achieve the 70 % objective of the Climate Law, research is needed on key technologies such as CCS, PtX and pyrolysis,

as well assupport for their deployment. The government launched a national green research strategy in 2020: "The Green Solutionsof the Future – Strategy for Investing in Green Research, Technology and Innovation" to support coherent efforts from basic research to commercialisation of green technologies can thus support the achievement of the objectives of the Climate Law. DDAmark has allocated significant funding to research, which has resulted, inter alia, in four mission-driven research and innovationpartners between industry and knowledge institutions in areas with high reduction potential.

In addition, the government has set up an expert committee to strengthen the knowledge base on the impact of publicgreen thinking and innovation and will, inter alia, put forward a blueprint on green research and innovation for the future in autumn 2024.

In 2024, a total of DKK 2.6 billion has been earmarked for green research. In addition, in 2023 the Government agreed with the parties of the Danish Parliament to maintain the level of green research funding in the state research budget of at least DKK 2,4*billion*(2023-pl) until 2025.

State funding for green research and development is implemented through a number of channels, including mainly the Danish Innovation Fund and theDanish Free Research Fund, as well as the three development and demonstration programmes: Energy TechnologyEnlargement and Demonstration Programme (EUDP), Environmental Technology Development and Demonstration Programme (MUDP) and GreenEnlargement and Demonstration Programme (GUDP).

(III) Overview with key objectives, agreements and policies

Table 1 illustrates an overview of key objectives, policies and agreements.

Table 1
Overview of key objectives, policies and agreements

Dimensions	Key objectives	Policies and agreements
Greenhouse gas reductions and RES	Denmark will reduce greenhouse gasemissions by 70 %. Together- equated 1990.	The target is adopted by the Climate Law.
	The Climate Law's objective for Denmark to be climate neutral by 2050.	The current government brought-forward the objective of climate neutrality from 2050 to 2045 and set a target of 110 % reduction in 2050 compared to ninelevels in 1990.
	Extensive expansion of RES	In the port wind sector, therehave been no easy tenders, authorisations and political agreements have been concludedfor the provision of port wind, with the potential for more than seven-fold the windcapacity of Dan field by 2030. Furthermore, Denmark has high ambitions for the development of marine wind and energy islands in the North Sea, which are also reflected in the Esmountain and Ostende declarations. In addition, Denmark has the ambition to enable a four-fold increase of ELPRO-abatement from renewable energy on land, equivalent to approximately 50 TWh. Most recently, agreement has been reached in December 2023 to enable the state to play a more active role in planning larger-energy pairs onshore, thereby-supporting the ambition of a
Energy efficiency	Obligations under the EU Energy Efficiency Directive,hereunder the energy savings obligation and targets for energy savings in the state.	In the area of energy efficiency, actionis based on a long series of initiatives that can be divided into three main types of initiatives; economic instruments,regulatory instruments and informative instruments. In Denmark, a number of political agreements have been reached in recent years, contributing to significant energy savings spread across sectors. This applies, inter alia, to the heat pump pool and the-energy reno verine pool, the Industry Pool, re.

		novering social housing,other measures to phase out oil and gas furnaces, CO_{2taxes}in industry, green transition of road transport, conversion aid, increase of diesel tax and energy taxes.
Security of supply	Stable and secure supply. DaNmark has a planning target for the level of security of electricity supply, which is determined once a year by the climate, energy and supplymine. The latest target is for 2033 and is 36 minutes of break on average for an electricity consumer of one year.	Can be found in the respective laws in thecase of electricity, gas and emergency services.
	Prevention of risks in the energy-stemet.	Laws on emergency situations, cybersecurity and cable laying in relation to the electricity grid.
Internal energy market	High degree of future interconnectivity, optimisation of electricity network usewith a focus on flexibility and sector coupling,-further integration of RES and-security of supply.	Recommendations from market model 3.0 reporting initiated by the Energy Agreement of 29 June 2018
Research, innovation andbankruptcy	To support Denmark's intention to reduce greenhousegas emissions by 70 %. Compared to 1990 through the development and maturation of technologies.	National Strategy for Green Forwardand Development *The Green Solutions of the Future – Strategy forInvesting in Green Research, TechnologyLogy and Innovation*, September 2020. In addition, laws on public funding programmes for research and innovation, including inter alia for theInno vationsfond, the Danish Free Research Fund, EUDP, MUDP, GUDP and FLFORSK

1.2 Overview of current policy situation

(i) The national and EU energy systems and the policy context of the national plan;

The EU helps to define a large part of the framework conditions, such as objectives, requirements and the emissions trading system, under which Danish climate action operates. Common climate regulation in the EU generally benefits Denmark as it creates more competitive conditionsand export opportunities for Danish companies.

The EU has an overall climate target of reducing total CO_2e-emissions by at least 55 % in 2030. Level 1990. Following up on the EU's 2030 climate targets, the European Commission presented the *Fit for 55 legislative package* in July 2021, which has sincebeen superseded with further EU proposals in December 2021 (the so-called 'Winter Package'). *Fit for 55* contains a wide range of proposals involving a historically broad review of the EU's climate and energy regulation, as well as new regulation in areas such as transport. Political agreements have been reached on all *Fit for 55 proposals except for the* agreement on the Energy Taxation Directive.

With several concrete Danish fingerprints, the adoption of *the Fit for 55 proposals* flies with a number of the priorities thatDan mark

has worked to promote. It is therefore in line with Denmark's position that an increased level of CO2 pricing

across sectors has beenagreedthrough a strengthened Emissions Trading System (EU ETS) as well as the extension of carbon trading to maritime, road transport and heating of buildings. The adoption increases the overall ambition of the EU ETS, so that emissions from ETS sectors should be reduced from 43 % to 62 % in 2030 compared to 2005 levels. To this end, the EU will establish a separate emissionstrading system from 2027 for the buildings and road transport sectors, as well as fuels for certain other sectors. This compromises that Denmark is working towards a new, more comprehensive and cost-efficient climate architecture HURas possible and by 2030 at the latest. Part of the revenues generated from the auctioning of allowances will be used to support vulnerable houseattitudes and micro-enterprises through a new Social Climate Fund. The issue of climate regulation in agriculture is expected to be re-examined in a few years' time when the European Commission proposes post-2030 climate regulation. As part of the EU's *Fit for 55 package,* the reduction commitments under the Burden Sharing Agreement and the LULUCF Regulation are significantly upjusted. Denmark's national reduction targets under the burden sharing agreement have been increased from 39 % to 50 % in 2030. Level 2005. The reduction target includes agriculture (excluding land), road transport and buildings sectors.

In addition to extending quota trading to road and maritime transport, significant legislation has been adopted in the field of transport. The revision of the EU ETS in aviation under the *Fit for 55 legislative package* also includes Danish fingerprints. Among other things, Denmark's priorities are that the temporary exemption from the ETS for third-country flights ("stop the clock") is extended to 2027 rather than permanently limiting the ETS to intra-EU flights, as well as the full phasing-out of free aviation allowances by 2026. In addition, Denmark has pushed for negotiations to ensure high requirements for SAF blending gradually as of 2025. Furthermore, early interest protection by Denmark has supported a significant strengthening of the CO_2reduction requirements for new light-duty vehicles, as a CO2 reduction requirement of100% has been adopted for both new passenger carsand vans by 2035. In addition, an agreement has been reached on aCO_2reduction requirement of 90 % for new heavy-duty vehicles in 2040. However, this is pending final approval by the Council and the European Parliament.

As a result of the negotiations of the *Fit for 55 package* and the subsequent *REPowerEU proposal*, the EU's renewable energy (RES) targets have increased from 32 % to at least 42.5 % in 2030, as well as the EU's energy efficiency (EE) targets, which now require a reduction in EU energy consumption by 11.7 % in 2030 relative to the Commission's baseline.

In addition, the European Commission put forward the so-called 'Winter Package', which included proposals for the revision of the Building ExecutiveBoard, a regulation to reduce methane emissions in the energy sector, as well as the hydrogen and gas market package. The Council and theEuropean Parliament agreed on a revision of the EPBD in December 2023. The majority of Danish priorities are reflected in the final outcome. This applies in particular to the possibility of flexibility in the national implementation with the aim of achieving a zero-emission building stock.

The Regulation on methane emissions reduction in the energy sector was provisionally adopted in November 2023. Theregulation introduces new requirements for the oil, gas and coal sectors to measure, report and verify methane emissions, as well as to introducebearings to avoid such emissions. In addition, a global monitoring tool is being introducedto increase methane emissions from imported oil, gas and coal to the EU. The majority of Danish priorities are reflected in the final text, particularly in relation to the principle of cost-effectiveness.

In December 2023, the European Parliament and the Council reached a provisional political agreement on the hydrogen and gas market package (consisting of the revision of the Gas Regulation and the Gas Directive respectively). The hydrogen and gas market package is the most fundamental regulatory framework for the upcoming European hydrogen infrastructure and the decarbonisation of the existing internal gas market. The overall objective of the Regulation is to lay down basic market rules, in particular rules for cross-border hydrogen networks and the uptake of renewable and low-carbon gases in the EU gas market. The overall objective of the Directive is to broadenEU principles for the gas network to cover the hydrogen network as well. In addition, the Directive lays down, inter alia, consumer protection regulations, provisions on transmission and distribution system operators (and unbundling between the two indents), as well as new definitive "low-carbon" and provisions on sustainability and certification of renewable and low-carbon gases.

Across several key provisions of the Directive and the Regulation, the package responds to Danish priorities. For example, the package represents an important regulatory framework for hydrogen actors across the value chain, which is expected to have a positiveimpact on the roll-out of a European hydrogen market, as well as a flexible tariff regime for both the existing natural gas system and for hydrogen infrastructure.

The importance of the Fit for 55 package for Denmark's achievement of the 70 % target

A strengthened and extended ETS with emissions from road transport and heating of buildings will help achieve Denmark's reduction commitments in both the burden sharing agreement and the 70 % target. Moreover, by sending a price signal, it complements EU sectoral regulation such as CO_2 displacementrequirements in the Renewable Energy Directive, the EPBD and the EED, thus contributing

to increased reduction efforts.

For the strengthened reduction commitments in the burden sharing agreement, with considerable uncertainty, Denmark's accumulated shortfallunder the burden sharing agreement 2021-2030 (without the use of flexibility mechanisms) is estimated to amount to approximately 1.9 million tonnes of CO_2e. Taking into account the partial reduction effect of the diesel and road tax in the *Agreement on the partial implementation of the Green Fund*, the shortfall for the period 2021-2030 is estimated at around 0.1 million tonnes of CO_2e. Thus, further reduction measures and/or theuse of flexibili mechanisms are necessary for Denmark to meet the obligations. Denmark is deemed to have the possibility to use flexibility mechanisms (excluding the purchase of emission rights from other countries) corresponding to the remaining gapin the burden sharing agreement. Thus, if it is decided to make use of the flexibility mechanisms, Denmark's reduction obligation underthe burden sharing agreement could be met with flexibility mechanisms. There are a wide range of possible reduction measures, particularly in agriculture and transport, which can contribute to achieving this.

The increased ambition of the LULUCF Regulation means that Denmark will have to reduce net emissions in the LULUCF sector by 0.44 million tonnes of CO_2 in 2030 compared to the average level of the reference period 2016-2018. Denmark's shortfall in relation to the LULUCF commitments in 2026-2029 and the net removals target of 441 $ktCO_2eq$ in 2030 under LULUCF R estimates isexpected to overmeet the budgetary target in 2021-2025 by 30.6 Mt CO_2e, while the shortfall for the budgetary target in the period 2026-2029 is estimated to be 3.8 Mt CO_2e. The gap can be reduced by the achievement of the 55-65 % objective ofthe Agreement on Agriculture. The rate of reduction will depend on the pace of reduction, the distribution of reductions between theland use and LULUCF sectors, the decision to make use of flexibility mechanisms, as well as the level of removalsby forests.

The calculations are subject to considerable uncertainty, including how the 70 % target is met through national measures in Denmark. The impact of the proposals also differs from the fact that some proposals have a direct reduction effect on Danish target achievement as well as economic consequences, and others have a more indirect effect, for example by reducing leakage, increasing cost-effectiveness or increasing export opportunities to Danish companies. In addition, a number of the proposals regulate greenhouse gasemissions from sectors such as international shipping and aviation, which are outside Denmark's national climate targets.

JTF (Just Transition Fund)

As part of the EU's multiannual financial framework, the new EU Fund, the Just Transition Fund (JTF), is established. The objective of the Fund is to mitigate the impact of the green transition by financing the diversification and modernisation of the local economi and mitigating negative effects on employment. The Fund distributes DKK 663 million in current prices in Denmark for the period 2021-27. North and South Jutland have been identified as eligible parts of the country, as they are likely to be most affected by the transition-towards a climate-neutral economy by 2050.

Resources from the JTF are prioritised for five strands. DKK 100 million has been allocated to the development of commercial lighthouses in North and South Jutland, which focus on green technologies, including CCUS, green fuels such as PtX, and sector coupling. In addition, DKK 100 million has been allocated to an additional PtX action on hydrogen. This will support the development of PtX technologies, increased industrialisation and maturation of all or part of the value chain. DKK 50.5 million has been allocated to support the green aboutposition in SMEs in North and South Jutland. DKK 196 million has been allocated to support the development of brown biorefining, such as the technologie pyrolysis. Finally, DKK 190 million has been allocated to support the development of local value chains for CO_2catch, use and storage (CCUS).

In 2023, the Fund pledged five projects for commitments under the first three rounds of applications for a total of 280 million Puljen for commercial lighthouses have been fully implemented, with Sydjylland suspended at 52 million and Nordjylland at 47 million. In addition, DKK 109 million has been granted to Greenport Scandinavia, which will make the Port of Hirtshals the Nordeuropa hub for storing and discharging CO_2 for storage in the North Sea as early as 2025/2026. In addition, a commitment of DKK 71 million was suspended in 2023 for two pyrolysis projects. The remaining DKK 356 million will be implemented in the course of 2024-2025.

Danish energy sector

The emissions of the Danish energy and accounting sector are expected to amount to 3.7 million tonnes of CO_2e in 2030. Although the sectoris expected to have a very low level of CO_2e-emissions in 2030, the expansion of green energy in the sector is important to meet the Danish and European climate targets. The Government and the Danish Parliament have therefore concluded a number of agreements to expand the supply of green electricity and heat. The aim is to reduce emissions from other sectors through, for example, increased green electrification and increased use of green gases. In addition, the agreements will contribute to advancing Europe's green transition and energy independence.

With *the Climate Agreement on Green Power and Heat 2022*, framework conditions have been agreed to allow electricity generation from onshore renewable energy to quadruple by 2030. In the field of offshore wind, a political agreement has been reached which sets the framework for the largest expansion of marine wind in Denmark, amounting to 6 GW of radial sea wind and 3 GW of Bornholm energy island, which could potentially reach 14 GW or more if the offshore wind contributors make use of the freedom provided for in the agreement to build the maximum capacity on the land (overplanting). In addition, work is underway to establish an energy island of the North Sea, for which the ambition is a capacity of 10 GW of sea wind in the long term. Much of the offshore wind expansion will be for export to Europe and aiming for Denmark to become Europe's green powerhouse, contributing to the green transition, our security and independence from Russian gas. Thecouples of agreements agree that Denmark should go to the task in a way that reconciles the ambitions of massive green transition with good grocery. It aims to ensure that Denmark's sea basins and marine wind resources contribute to the well-being and prosperity of the future, and that Denmark achieves maximum income and benefits for Danish society, citizens and businesses, respecting nature and biodiversity. The ambition for land-based RES is linked to the fact that the expansion of green power beyond Denmark's needs must be built free of aid and that consumers and businesses should not be charged with significant costs. The *climate agreement on green electricity and heat 2022* also set a political ambition for Denmark to be 100 % supplied with green gas by 2030. Based on *the climate status and projection 2024* (KF24), it is expected that the share of biogas in the pipeline gas will be around 124 % in 2030 and around 156 % in 2035, with Danish gas consumption being green.

The*climate* agreement also included the ambition not to use gas for space heating in Danish households from 2035. At the same time, the government's aim is to ensure that as many households as possible come away from individual gas and oil boilers as quickly aspossible. Households must convert to district heating in those areas where it makes sense. In other areas, households need to convert to alternative green solutions, such as an individual heat pump. A number of measures have thus been taken to phase out the use of natural gas in household heating. Including the *Climate Agreement on Green Power and Heat 2022* and the *Accelerated Planning Agreement for the phase-out of gas for heating and clear message to citizens* of June 2022 between the then government and the interest organisation of Denmark's 98 municipalities – Kommunernes Landsforening (KL), where a municipal planning effort has been launched with the ambition for district heating to be rolled out by 2028 where it makes sense. In areas where district heating does not make sense, conversions to alternative green solutions, including grant pools and advice, are supported by replacing oil and gas furnaces with alternative green solutions. At the same time, the state-owned gas distributioncompany has started to clarify where the gas system can be shut down and whether parts of the infrastructure could usefully be converted into hydrogen.

(ii) Current energy and climate policies and measures related to the five dimensions of the Energy Union

See Section 1.1.3 for objectives and policies related to the five dimensions. See Chapter 3 for a more detailed description.

(iii) Key issues of cross-border relevance

Marine wind is highlighted in the European Commission's Marine Renewable Energy Strategy as an important part of the EU's future giosupply. The EU will need to five-fold its offshore wind capacity by 2030 to 60 GW. From 2030 to 2050, the EU needs to further increase capacity to 300 GW to reach the climate neutrality objective. Geographically, the North Sea and the Baltic Sea can be highlighted as important regions if the potential for marine wind in Europe is to be exploited.

In May 2022, Denmark, together with Germany, Belgium and the Netherlands, held a North Sea Summit in Esbjerg. Here, countries set ambitions for the expansion of marine wind in the North Sea to increase the speed of the green transition while contributing to the phasingout of fossil energy sources. The North Sea Summit was a milestone in cooperation between heads of government and energy ministers from the four countries. At the summit, heads of government signed the Esbjerg Declaration, which set the goal of delivering at least 65 GW of seawind in 2030 and of increasing capacity to at least 150 GW by 2050. In addition, energy ministers included a separate statement to set out the way to achieve the objectives of the Esbjerg Declaration, including through bilateral cooperation on connection to the North Sea energy island. Denmark and Belgium signed an agreement to sell Danish renewable energy shares to Belgium. At the same time, the agreement confirmed cooperation with regard to TritonLink. The Netherlands agreed with a statement with Denmark to prepare an analysis to serve as a basis for an external connection to the energy island. Germany and Denmark further agreed to cooperate on hydrogen in the North Sea.

The North Sea Energy Island is eventually sought with a total capacity of 10 GW according to the political ambitions. Ways of connectingthe energy island with foreign connections to North Sea countries, including Germany, Belgium and the Netherlands, are being mitigated.

In August 2022, Denmark, together with Sweden, Finland, Germany, Poland, Estonia, Latvia and Lithuania, held a Baltic Sea Summit in Marienborg. At the end of the Baltic Sea Summit, energy ministers and political representatives fromthe delta countries signed the Marienborg Declaration, setting a common ambition to establish at least 19.6 GW of offshorewind in the Baltic region by 2030 and to

strengthen cross-border electricity cooperation. Denmark and Germany have reached a political agreement to connect Germany to the energy island of Bornholm. With 3 GW, the energy island can generate enough green power for either 3.3 million Danish or 4.5 million German households. In addition, Denmark entered into new regulatory cooperation with the Baltic States to transfer its experience in building marine wind. Cooperation will run up to and including 2025.

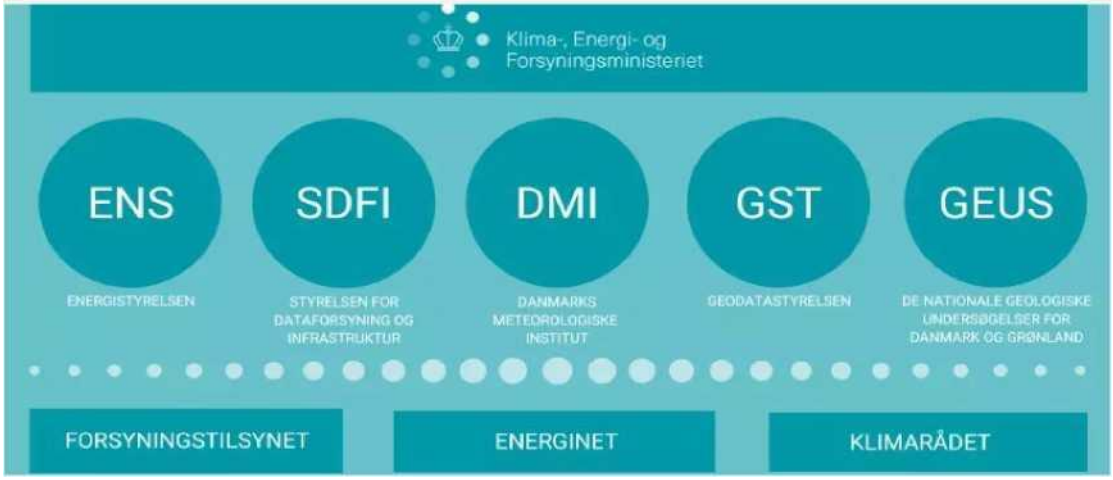
(iv) Administrative structure of implementing national energy and climate policies

The implementation of Denmark's national energy and climate policies is driven by the Ministry of Climate, Energy and Utilities. Figure 1 shows the organisation of the Ministry and the institutions under the Ministry's remit.

To coordinate the preparation of the NECP, a coordination and steering group has been set up with representatives from both the Ministry of Climate, Energy and Utilities and the Danish Energy Agency. The NECP brings together already existing policies and objectives and reports on their planned implementation. The implementation of existing policies and objectives is done in the same wayas other legislative initiatives in this area and is driven by the Ministry of Climate, Energy and Utilities. Below, they explain the roleof a single institution in the implementation of national energy and climate policies.

Figur 1

Organisering af det danske Klima-, Energi- og Forsyningsministerium



The**Danish Energy Agency's** task is to advise the Minister for Climate, Energy and Utilities and to manage climate, energy and supply legislation. The Agency's areas of work include energy consumption and savings, supply systems, exploration and extraction of oil and gas, etc., energy economy, energy technology, advice on greenhouse gas emissions from non-ETS sectors, and responsibility for the economic regulation of waste and water. In order to promote climate and energy considerations, the Danish Energy Agency also manages a number of subsidy schemes, including support forthe production of renewable energy, research and development in the field of energy technology and the promotion of energy efficiency. Finally, the Agency is the crank of Denmark's international climate and energy cooperation, where Danish experience with the greentransition is shared with emerging economies and western partner countries for the climate.

The Agency for Data Supply and Infrastructure provides the public and private sector with high-quality data that allows important social decisions to be taken on the best possible basis.

DMI – The Danish Meteorological Institute provides meteorological services in Denmark, the Faeroe Islands, Greenland and the-surrounding waters and airspace. Meteorological services include forecasting and warnings and monitoring of weather, climate and associated environmentalconditions in the atmosphere, on land and at sea. The Institute is responsible for Denmark's international meteorologicalobligations and is the focal point for international exchange of information.

The**Geodata Agency** is responsible for the measurement, mapping and cadastral registration of the whole of Denmark, Greenland, the Faroe Islands and all waters associated with them.

GEUS – The Geological Study of Denmark and Greenland is an independent Danish research and advisory institution operating in the fields of environmental geology, water, energy and mineral resources. GEUS collects and stores data and is responsible for

research, advice and communication related to the exploitation and protection of natural geological resources in Denmark and Greenland.

The**Utility Regulator** must ensure strong and effective oversight of the utilities sectors. The Utility Regulator shall, in particular, safeguard the interests ofusers in the supply sectors by promoting excessive efficiency, the lowest possible consumer prices in the short and long term, a secure and stable supply, as well as cost-effective technology development and a cost-effective green transition.

Energy grid is an independent State-owned company that owns Denmark's electricity and natural gas transmission network. They also own the Danish gas storage company and help maintain gas supply in emergency situations. The primary responsibility of the energy network is to ensurethe efficient operation and development of the overall electricity and gas infrastructure.

The Klimaråden is an independent body of experts. It provides the Ministry with proposals for cost-effective climate policy solutions that pave the way for a society with very low greenhouse gas emissions while maintaining well-being and development.

The National Bioeconomy Panel is set up by the government to provide advice on the use of biological resourcesin commitment to the green transition, including pyrolysis, biogas and CCS.

1.3 Consultations and involvement of national and Union entities and their outcome

(i) Involvement of the national parliament

Danish energy and climate policy is based on a wide range of broad agreements across the Danish Parliament. The NECP shares-these already existing policies and objectives and reports on their planned implementation. The Danish Parliament, including the Climate, Energy and Supply Committee, has been informed of the draft update and is informed about the final update of the Danish NECP before it was submitted to the European Commission.

(ii) Involvement of local and regional authorities

The draft update of the NECP as well as the final update of the plan have been subject to public consultation, on the consultation portal, via the EU specialised committees on climate, energy and supply policies, and on energy tyrelsen.dk, including the Kommunernes Landsforening (KL) and Danish Regions (DR) have been given the opportunity to submit a consultation response to the draft update of the Danish energy and chlorimaplan. In the consultation of the draft, the Ministry did not receive any comments on this basis. KL and DR both responded to the consultation of the final plan. The responses to the consultation and the Ministry's comments are set out in Annex 0.

(iii) Consultations of stakeholders, including the social partners, and engagement of civil society and the general public

Denmark's climate and energy policy is designed in dialogue with relevant stakeholders. Formal fora such as the Climate Partnersand Green Business Forum have been set up. In addition, draft laws are submitted for consultation before they are submitted to the Danish Parliament and finallyapproved. In its recommendation No 21, the Commission addressed the need to clarify how the public has been involved in the preparation of the plan. The consultation process of the Plan and the other formal fora set up will be elaborated below.

Consultation of Denmark's National Energy and Climate Plan

Both the draft National Energy and Climate Plan of Denmark and the final update of the plan have been subject to public consultation and EU specialised committee consultation. 12 external responses to the draft NECP of Denmark and 15 external responses to the final update of the plan were received. The responses to the consultation and the Ministry's comments are set out in Annex 0. The draft plan was the subject of an external consultation from 16 May 2023 to 6 June 2023, while the final plan was subject to external consultation from 21 May 2024 to 18 June 2024. The Ministry of Climate, Energy and Utilities has thus extended the consultation period from three weeks in connection with the consultation of the draft to four weeks in connection with the consultation of the final plan. The consultation of legislation related to the existing policies and measures included in the NECP is further elaborated below.

Consultation of legislative proposals

Prior to enacting agreements on Danish energy and climate policy, draft laws are submitted for public consultation via the consultation portal. The ministries send draft bills for consultation before submission to the Danish Parliament, and the associations and

organisations concerned, etc. are asked to provide written comments (responses to the consultation) on the proposal. The consultation portal provides the public with a single digital entry point for legislative proposals, draft orders, etc., as well as consultation responses, in order to increase the transparency of thelegislative cycle. Legislation linked to the existing policies and measures included in the NECP has therefore been subject to proper consultation beforethe legislative proposals have been tabled in the Danish Parliament and finally adopted.

Consultation of EU specialised committees on climate, energy and supply

In addition, the government has set up 30 specialised committees dealing with EU files in different policy areas, including a committee dedicated to climate, energy and supply. Each Specialised Committee has attached an inter-governmental specialised committee composed of relevant external stakeholders. The Committee shall be consulted when EU proposals are made. Both draft NECP and finally NECP have been consulted by the Specialised Committee on Climate, Energy and Supply. In addition to submitting legislative and EU proposals for consultation, Denmark's climate and energy policy is being developed in dialogue with relevant stakeholders. Below, the Government's Climate Partnerships and the Green Business Forum are elaborated.

Climate Partnerships and Green Business Forum

The Government of Social Democracy, Venstre and Moderates decided in spring 2023 to continue working with business in the form of Climate Partnerships and Green Business Forum. By doing so, the business community and the Danish government work together on how they can contribute to tackling climate challenges in a way that simultaneously supports Danish competitiveness, exports, jobs, welfare and prosperity.

The objective of the Climate Partnerships is to contribute to (1) supporting the implementation of the government's green ambitions, (2) achieving the current and upcoming CO_2reductiontargets, (3) helping to keep Denmark's green transition fast, and (4) maintaining Denmark's global green leadership. The work on the above is regularly followed by the Green Business Forum.

Each partnership has appointed a chairperson who is a member of the Green Business Forum. The Green Business Forum shall be chaired by the Minister for Business, the Minister for Climate, Energy and Supply and the Minister for the Economy. The Chair of each ClimatePartnership, assisted by relevant business organisations, is responsible for preparing the business vision and reduction-ambitions.

The organisation of the Green Business Forum is shown in Figure 2. The Forum meets biannually to strengthen the dialogue between government, business and trade union movement on opportunities and barriers in the green transition of business. The Forum discusses concrete pathways to achieve greenhouse gas reductions through business and policy actions by regerin genders, as well as discussing business opportunities for Danish companies in the green transition.

Figure 2

Organisation of the Green Business Forum

The 14 Climate Partnerships consist of:

- Energy and utilities sector
- Waste, water and circular economy
- Energy-intensive industry
- Production companies

- Life science, biotek
- Food and agriculture sector
- Land transport
- Aviation
- What Blue Denmark
- Construction sector
- Trade
- Service, IT and advisory services
- Financial sector
- Defence

(iv) Consultations with other Member States

Cooperation, coordination and dialogue have taken place with neighbouring countries through ad hoc networking groups where experience and knowledge sharing has taken place. In addition, the draft update of the report has been subject to regional consultation with Denmark's neighbouring countries, which have been part of these network groups. It includes Germany, Norway, Sweden, Finland and Iceland. Denmark did not receive any comments on the draft in the regional consultation. Towards the final update of the NECP, Denmark has held meetings with Germany, Sweden and Finland for the exchange of experience and knowledge sharing, with a particular focus onthe Commission's recommendations.

(v) Iterative process with the Commission

The dialogue with the European Commission took place through working groups under the auspices of the Energy Union Committee and the Ad-hoc Wor- king Group 2 of Climate Change Committee. In addition, Denmark has held bilateral dialogue with the European Commission on its way. In addition, Denmark received the Commission's recommendations to the Danish NECP in December 2023, onwhich the final update of the NECP was based.

1.4 regional cooperation in the preparation of the plan

(i) Elements subject to joint or coordinated planning with other Member States

North Sea Energy Cooperation – Regional Cooperation on Offshore Renewable Energy

Denmark is part of the wider North Sea region, which has a high potential for renewable energy. The rollout of offshore windenergy will play an increasingly important role in achieving Europe's energy and climate goals. The EU offshore strategy has set the ambitious target of 300 GW of offshore wind and 40 GW of offshore installed capacity by 2050. On 19 January 2023, the North Sea Cooperation (NSEC) facilitated the development of the non-binding agreement on offshore renewable energy generation targets in 2050, with intermediate steps in 2040 and 2030 for the priority offshore grid corridor Nordsø offshore grid under the TEN-E Regulation. The NSOG priority offshore grid corridor targets are 60.3 GW in 2030, between 134,9 and 158 GW in 2040 and between 171,6 and 218 GW in 2050. This means a significant change in the size of the offshore sector, the deployment ofrenewable energy and strategically integrated offshore development. High energy prices, for example in 2022, and geopolitical events threatening the European energy system have highlighted the need to accelerate the deployment of domestic renewable energy generation capacity and transmission networks at regional level as soon as possible, thereby significantly improvingenergy efficiency.

Denmark is working with the other NSEC countries to identify, analyse and realise opportunities for concrete workprojects. The NSEC is a voluntary, bottom-up, market-oriented regional cooperation initiative, established in 2016, which aims to:

- Create synergies
- Avoid incompatibilities between national policies;
- Exchange knowledge of international best practices;
- Promote common approaches where possible and beneficial.

Energy ministers meet regularly in the NSEC. In 2023, the NSEC is composed of Belgium, Denmark, France, Germany, Ireland, Luxem Bourg,the Netherlands, Norway and Sweden, with the participation of the European Commission. On 18 December 2022, NSEC Energy Ministers and the European Commissioner for Energy signed a Memorandum of Understanding on offshore renewable energy cooperation with the United Kingdom (UK). The establishment of this Memorandum of Understanding was set out in the Trade and Cooperation Agreementbetween the European Union and the United Kingdom of 30 December 2020, which builds on the NSEC and is a separate complement to the NSEC framework.

For the offshore wind sector, it is essential to offer a predictable and stable long-term operating environment to facilitate long-term investments and further cost reductions. To this end, existing barriers need to be removed and attractive investment conditions should be created. The NSEC members are working together to make an important contribution to achieving these objectives, facilitating a regular exchange of expertise focusing on several topics within the four NSEC Support Groups:

- SG1: development of hybrid and joint projects
- SG2: permits, maritime planning and environmental considerations
- SG3: financing and support frameworks
- SG4: long-term planning of networks and infrastructure.

In order for each support group to fulfil its objective, exchanges between and within the support groups at NSEC coordinators' level are encouraged and monitored. Examples include ports with SG1 and SG4, maritime spatial planning and network planning with SG2 and SG4, and how criteria other than price criteria can enhance innovation in key challenges for an accelerated, cost-effective and responsible deployment of marine wind with SG1, SG3 and SG4. Finally, the Support Groups also work closely with other international fora, such as the Pentalateral Energy Forum and the Clean Industrial Forum in terms of onshore grid planning, market events and stakeholder engagement.

Development of hybrid and joint projects

NSEC's SG1 serves as a platform to cooperate on concepts for potential offshore wind projects and coordinated electricity infrastructure, including transmission infrastructure. The group has increased its activity as NSEC countries have launched more joint and hybrid projects in the North Sea to facilitate technical and ministerial discussions and exchange of best practices as projects progress.

In addition to joint offshore wind projects, which will be connected and supported by several countries, the Support Group is also working on possible 'hybrid' solutions that use cross-border options to connect offshore wind farms with more than one electricity market andcreate synergies between countries, as well as the corresponding EU and national market organisations.

Therefore, SG1 members develop opportunities for cooperation on hybrid projects, as well as on possible legal,regulatory and commercial barriers. SG1 will continue to work on obstacles and steps for hybrid and joint projects that can be tackled at national and regional level. In addition, cooperation will continue to serve as a forum to reflect on how to work on issues with legislative processes at EU and national level.

Permits, maritime spatial planning and environmental considerations

In order to achieve our energy and climate goals in the EU, there is a need to speed up planning and permitting procedures at EU and national level, while better understanding the possible ecological limits for large-scale wind development in the North Seaand the impact of other sea users. SG2 compiled an inventory of the geographical tensions associated with the development ofoffshore wind farms up to 2030 at regional level. The next steps are set to better define the environmental spindlesand potential threats to development and define spatial strategies to avoid or mitigate such threats. To increase knowledge and support the deployment of marine wind in the North Sea, North Sea countries will continue to cooperate closely on maritime spatial planning, environmental research, cumulative impact assessments of wind farms between responsible authorities for energy, maritime spatial planning and the environment.

Financing and support frameworks

Offshore procurement is a key issue for funding and support frameworks. NSEC members coordinate offshore procurement by exchanging information on the national procurement plans as part of SG3. Within the working group, countries also exchangebest

practices on procurement design, support without support, design elements to promote system and sector integration, and grid connection schemes. In order to achieve the ambitious goals, joint projects are also becoming increasingly important.

Therefore, the Group also addresses funding opportunities for joint cross-border offshore projects, including through Union funding instruments such as the Connecting Europe Facility and the Union Renewable Energy Financing Mechanism. Finally, Power Purchase Agreements (PPAs) play an increasingly important role in the financing of offshore projects. Countries will address issues, barriers and solutions for the wider use of PPAs. In addition, the group on decommissioning, lifetime extension and repowering of wind farms is exchanged. The aim of the exchanges is also todevelop and discuss ideas for the medium-term future of the offshore energy system in terms of installed capacity, for example through the coordinated procurement plans.

Implementation of 2050: Long-term network and infrastructure planning

NSEC SG4 works with ENTSO-E to provide and coordinate input to the North Sea Offshore Network Development Plan in linewith the EU TEN-E Regulation. SG4 also aims to expand discussions on long-term grid planning to also embrace theearly development and upscaling of green offshore hydrogen production and transport, as well as its potential role in an increasingly interconnected North Sea energy system. Green hydrogen can be important for the decarbonisation of our energy system. Power-to-X, and hydrogen in particular, can play a key role in providing flexibility. Demand for hydrogen is expected to increase, especially after 2030, due to both its potential as an energy carrier for storage and as a fuel and feedstockfor assets that are difficult to electrify. Several NSEC countries have announced targets for onshore and offshore green hydrogen production targets. In SG4, NSEC countries will share the first experiences of hydrogen in the context of offshore wind and share knowledge on transport fromstructure, renewable energy sources development and offshore Power-to-x production. They will work together to provide insights into off-shore hydrogen production, discuss the roll-out of electrolysis and increase synergies between the long-term offshore grid and hydrogen network-planning. In all aspects of infrastructure planning in the medium and long term, SG4 underlines the importance of a broad engagement in this planning process with Member States and relevant stakeholders, including industry and NGOs, to anticipate and tackle supply chain deflasance (e.g. port development and availability) in the roll-out and acceleration of thedelivery of our energy system in the North Sea. This is closely linked to the importance of protecting sicsin critical offshore and underwater infrastructure and the supply of critical raw materials throughinnovation and increased circularity.

Regional cooperation

In preparation of this plan, Denmark has used the NSEC, where experts in the support groups share information and experience on specific aspects, for example in terms of challenges and *best practice* in relation to the development of marine wind at national nine levels, in particular in relation to the aggregation of national RES projections for marine wind up to 2030, as well as market integration.

The support groups below focus on the following topics:

Support Group 1: Hybrid and Joint Projects Support Group 2: Maritime planning

Support Group 3: Framework conditions for support and funding Support Group 4: Achievement of the 2050 target

Hybrid and joint projects

The NSEC serves as a platform to cooperate on concepts for potential joint projects on marine wind and coordinated electricity infrastructure, including transmission infrastructure.

Denmark is working with other NSEC countries on the possibilities for concrete cooperation projects. In addition tojoint checks on marine wind, which need to be connected to and supported by several Member States, this includes working on possible "Hy-Bride" solutions that use cross-border solutions to connect offshore wind parks to the electricity grid and get synergies with inter-country-linkages as well as the corresponding market conditions.

Denmark therefore contributes to the development of opportunities for cooperation in hybrid projects, as well as cooperation on possible legal, regulatory and commercial barriers. By coordinating better interconnection between NSEC countries, an increased amount of excess energy production can flow across borders to meet demand in a well-functioning internal energy market.

The NSEC will continue to work on action plans for the specific hybrid projects, which can also be taken forward at national and regional level. In addition, cooperation will continue to serve as a forum to reflect on how to deal withuncertainties about legislative processes at EU and national level, as well as a forum to discuss options to address these issues.

Maritime planning

In the North Sea Cooperation (NSEC), Denmark contributes to the work to establish a common methodology for environmental assessments. In order to achieve our energy and climate goals in the EU, there is a need to better understand the possible environmental limits for large-scale wind expansion in the North Sea. Further work on marine planning and environmental assessment is needed in order to exploit the Potenti Alet inthe North Sea. To build more knowledge and support the development of offshore wind in the North Sea, North Sea countries will continue to cooperate closely on ocean planning, environmental research, and cumulative impact assessment of wind farms betweenthe Responsible Energy, Marine Planning and Environment Authorities. It should be noted that a political agreement has been reached on 7 June 2023 with all parties to the Danish Parliament to update Denmark's marine plan.

Framework conditions for aid and funding

In terms of action, Denmark benefits from the NSEC in several ways. The work of the NSEC provides a platform for the exchange of best practice on support schemes as well as development and work on new concepts that address new challenges in terms of supporting offshore wind as well as developing opportunities for future joint offshore wind projects.

Denmark cooperates in the NSEC to coordinate procurement timing, exchange of *best practice* for the design of support schemes for marine wind and identification of common principles, where possible, and possibilities for balancing support.

As regards the coordination of tenders, Denmark frequently shares information on its national procurement timetable with other NSEC countries in order to identify possible overlaps and ensure a continuous rhythm of stakeholder involvement, without projects to be stopped and started at all times.

Denmark shares and discusses the estimated projection of national ocean energy in the NSEC, as well as information on national-offshore energy plans and *best practice* in the design of tenders.

Furthermore, Denmark is also contributing to the analysis and development of opportunities for further mobilisation of inmost pocket capitalfor joint projects, for example through EU funds such as the European Fund for Strategic Investments (EFSI) and Connec- ting Europe Facility (CEF), as well as institutional investors. Such future joint projects may be cross-border renewable energy projects in line with the CEF proposal.

Achievement of the 2050 target

In the Fourth Support Group, Denmark has focused on three main topics: The development of the 2050 targets and the exchange of knowledge and experience on hydrogen in relation to marine wind. An important task has included defining and aggregating the 2030, 2040 and 2050 targets in the North Sea for the nine Member States. In addition, there is also cooperation with the Pentalateral Energy Forum on 2050 ambitions. In addition, an analysis on marine wind and grid planning has also been prepared with recommendations for the North Sea region up to 2050 and published in February 2022.

In addition, in this group, Denmark has also cooperated with ENTSO-E in the context of the revised TEN-E Regulation, which entered into force in June 2022. The North Sea countries, with the support of the European Commission, should define and agree on a non-binding commitment by 2040 for the sea basin with milestones in 2030 and 2040. Finally, there is also an increased focus on green hydrogen and building on the principles of the 2022 Esbjerger Declaration, as well as increased involvement of citizens and stakeholders.

Baltic Sea Cooperation on Regional Market Integration – BEMIP

The Baltic Energy Market Interconnection Plan (BEMIP) consists of a high political and technical level, which includes groups of workerssuch as infrastructure, the internal energy market, security of supply, renewable energy, energy efficiency, etc.

There is also a focus on integrating the Baltic countries' electricity networks with continental Europe. At political level, the focus is on putting the political and strategic direction as well as low political agreements for areas that cannot be solved at the operational or technical level. The work of BEMIP was also highlighted when Denmark organised the Baltic Sea Summit in Marien- borg on 30 August 2022.

Nordic Council of Ministers

Denmark is a member of the Nordic Council of Ministers, which is the official institution for state cooperation in the Nordic region. This

cooperation covers both climate and energy, with separate ministerial meetings, committees and technical working groups.

The Nordic Council of Ministers' vision is to become the world's most sustainable and integrated region by 2030, with a focus on the green transition of the Nordic to support the ambitious climate goals of the Nordic countries. This has led to a larger share of the budget under Nordic cooperation being allocated to the climate and energy sectors. The vision will be translatedinto one-year cooperation programmes to ensure even closer cooperation on both climate and energy in the coming years. The Nordic countries are working in 2024 to define the future cooperation programmes for 2026-2030.

Denmark continues to focus on projects in the field of energy and climate in Nordic cooperation, in particular in transport and maritime transport, international climate change, the Nordic electricity market and PtX. Since 2021, there has also been a stronger focus on the expansion of renewable energy and security of supply in the context of the energy crisis in Europe.

Nordic climate cooperation

Climate cooperation in the Nordic Council of Ministers is in line with its overall version and takes place primarily in the common environment and climate sector. In 2019, Nordic ministers of state signed a declaration that the Nordic country will work for CO_2neutrality both nationalt and internationally. As a follow-up, the Nordic Council of Ministers has created, inter alia through the project Climate Change in the Nordics, a forum for exchange of experience and knowledge sharing on the green transition in the Nordic region. The Nordic countries are also cooperating on sustainable solutions in areas such as transport, construction, food and energy. For example, Nordic TransportMinisters adopted in November 2022 a declaration to strengthen cooperation on green transport, where countries will, inter alia, work together to pave the way for green aviation in the Nordic region by 2030, strengthen road transport infrastructure across rural areas andcontinue cooperation on zero-emission ferry transport in the Nordic region. In the context of the UNFCCC Global Stocktake at COP28, the Nordic Council of Ministers has funded a "Nordic Stocktake" report as a regional tool in the international process, inter alia to accelerate climate change work in the Nordic region. The report was followed by a Nordic Joint Statement on Cooperative Priorities at COP28 and the report's recommendations are considered in the work on the future cooperationprogramme.

Nordic energy cooperation

Nordic energy cooperation focuses on the Nordic electricity market, renewable energy, energy efficiency and many other energy-related issues. The Nordic countries aim to have the most competitive, innovative and consumingoriented electricity market by 2030, helping to achieve the ambitious Nordic climate targets.

The Nordic Energy Cooperation Working Groups cover a wide range of projects in the field of energy. More recently, there has been an increased focus on cooperation on hydrogen, which has become part of a new working group with a broad focuson energy and hydrogen.

In addition, the Nordic Council of Ministers also cooperates closely with the Baltic States. The Baltic States are involved in a wide range of projects and initiatives in the Nordic countries, including an ad hoc working group on CCS and CCUS. The Nordic and Balti-countries also organise joint meetings focusing on shared interests and challenges in the energy sector.

Nordic cooperation on energy research

Nordic Energy Research is an institution of the Nordic Council of Ministers, which acts as a platform for energy research and politics-development. Nordic energy research has a close dialogue with the Nordic countries' National Research Council to developthe reorientation of Nordic energy research. The close cooperation between Nordic countries is therefore also an integral part of Nordic energy research.

North Sea Basin Task Force

The North Sea Basin Task Force (NSBTF) is composed of countries around the North Sea, which aims to develop common principles for the transport, injection and permanent storage of CO_2. As of March 2023, the NSBTF includes the members Denmark, Flanders, France, the Netherlands, Norway, the United Kingdom and Germany. All NSBTF members have the ambition of Carbon Cap- ture and Storage (CCS) in their countries and recognise the role of CCS in curbing CO_2emissions, regardless of thedifferent national policies on CCS.

(ii) Explanation of how regional cooperation is considered in the plan

As previously mentioned, Denmark benefits from regional cooperation in several ways. NSEC is an important forum forsamar on

marine wind, while Nordic cooperation is much broader.

2. National objectives and targets

2.1 Dimension related to decarbonisation

2.1.1 Greenhouse gas emissions and removals

(1) The elements set out in Article 4(a) (1);

In December 2020, the European Council agreed on a more ambitious EU target to reduce greenhouse gas emissionsby at least 55 % by 2030 compared to 1990. Under the Paris Agreement, this agreement was presented as the EU's updated Nationally Determined Contribution (NDC). As a follow-up, the Council adopted in June 2021 the European Climate Law, which commits member states to achieve the 2030 and 2050 climate targets.

In July 2021, the European Commission made subsequent proposals for the revision of all relevant EU legislation, including a proposal for the revision of the ESR with updated individual targets for EU Member States, as elaborated below. In line with the NECP reporting requirements, this section provides information on the nationally binding reduction commitmentsestablished pursuant to EU legislation.

Article 4(a) (1) [i]: Denmark's binding national targets for greenhouse gas emissions and annual binding national limitvalues pursuant to Regulation (EU) 2018/842

In the revised ESR, which entered into force in May 2023, Denmark is obliged to reduce greenhouse gases outside the allowance by 50% in the period 2021-2 030 in 2030. 2005.

Under the Effort Sharing Regulation, flexibility mechanisms that ensure cost-effective reductions include the possibility to borrow, save and transfer annual emission allowances between years and between Member States (see Article 5), the cancellation of EU ETS allowances instead of reductions under the EU ETS instead of under the ESR (see Article 6) and the use of credits from LULUCF (see Article 7). Further information on the obligations under the ESR Regulation isprovided below.

With regard to GHG emissions and removals, as well as the contribution to the achievement of the EU economy-wide greenhouse gas emissions target for 2030, Denmark's binding national greenhouse gas emissions targets and annual binding national limits under the Effort Sharing Regulation (ESR) are the following:

- **2021-2029:** Reducing Denmark's annual out-of-quota greenhouse gas emissions so that the established annual cap 2021-2029 complied with1.

For 2021 and 2022, there is no change in the ceilings established in 2020 under the ESR before the 'Fit for 55' amendment to the ESR. For 2023-2025, the ceilings in 2023 were set on the linear reduction line between the ceiling for 2022 and the end discharge ceiling for 2030. For 2026-2029:

- **2030:** Reducing Denmark's out-of-quota greenhouse gas emissions by at least 50 % in 2030. Denmark's emissions is out of quota in 2005 determined in accordance with Section 3 of the Effort Sharing Regulation (ESR).

Table 2

Reply to Commission Recommendation No 1 on draft NECP

Commission recommendation	Reply
1. Set out Cost-efficient additional policies and measures, recent in the transport and agricultural sectors, to bridge the projected gap of 10.5 percentage points to meet the national greenhouse gas target of -50 % in 2030 combined to 2005 levels under the ESR. Provide updated projections to show how the existing and planned policies will perform on the target and, if necessary, specify how flexibility available under the ESR will be used to ensure compliance. Complete the information on the policies and measures, clear spelling out their scope, Timeline and, where possible, expected greenhouse gas reduction impact, including for measures in Union funding programmes, such as the common agricultural pol- icy.	The present final update of Denmark's NECP also includes updated projections of Denmark's greenhouse gas emissions, including updated projectionsof greenhouse gas emissions under theburden-sharing agreement for 2030. As can be seen from the updated projections with effects of policies and instruments adopted up to 1 and 2024, Denmark's accumulated shortfall in-burden sharing agreement 2021-2030 is estimated to amount to around 1.9 million tonnes of CO_2e. Taking into account the partial estimated reduction effect ofthe diesel and road tax in the *Agreement on the partial implementation of the Green Fund*, the shortfall for the period 2021-2030 is estimated at around 0.1 million tonnes of CO_{2e}. The remaining shortfall is expected to be closed withadditional policies and instruments. In this respect, the Government, based on the Government *Responsibility for Denmark*, has undertaken to present a proposal for a climate tax on agriculture. For thisreason, the government has set up a green tripartite. A Green Tripartite has presented an agreement on 24 June 2024, whichthe government will then bear into the Danish Parliament in autumn 2024. The agreement achieves the 70 % target in 2030, as well as Denmark's obligationsunder the EU burden sharing agreement and LULUCF regulation. To this end, the agreement implements the EU Water Framework Directive. The Green Tripartite Agreement is estimated to reduce agriculture's non-energy greenhouse gas emissions by 1,8-2.6 million tonnes of CO_2e-reductions in 2030, rising to 3,3-3.6 million tonnes of CO_2e-reductions in 2035. If the planned reductionsare not realised, the Parties agree that-equivalent CO_2e-reductions up to 2.2 million tonnes by 2030 will be achieved by other measures in the field of agriculture. A number of potential additional instruments have been analysed in terms of effects and costs. The results of these analyses are described in more detail in the Climate Programme 2023.Finally, it should be pointed out that,at this stage, no final decision has been taken on all concrete instruments to achieve the Danish reduction targets by 2030, but, in accordance with the Danish Climate Law, the Government has set out the way to achieve the Climate Law's national targets for 2 030 in the Climate Programme 2023. The extent to which the annual fractions ceilings underESR 2021-2025 and 2026-2030 will be respected;

thelimits in 2025 on the linear reduction line between the average level of 2021-2023 (from a point in time 9/12-dele in 2023) and the end emission cap for 2030. The zero emission ceiling for 2030 is determined by calculating 50 % reduction from out-of-quota emissions in 2005, the latter being the 2005 emissions determined by the 2020 decision.

the need to use the flexibilities available under the ESR in the form of LULUCF credits, ETS allowances zeros or purchases of allocated emission rights from other countries will only be possible to take a finalapproach once the final annual greenhouse gas inventories for 2021-2025 and 2026-2 030 are available in 2027 and 2032 respectively.

Article 4(a) (1) [ii]: Denmark's commitments and national targets for net greenhouse gas removals pursuant to Article 4(1) and (2) of Regulation (EU) 2018/841

In May 2023, a revised regulation of emissions by sources and CO_2removals by sinks in the land sector – LULUCF Regulation – (LULUCF: Land use, Land-Use Change and Forestry) in force. Credits obtained under this Regulation can be broken toreach the target outside the Allowance Regulation (ESR) in accordance with the ESR rules up to a certain limit. The limit for Denmark is 14.6 million CO_2e credits from LULUCF in the period 2021-2030 divided into two separate envelopes of 7.3 million CO_2e credits from LULUCF in each of the periods 2021-2025 and 2026-2030. Further information on the obligations under the LUCF Regulation is included below.

With regard to greenhouse gas emissions and removals, and with a view to contributing to the achievement of the EU's economy-wide domesticemissions reduction target for 2030, Denmark's obligations under the LULUCF Regulation are the following:

- **2021-2030:** Accounting for emissions and removals from land use, land use change; cultivation and forestry ('LULUCF') in the periods from 2021 to 2025 and from 2026 to 2030, which occur in the following economic accounting categories on the territory of Denmark in the EU:
  - afforested land;
  - areas under deforestation;
  - arable land under crop cultivation;
  - agricultural land with grass; and
  - managed forest land; and
  - harvested wood products; and
  - from 2026, also managed wetlands, settlements and other land.

- **2021-2025:** To ensure that Denmark's LULUCF emissions do not exceed LULUCF removals calculated in accordance with accounting rules; when the sum of total emissions and removals on the EU territory of Denmark in the above-mentioned land accounting categories is sownaccording to the rules of the LULUCF Regulation.

- **2026-2029:** To ensure that Denmark's net LULUCF emissions do not exceed a budgetary target for the period 2026-2029 that is fixed; to be set by the Commission in 2025 on the basis of the latest emission inventory.

- **2030:** To ensure that Denmark's net LULUCF emissions are reduced by 0.4 million tonnesofCO 2e in 2030 compared to gene; average net emissions for 2016, 2017 and 2018.

Table 3

Reply to Commission Recommendation No 3 on draft NECP

Commission recommendation	Reply
3. Set out a concrete pathway towards restoring the national LULUCF target as defined in Regulation (EU) 2018/841. Include additional measures in the LULUCF sector, Quantifying their expected impacts to ensure that	The present final update of Denmark's NECP also includes updated projections for Denmark

greenhouse gas movements in this sector shall be effectively aligned with the 2030 EU net removal target of – 310MtCO 2eq and with the Country-specific removal target of – 441 ktCO2eq defined in Regulation (EU) 2018/841.

Provide additional details about the planned measures, including Quantifying their expected impact in terms of removals or emissions from the LULUCF sector.

Provide clear information on how public funds (both Union funds, including the common agricultural policy, and State aid) and private financing through carbon farming schemes are consistent and effective used to achieve the net mobility national target.

Provide information on the status and the progress to be made in establishing the consequences to higher tier levels/geographically explicit data sets for monitoring, reporting and verification, in line with Part 3 of Annex V to Regulation (EU) 2018/1999.

greenhouse gas emissions, including updatedprojections of greenhouse gas emissions and removals to 2 030 in relation to the LULUCF Regulation.

In the latest climate depreciation, Denmark is estimated to overmeet the budgetary target in 2021-2025 by 30.6 Mt CO2e, while the gap for the budgetary target in the period 20262029 is estimated to be 3.8 Mt CO2e. Final estimates arethe point target of an increase in net removals in 2030,filled by approximately 0.2 million tonnes of CO_{2e}.

The remaining shortfall in 2026-2029 is expected to be closed with the adoption of additional policies and instruments. Here, the government base and discussions in the Green Tripartite on measures to reduce emissions without theburden sharing agreement can also be mentioned. The Green Tre-Party submitted an agreement on 24 June 2024, whichthe ring will subsequently feed into the Danish Parliament in autumn 2024.

The agreement achieves the 70 % target in 2030, as well as Denmark's obligationsunder the EU burden sharing agreement and LULUCF regulation. To this end, the agreement implements the EU Water Framework Directive. The Green Tripartite Agreement is estimated to reduce agriculture's non-energy greenhouse gas emissions by 1,8-2.6 million tonnes of CO_2e-reductions in 2030, rising to 3,3-3.6 million tonnes of CO_2e-reductions in 2035. If the planned reductionsare not realised, the Parties agree thatequivalent CO_2e-reductions up to 2.2 million tonnes by 2030 will be achieved by other measures in the field of agriculture.

The government expenditure spent on supporting measures with goodfate in LULUCF is shown in the annual staterains.

Since 2008, Denmark has been a frontrunner in providing LULUCF data, both under the Kyoto Protocol and in the EU context, where the highest possible level of methodology ("tier") has been applied to the available and complementarydata provided for the Danish greenhouse gasinventories. The new requirements for even very small sources in LULUCF for even very small sources are a beautiful andcostly challenge on the data side. The more precise scope of new data requirementsand the costs of obtaining these data are currently being mapped. This mapping exercise is not expected tobe completed before the NECP deadline (30 June 2024).

(II) Where applicable, other national objectives and targets consistent with the Paris Agreement and the existing long-term strategies. Where relevant for the contribution to the Union's overall greenhouse gas emission reduction commitments, other objectives and targets, including sector targets and to care targets;

The EU has committed to reducing its ETS emissions by 62 % in 2030 from 2 005 in order to achieve the overall reduction in drifting domestic gasemissions of 55 % below 1990 levels by 2030.

In June 2018, all parties tothe Danish Parliament agreed on a Danish energy agreement, and in this context they agreed to setaside funding, which indicates the way to reach a share of RES of around 55 % in 2030. At the same time, with the agreement, Denmark achieves a shareof renewable energy in electricity combustion of more than 100 % and that at least 90 % of district heating is based on forms of energy other than coal, oil and gas in 2030.

The Parties agree to keep track of developments throughout the duration of the Agreement. The parties also agreed to phase out coal in Danish electricity production by 2030, and to carry out an analysis of how and how quickly it could be safely phased out.

Consistency with Denmark's long-term low carbon strategy is ensured, as Denmark's targets under the ESR and LULUCF Regulations are to be seen as a step in 2021-2030 towards the objective of working towards net zero emissions inline with the Paris Agreement and towards a net zero emissions target in the EU and Denmark by 2050.

As Box 1 shows, the government has brought forward the climate-neutrality objective to 2045 and set a new targetof 110 % reduction in 2050. 1990.

An agreement on a Climate Law was reached in December 2019. The agreement contains the following key elements:

- The Climate Law is legally binding
- A target to reduce greenhouse gas emissions by 70 per cent by 2030 compared to 1990 levels;
- Obligation to reach net zero emissions by 2050
- An obligation to set milestone targets every five years with a 10-year perspective;
- Setting an indicative milestone target for 2025
- The Milepole Targets are implemented in Danish legislation
- Emissions have been calculated in accordance with the UN greenhouse gas inventory rules;
- The government will develop annual climate programmes that will outline concrete policies to reduce emissions
- Strengthening the Klimar Council with tasks such as:
  - Provision of technical assessments of the adequacy of the initiatives of the Government's climate change programme to reduce emissions
  - Recommendations for climate action
  - Doubling the Council's annual budget
  - Additional experts to be added to the Board
  - Strengthening the political independence of the Council as it can now elect its own president and members;
- A Climate Dialogue Forum. Council with representatives of business organisations, think tanks, green organisations, workers' organisations and ministries
- Separate report on Denmark's impact on international emissions, including those related to international shipping and aviation. Furthermore, reductions from electricity produced from renewable sources and the effects of Denmark's bilateral energy-cooperation can be included in the separate report. Finally, the separate report will highlight the effects of consumption.
- Formulate an annual global climate strategy to ensure that Denmark continues its ambitious work on the global stage.
- A citizens' engagement initiative for the forthcoming government climate action plan in 2020. The Climate Law was adopted by theDanish Parliament in June 2020.

The objective of the Climate Law for 2030 is to reduce greenhouse gases by 70 % per cent. The 1990 level and the long-term objective for Denmark is to achieve net zero emissions by 2050. In May 2021, a majority of the parties to the Danish Parliament agreed on an indicative target for 2025 of 50-54 % reduction in terms of volume. The 1990 level, which was written into the Klimal Act in December 2021.

Further steps have been taken to ensure that climate, environment and nature are taken into account across all relevant policeadvice. A permanent Green Government Committee has been set up to ensure that climate, environmental and negative impacts are taken into accountin government proposals and draft laws.

The December 2022 government base includes a number of climate and energy-relevant objectives, which are set out in Box 1.

Box 1

Government Basis: Selected sections from Chapter 4 on ambitious climate action

The Government will take the necessary decisions to bring Denmark fully into line with the reduction target for 2025 and 2030. The 70 % target is to be achieved, inter alia, by achieving the reductiontargets of the agriculture and forestry sectors in line with those agreed in the 2021 Agriculture Agreement.

It is crucial for the government to keep pace and ensure a thorough implementation of the many politically agreed measures, so that we are fully targeted. As the targets are met, the government is ready to set new, ambitious targets.

It is imperative for both Denmark and Europe to move away quickly from fossil fuels for safety reasons – also for reasons of electricity and heating in Danish households. The government's aim is to ensure that as many households as possible come away from individual gas and oil boilers as soon as possible, which will help to reduce Danish energy costs in the coming winters.

To support implementation at all stages, the government will therefore reduce a national energy crisis unit, following the same model as the National Operational Staff (NOST). NEKST shall, with the involvement of relevant societal actors, inter alia:

- *Ensure national coordination of the roll-out of district heating and other actions aimed at HUR toreduce the consumption of natural gas and replace it with renewable energy.*
- *Identify barriers to the agreed ambitions for the scaling of sunshine and wind on land, as well as sea wind, and apprehend the disastrous government possible measures to accelerate expansion.*
- *Support the development of the electricity grid where capacity challenges already exist today and contribute to the development of electricity at the forefront of electricity consumption and the production of electricity from renewable energy.*

Section 4.1 Target with the 70 % objective

Denmark must be a green frontrunner that sets and achieves ambitious climate goals and actions, thus inspiring other countries to follow.

It is the link between action on the green transition and continued economic growth that will make other countries look at Denmark. We must show the world that it is possible to balance high climate ambition,competitive business and social cohesion.

The Government will:

- *Meet the reduction target for 2025 – and meet the reduction target for 2030.*
- *Ensure that the greenhouse gas reductions agreed politically are realised in practice.*
- *If the assumptions change, so that climate depreciation in 2025 or later shows that the 70 % target is not achieved by agreed concrete means, propose additional concrete instruments to ensure that we achieve targets.*
- *Work for ambitious and cost-effective climate and energy regulation in the EU to help achieve the 70% target while at the same time making Europe independent from Russian fossil energy.*

Section 4.2 New climate targets

With our businesses, technologies and knowledge, Denmark has an opportunity and a commitment to promote the uptake of green solutions in the EU and globally. The government will work towards an ambitious 2040 climate target in the EU and continue to engage in green strategic partnerships with other countries. The Government intendsto put administrative cooperation with countries around the world on spreading Danish experience ofdecades of green transition.

As we reach the 70 % target, it is natural to set new targets that can continuously ensure a high pace while increasing the focus on

the implementation of initiatives already decided.

The government will bring the target of climate neutrality forward to 2045. And set a new target of 110 % reduction in 2050. 1990. The government will propose an ambitious reduction target for 2035 and assess whether to further revise the reduction targetin 2030.

The Government wishes to raise the ambition for Denmark's footprint in the world by setting a target for the Danish climate impact, understood as the international climate impact resulting from Danish exports of energy technology and services. In cooperation with the Danish business community, a solid professional foundation must be put in place, so that it needs to beeasily addressed at political level.

The government will reduce the climate pressure on public procurement, including the purchase of transport and therepair of public buildings. The Government will examine the consequences of setting a target for CO_2e-footprint on Danish consumption.

Section 4.3 Vision for the future of Danish food production

Denmark is one of the most intensively cultivated countries in the world. We produce enough food to feed more than twice as many people than we are. This is good for the world and it helps to generaterevenues and jobs for exports.

We must produce high-quality food products in an innovative, sustainable and more climate-friendly way. Danish agriculture is already strong when it comes to green innovation. It is the Government's ambition to continue developing – not phasing out – Danish food production.

In the coming years, agriculture and the food sector are facing an ambitious transition in many areas. Emissions must be drastically reduced, we need to better protect drinking water, have more nature and forests, and strengthen ecology and plant-based production. The government notes that the profession itself has highambitio for the green transition.

The Government will present a proposal for a climate tax on agriculture once the Green Tax Expert Group haspresented their conclusions. The climate tax shall ensure the implementation of the development track andthe implementation of the binding reduction target for the agriculture and forestry sectors of 55 % to 65 % in 2030. 1990. Regeringene will ask the Expert Committee to present different scenarios to achieve this objective, in line with therecommendations the Committee presented in the context of the CO_2e-tax on industry, including consideration of discouraging the relocation of production, taking into account international experience and the possibility of adding CO_2e-tax to final consumption as a possible instrument.

The tax must be designed in a way that supports the industry so that the competitiveness of the industryis not impaired and thus no jobs are moved out of the country as a whole. Implementation is thus in line with what a broad majority in the Danish Parliament was behind with the 2020 Climate Law: "The achievement of Denmark'scli matargets must be achieved as cost-effectively as possible, taking into account both the long-term green transition, sustainable business development and Danish competitiveness, sound public finances and reduction, and that Danish business needs to be developed and not wound up."

These reductions need to be realised with a focus on moving from development to implementation of the development tracks launched by the Agriculture Agreement. This identified a total potential for reductions of 5 million tonnes of CO_2e in 2030 from brown biorefining, manure and manure management, feed additives, doubling the organic area and further set-aside of lowland. This potential is at the top of the already reportedreductions of around 1.9 million tonnes of CO_2e, for which the instruments have already been decided by the 2021 agreement. Thefocus will be on implementing these instruments as soon as possible.

Therefore, investments must be made in the green transition, food production and its competitive environment. Danish food production must be an example of compliance with other countries' agricultural transition, and itmust be ensured that production is not simply moved out of the country. Therefore, the revenue from the levy has to be channelled directly back to agriculture in order to support the transition of the industry. In addition, the government wants to use part of the Green Fund for additional investments in technology for the green transition of agriculture.

If we are to succeed in transforming and developing Danish agriculture, we need to see all the efforts and thechallenges in a context.

The Government will therefore set up a partnership with agriculture, the food sector,nature organisations, burners' organisations and municipalities to propose a comprehensive vision plan for Danish agriculture.

The partnership will make its recommendations by the end of 2023 with a view to establishing a comprehensive vision plan for Danish agriculture in the first half of 2024. A comprehensive vision plan must also address thesame land use targets in Denmark for agriculture, nature, renewable energy development, etc.

In addition to the need to agree on new initiatives for the food industry, the government will have a strong focus onimpacting the agricultural agreement. Including set-aside of low-lying land which is too slow

Section 4.5 More Danish forest

The government will present an ambitious forest plan with a target of establishing 250.000 hectares of new forest in Danmark. The creation of new forests contributes significantly to reaching climate neutrality and, in the long term, net-zeroemissions.

The Forest Plan should maximise synergies and trade-offs between the multiple purposes of new forests, identify key actors and already existing funds, and consider instruments.

This will go hand in hand with the development of the vision plan, which will focus, among other things, on starting with private afforestation. The forest plan and afforestation are financed by the Green Fund, makingas much contribution as possible from private operators and existing subsidies.

Section 4.6 Increasing the expansion of renewable energy and transition away from fossil heating

We must make Russian gas free faster and turbo the green transition with more renewable energy. The North Sea and the Baltic Sea must be green power centres that supply green power to the rest of Europe. Unnecessary bureaucracy and inappropriate allocation of tasks must not hinder rapid and efficientconstruction of renewable energy.

The Government will:

- *Shorten the time for the deployment of renewable energy so that it is not put on hold due to bureaucracy. In this context, the government will look at whether more flexible models for the supplyof marine wind can be established, while ensuring a fair share of revenue for society from energy extraction on land and at sea, possibly in the form of an updated concession model. The government will also promote cooperation in the North Sea and Baltic regions on faster and coordinated deployment with necessary infrastructure to promote green transition and marine wind.*

- *Launch an analysis of the efficiency of the current division of tasks between state authorities, regions and municipalities, with a view to ensuring a rapid pace of onshore deployment of renewable energy. In this context, the government will promote an active role for the State in the planning of energy parks, in addition to the municipal planning of renewable energy projects. Neitherof the energy parks shall be market-driven and managed by private actors.*

- *The government perceives the energy system of the future as critical infrastructure. The development of renewable energy and the Danish electricity grid must therefore require the most secure and sustainable solutions on the market. Increased sustainability of tenders must be ensured, respecting the principles of the EU's environmental sustainability strategyand the Danish climate objectives, as well as tools such as ESG and life-cycle assessments. A particular challenge will be to create safe, stable and sustainable supplykits for the entire green transition from Europe and like-minded countries. The government will therefore be fully committed to the development of a new European industrial policy to this end.*

- *Increase the decoupling pool financed by the Green Fund, so there are funds until 2030 to promote the decouplingof Danes from the gas network by lifting the cost of approximately DKK 8.000 charged by the State gasdistribution company Evida when decoupling from the network.*

- *Ensure a strong focus on energy efficiency for both private homes, businesses and publicbuildings.*

- *Initiate an electricity grid deployment plan and identify actions to support timely and efficient readings inthe electricity grid. The Government will examine whether further action is needed to make more efficient use of the electricity grid, including through, inter alia, more demand response. This work is based on the efforts of NEKST and may lead to changes in network regulation.*

- *Establish the "Together for Climate" partnership to support accelerated climate action across state, municipalities and regions,*

civil society and business, with an emphasis on citizens.

- *Increase biogas production so that Denmark can quicker out Russian natural gas. Including, as far as possible, frontloading the agreed tenders.*

Section 4.7 Greening transport

The Government wishes to accelerate the development of green transport in Denmark by 2030.

The Government will:

- *Highlight the effects of the agreement on the green transition of road transport with a view to making it more effectivein the light of technological developments. Here, the scope for increasing the ambition of the number of clean electric cars needs to be explored.*
- *Set further action for the promotion of zero-emission lorries, building on the 2021 Infrastructure Grant Infrastructure Pool for Heavy Road Transport. This should, for example, promote fleet conversion and the installation of recharging points.*
- *Introducing a passenger tax on air travel of an average of DKK 100. The resulting revenue is used, inter alia, for measures for the airports and areas around, the financing of the green domestic route and an increased oldercheque.*
- *Enable the establishment of a green domestic route by 2025 and, by 2030, full green domestic flight by the passengerfee, as well as increasing the pace of conversion of heavy transport as well as maritime and aviation, inter alia by promoting electrification and green fuels.*

Section 4.9 Global climate action

The government will work to ensure that the EU continues to be at the forefront of international climate agreements. Both in terms of limiting the global climate footprint of major emitters and rich countries – also beyond their own borders – and supporting the most vulnerable countries suffering the greatest losses and damage caused by globalwarming.

The government will present a plan on how Denmark can live up to its share of the global commitments in the global climate agreements, in particular from COP15 and COP27, on financing for the world's poorest countries. It needs to be explored how public risk-taking funds can be used as a means of leveraging more private funds.

Adaptation objectives

Responsibility for climate adaptation goes across authorities and regulatory areas, as tackling the climate challengerequires cooperation between authorities, organisations, private companies and landowners.

The Ministry of the Environment has the overall coordination responsibility for adapting to the consequences of climate change in relation to national efforts.

Municipalities are responsible for planning and authorising various climate adaptation actions. Landowners are basically responsible for adapting their own property to climate change.

As climate adaptation is thus carried out by many different parties and involves many different professions, a single digital entry point on climate adaptation information has been established in the form ofclimate adaptation.dk.

Climate adaptation is primarily based on initiatives at local level and involves municipalities, water supply companies and landowners. These stakeholders are best aware of the local circumstances and are therefore best placed to make appropriatedecisions. In Denmark, municipalities are the Climate Adaptation Authority.

National Climate Adaptation Plan

The government launched a Climate Adaptation Plan in October 2023. The plan is a follow-up to the government base of December 2022, which states that the government will prepare a National Climate Adaptation Plan to support timely implementation of the necessary steps and ensure that efforts are organised in the best possible way. The plan thus boosts coastal protection and the protection of cities and landowners in high groundwater. Adapting to future weather and the consequences of climate change requires long and sustained efforts. The Climate Adaptation Plan is therefore a first step.

A number of initiatives have already been launched to protect Denmark from the effects of climate change, and municipalities and utilities are already underway. With the Climate Adaptation Plan, the government is further addressing the following areas:

1) *State aid in particularly vulnerable areas:* Several coastal areas in Denmark are now at high risk of flooding and exposed to erosion. Therefore, the State offers professional assistance to municipalities with coastal protection projects in six of the most vulnerable areas. This may, for example, assist in the choice of technical solutions, security level proposals, contribution allocation, construction economics calculations, regulatory processes or similar. Municipalities are responsible for the projects and must take concrete, local decisions once the basis is clear. Aid for individual areas runs over two years and is organised according to the highest risk of flooding and erosion and high damage costs.

2) *Coastal Pool:* To speed up coastal protection and support municipalities' coastal protection efforts the GES coastal protection pool in 2024, with DKK 150 million, is intended to help municipalities and digest them to carry out the necessary measures against floods and coastal erosion.

3) *Protection of the west coast of Denmark:* The State allocates just over DKK 1 billion to the protection of parts of the west coast of Jutland which:
the State has contributed since 1983. DKK 1 095.5 million will be allocated to the action in the period 2025-2029, i.e. DKK 219.1 million annually in the period.

4) *Securing infrastructure:* The State provides a number of its infrastructure on the west coast of Jutland, which lake Bende needs to be renovated and renewed to maintain the security level. DKK 46.7 million will be allocated in 2024 to two plants comprising the northern mole in Thorsminde and the drainage lock in White Sande.

5) *Better framework for municipal coastal projects:* Model to be drawn up on the basis of the Coastal Protection Act calls for a new organisation to make it easier for municipalities to implement large coastal protection projects. In the proposals, municipalities will remain the authority and the usefulness principle, which indicates that the most useful beneficiaries of an action contribute most, will be maintained.

6) *Addressing high groundwater challenges in cities:* The groundwater level in Denmark is over the last 30 years it increased by about one metre and is likely to increase further in line with climate change. Today, approximately 450.000 dwellings below one metre to the groundwater level have more than 80 per cent of the year. Today, there is a lack of regulation to ensure collective solutions for high-level groundwater in cities. As a consequence, landowners often stand alone with the challenge and bill. The Government will therefore put forward a draft law which, acting under the authority of the municipality, allows waste water companies to implement collective solutions for high-level groundwater in areas where it is economically appropriate.

7) *Establishment of a State Official Committee:* In order to strengthen national coordination on climate adaptation, there is: an inter-sectoral committee of officials was established. The Committee's role is to assess risks, challenges, need for new actions and follow up on actions undertaken, involve other parties and initiate solution-focused and intensive cooperation. The Committee shall report to the Government once a year.

8) *Climate adaptation in interaction with nature and environment considerations:* Just as there is a political focus on ensuring that:
renewable energy in better interaction with nature and environmental concerns are the same as climate adaptation challenges. To this end, a survey will be launched on how other EU countries manage legislation on nature and environmentalissues related to climate adaptation, including on derogations, in order to gather knowledge about practical solutions, interpretations and the caselaw of the European Court of Justice.

9) *Analysis of damage and investment:* The government will launch an analysis of the adequacy of climate change prospect of flooding in Denmark. The first part of the analysis is a state of play of climate adaptation efforts and an

overview of expected damage costs. In the second part of the analysis, work is taken forward on an estimate of the future ininvestment needs in Denmark. Relevant stakeholders are involved and the analysis is reported to the government in spring 2025.

Climate adaptation of energy infrastructure

Protection, including inter alia climate adaptation of energy infrastructure, is part of contingency planning in the energy sector. It requires, among other things, electricity and gas critical undertakings to prepare risk and vulnerability assessments of the undertaking and its supply critical systems every or three years. The assessments are based on a number of scenarios which ENER the Danish-Energy Agency prepares and updates each year and which take into account, inter alia, extreme weather events. On the basis of the risk and vulnerability assessments, companies are required to draw up contingency plans on how they will deal with various emergency situations.

In addition to emergency response requirements for undertakings, the Danish TSO Energinet performs at sectoral level emergency tasks in the electricity and gas sectors, including responsibility for the vulnerabilities of the two sectors to, inter alia, physical incidents.

The government is strengthening preparedness in the energy sector, including through the implementation of the CER Directive, which, among other things, requires critical entities to undertake climate adaptation measures.

CCS/CCUS

Thegovernment and a broad majority in the Danish Parliament agreed in June 2020 on a climate agreement for energy and industry, etc., which included massive investments in CCS deployment. Since then, a wide range of political agreements based on broad parliamentary support have encouraged the rapid development of CCS in Denmark. The agreements support the strategic, regulatory andregulatory development of CCS in Denmark and provide financial support for the development and implementation of CCS in Denmark.

Table 4
Overview of political agreements on CCS and their content

Agreements	Date of agreement	CCS relevant information
Climate agreement for energy and industry, etc.	22 June, 2020	A pool is set aside to promote CCUS technologies and drive-greenhouse gas reductions towards 2030 and beyond. A total of DKK 16.6 billion (2023 prices) is available. Cross-border transport of CO_2 shall be possible.
Research Reserve 2021	30 November, 2020	DKK 700 million for the establishment of four green research missions under the auspices ofthe Innovation Fund, including a mission focusing on the capture and storage orsuppression of CO_2 under the name 'Inno-CCUS'
The future of oil and gas winteringin the North Sea	3 December, 2020	200 million knights will be allocated-in 2021-22 for development and demonstration projects related to storage in the North Sea.
Roadmap for CO_2storage (Part 1 of the CCS Strategy)	30 June, 2021	The contract consists of a setof roofs to allow storage in the Danish subsoil in both the short and the long term. Specifically, the agreement starts the process of granting permits for CO_2storage in the Danish subsoil in the North Sea.
Roadmap for the capture, transport and storage of CO_2 (CCS Strategy Part 2)	14 December, 2021	Agreement on the disbursement of the first phase of the CCUS pool. The agreementalso provides for the development of Danmark as a European hub for the storage of CO_2
Green partial agreement, Finance Act 2022	4 December, 2021	DKK 2.6 billion (2023 prices) is allocated to support negative emissions. The expected eftis 0.5 Mt CO_2 pa for the perioof 2025-2032.
Green tax reform	24 June, 2022	A total of DKK 17.2 billion (2023 prices) will be allocated to an aid-word. Reductions of 1.8 million tonnes of CO_2 are estimated in 2030
Framework conditions for CO_2 storage in Denmark	21 June, 2022	20 % State ownership in off-shore storage licences.
Strengthened framework conditions for CCS in Denmark	20 September 2023	Agreement on the pooling of pooled funds into a global CCS pool, preparation of newmain law for pipeline transport of CO_2, State participation by allocation

		of on-shore CO_2storage licences.
Long-term framework conditions for $CO2_{catch}$in the supply sector	7 February 2024 and	Agreement to secure legal basis; a level playing field for municipal andpri owned companies carrying out CCS activities, including for-team around corporate distribution of activities, exploitingsurplus heat from CCS installations, legal basis for the owner ofthe pipeline, and sale of voluntary climate credits.
Research reserve 2022, 2023, 2024	28 October 2021, 28 February; DKK 300 million. 2023 and 2 November 2023 2024 for	DKK 295 million in 2022, in 2023 and DKK 320 million in four green research missions under the auspices of the Innovation Fund, hereunder a mission focusing on capturing and storingor releasing CO_2. DKK 85 million in 2022 and DKK 121.5 million in 2 023 are allocated to studies into possibleon-shore and near-shore storage-structures. DKK 15 million in 2024 was allocated to studies on the safe storage and monitoring of

Potential for CO_2 catchfrom Danish point sources

CCUS actions address carbon capture, storage and utilisation. The carbon may originate from e.g. biomass (biogenic carbon), atmospheric or fossil sources.

The total annual long-term CO2 $catch_{potential}$from Danish point sources is estimated to be around 15.3 Mt CO_2, broken down by Inland,waste incineration, energy production and biogas plant.

Table 5
Estimate of Danish CO_2catch potential in 2030 by sector

$CO2_{catch}$potential Mtpa	**2030**
Waste incineration	3,1
Heat and electricity	6,4
Industry	4,4
Biogas upgrade	1,5
Total	**15,3**

It is estimated that about 11.0 Mt CO_2 of the long-term potential comes from biogenic sources.

Table 6
Estimate of Danish CO_2catch potential in 2030 by biogenic and fossil

$CO2_{catch}$potential Mtpa	**2030**

Biogenic	11,0
Fossil and process	4,4
Total	**15,3**

Estimated geological storage capacities

The National Geological Studies for Denmark and Greenland (GEUS) estimate the total storage capacity of a number of identified saline aquifers at 12.000-22.000 Mt, and in addition there is potential for volcanoclastic deposits and end-of-life oil and gas fields.

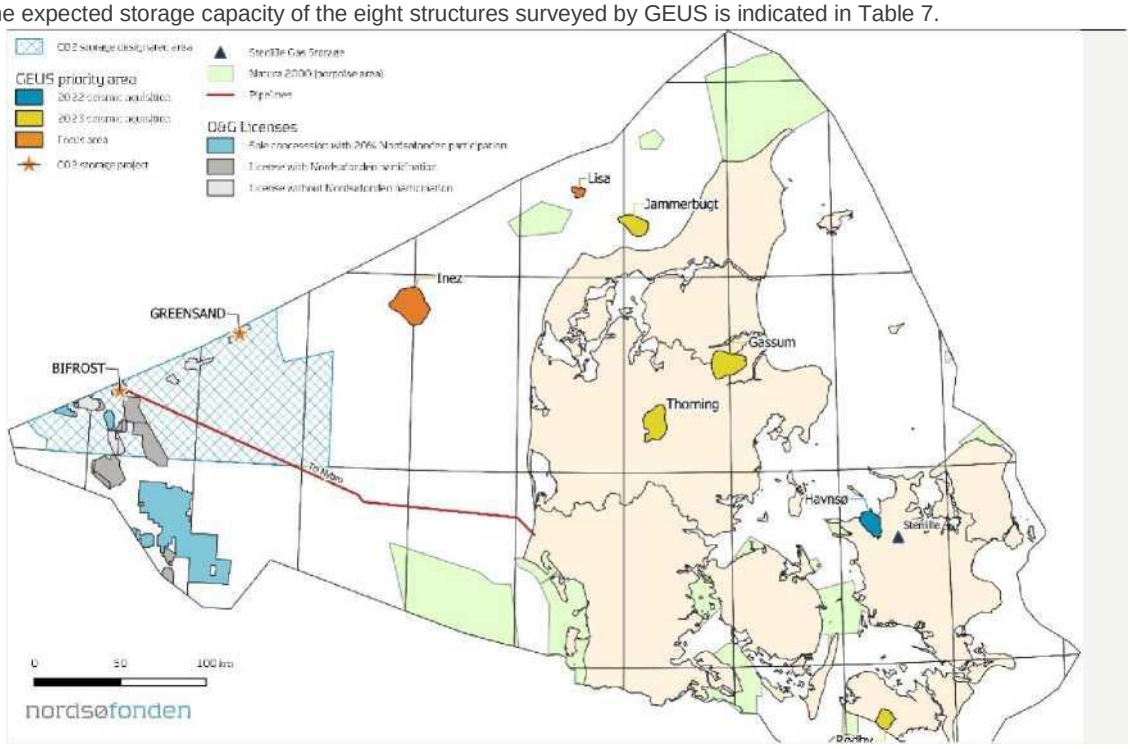
The structures are located offshore, near-shore and onshore. As of February 2023, the first three exploration permits have been granted for offshore storage in the north-western North Sea, two of which are located in depleted oil and gas fields, and one for a Salin akvifer.

In 2022-2023, GEUS carried out studies and mapping of 8 potential land and coastal storage sites. The Danish Energy Agency also carried out a strategic environmental assessment of the areas, which was completed in autumn 2023. The completion of these activities has so far resulted in a call for tenders for further exploration permits in December 2023, where the Danish EnergyAgency expects to be able to complete the assessment and issue permits in the five areas of the Port of Port, Gassum, Thorning, Stenlille and Rødby in June 2024.

Figure 3

Maps of eight potential storage sites as well as offshore activities

The expected storage capacity of the eight structures surveyed by GEUS is indicated in Table 7.



Source: North Sea

Table 7

The potential storage capacity of the eight structures provisionally mapped by GEUS;

Name of the structure	Capacity (mean, MtCO2)
Porvnsø (Gassum Fm)	306,0
Gassum (Gassum Fm)	585,0
Thorning (Gassum Fm)	295,0
Stenlille (Gassum Fm)	NA
Rødby (Bunter Fm)	209,0
Inez (Gassum Fm)	178,0
Inez (HaldagerFm)	3,1
Lisa (Gassum Fm)	29,3
Gulf of Jammergt	NA

Development of CO2stocks and CO2 transport infrastructure

A number of project developments have taken place since 2020 and, from February 2023, Denmark has granted three exploration permitsfor the Greensand and Bifrost offshore projects, as well as a pilot and demonstration permit for the injection of less than 0.1 million of CO_2 into the Greensand project. The expected storage capacity for the Greensand project is up to 1.5 million tonnes of CO_2 per year from 2025-2026 and 8 million tonnes of CO_2 from 2030. For the Bifrost project, storage capacity of 2-3 Mt CO_2 per year is expected from 2029-2030 and 10-15 Mt CO_2 per year from 2030-2032.

Support pools for CCS

The development of CCS has been supported by general research and development funds, including the Technological Development and Demonstration Programme (EUDP). This includes grants for the development and demonstration of CO_2storage in depleted oil and gas feeds inthe North Sea.

In addition, GEUS has received funding to investigate a number of potential storage sites near-shore and onshore.

Other publicly funded support initiatives include funding for a concrete mission focused on capturing andring or using CO_2 under the auspices of the National Innovation Fund and the development of CCUS in the North Jutland region, funded through the EU REACT-EU programme.

In addition, DKK 190 million is made available from the EU Just Transition Fund for the development of local value chains for CO_2catch, use and storage in the land parts of North Jutland and South Jutland. The funds are intended to mitigate the negative effects of thetransition to a climate-neutral economy on selected parts of the country.

Private foundations also support development. For example, the Novo Nordisk Foundation has established the Novo Nordisk Fondens CO_2 Research Center, a mission-oriented centre that aims to develop new knowledge on CO_2capture, storage and use.

As part of the political agreements, more than DKK 35 billion has been allocated to the implementation of CCS as a client priority.

Table 8

Support pools for CCS

	CCUS Pool	NECCS Pool	CCS Pool
Eligible sources for CO_2 (DACCS)	Fossil, process and biogen	Biogen (incl. DACCS)	Fossil process and biogenic (incl.
Contract Period	Up to 20 years per opt-out contract	Up to 8 years per opt-out contract	Up to 15 years per contract – detailed terms and conditionsfor preparation

First year of reduction	2025/26	2025	2029
Eligibility period	2025-2049	2025-2032	2028-2043
Budget (2023 prices) *	DKK 8 billion	DKK 2.6 billion	DKK 26.8 billion

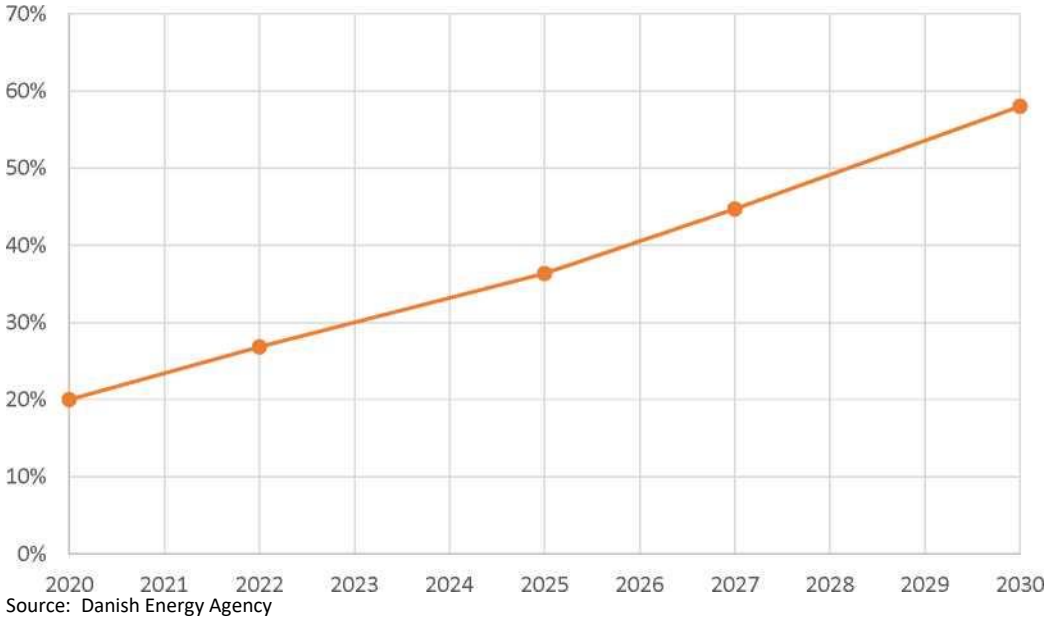
2.1.2 renewable energy

(i) The elements set out in Article 4(a) (2);

Denmark has set its national contribution to the EU's binding target of 42.5 % for 2030 on the basis of the objective criteria set outin Annex 2 to the Governance Regulation (2018/1999). On the basis of the formula, Denmark's share of renewable energy in final energy consumption must be at least 58 %, with a 42.5 % target, and 60 % in 2030 for an EU target of 45 %. Denmark is in dialogue with the Commission on the calculation formula.

Figure 4

National contribution to the EU binding target of 42.5 % in 2030 with minimum referencepoints



Source: Danish Energy Agency

Denmark exceeded the separate national target for Member States' renewable energy share in 2020 and is expected to meet the milestones by 2030 set out in the Governance Regulation (2018/1999).

In 2020, the Danish Parliament adopted the Danish Climate Law. The aim of the Act is for Denmark to reduce greenhousegas emissions in 2030 by 70 % compared with 1990 levels. Most recently, the Government, composed of Social Democracy, Moderates and Venstre, with the government *base Responsibility for Denmark* from December 2022, brought forward the climate neutrality target in 2050 to 2045, and set a target of 110 % greenhouse gas reduction by 2050 compared to 1990.

Oceanic wind

Since 2012, a number of political agreements have been reached on offshore development in Denmark. This is the case for the 2012 *Energy* Agreement, Sion 2012, a number of political agreements have been concluded on offshore development in Denmark. This applies to *the* Energy Agreement of 2012, the *EnergyAgreement* of 2018, the *Climate Agreement for Energy and Industry, etc.* of 2020, *the Supplementary Agreement concerning the ownership and construction of energy islands, etc.* of 2021 and the underlying procurement preparatory lots from 2021 and 2022, *Supplementary Agreement on Energieø Bornholm* from

2022, the 2022 *Finance Act, the Climate Agreement* of 2022 and *the Supplementary Agreement on tender frameworks for 6 GW of offshore wind and energy islandBorn* holm from 2023.

In accordance with *the* 2012 Energy Agreement, the Horns Rev 3 offshore wind farms are 406 MW and Kriegers Flak of 605 MW in August 2019 and September 2021 respectively. In addition, the coastal parks of the *2012 Energy Agreement*, Vesterhava South of 170 MW and VesterhavNord 180 MW, were put into operation at the end of 2023 and the beginning of 2024 respectively.

In *the* 2018 Energy Agreement, it was agreed that three new offshore wind farms would be built by 2030. The tender for the first-1.000 MW Thor offshore wind farm has been decided and is expected to enter into operation in 2027. The second Hesselø offshore wind park has been delayed due to soft seabed challenges, but is in tender (opened in April 2024) and is expected to be put into operation in 2030 with a capacity of 800-1.200 MW. The third park decided to join the 2020 *Climate Agreement* as part of the Bornholm Energy Island.

With *the Climate Agreement for Energy and Industry, etc.* of 2020, the parties to the agreement wanted to build two energy islands in the North Sea with 3 GW in the first phase and, with space for at least 10 GW in the long term, and at Bornholm by 2 GW, on condition that the projects are profitable. The *Finance Act for 2022* decided to offer 2 GW of offshore wind, of which the Bornholm energy island was extended by 1 GW ifm. *The Supplementary Agreement on the Bornholm Energy* Island of 2023. The completion of the Bornholm Energie is sought by the end of 2030. The Potentiain the realisation of the first phase of the North Sea Energy Island is sought with relevant partner countries.

In the 2022 *Climate Agreement on Green Power and Heat*, it was decided that an additional minimum of 4 GW of offshore wind would be offered for support-free deployment by the end of 2030.

With *the Supplementary Procurement Framework Agreement for 6 GW of offshore wind and energy island of Bornholm* of 30 May 2023, the terms of the tender for 6 GW of radial offshore wind farms and 3 GW for the Bornholm energy island were decided. All 9 GW have the possibility of transplantation, which theTielt pot could lead to 14 GW or more if the market so wishes.

Thus, in the context of the above energy and climate agreements since 2018, tenders have been decided for 1 GW and 6 GW of radial marine wind have been tendered and political agreements have been concluded to offer at least 3 GW of offshore wind in connection with the Bornholm energy island for establishment by the end of 2030. With *the Supplementary Agreement on a tender framework for 6 GW of offshorewind and energy island of Bornholm*, it has been decided to allow overplantation for future offshore wind farms so that the total of 9 GW could potentially be increased to 14 GW or more. In addition, a further minimum of 3 GW will be added to the first phase of the North Sea Energy island.

The Danish Parliament has adopted a bill to close the open door scheme for new commercial projects. It will continue to bepossible to apply for and construct smaller testing projects. The amendment will enter into force on 1 July 2024. Six open door projects assessed in compliance with EU law can continue under the current regime. Of this, behind one of the six projects (Omø Syd), has subsequently chosen to withdraw their application.

Inland wind and solar energy

In June 2022, the then S Government reached a broad majority in the Danish Parliament's *Climate Agreement on Green Power and Heat*. Theparties to the agreement agreed to ensure framework conditions that would allow a four-fold increase in total electricity generation from solar and onshorewind by 2030. This requires a very comprehensive land-use planning and rapid deployment of renewable energy onshore. It was therefore agreed to develop a model for how the State could play an active role in planning onshore energyparks by 2030, i.e. larger, government-designated areas where a variety of renewable energy technologies can be rapidly deployed, including wind turbines, solar photovoltaics and PtX installations, etc. The agreement provided for the expansion of parks to be market-driven and thus carried out by private developers, while the State's contribution may be via planning, etc., in order to remove barriers. The agreement stated that the energy parks will be complementary to the municipal planning of renewable energy projects and could, for example, also cross municipal borders.

In addition, a number of initiatives have been adopted to strengthen local anchoring and support faster onshore renewable energy deployment processes. This includes setting up a renewable energy travel team to ensure, among other things, the dissemination of good examples in the implementation of renewable energy projects in municipalities. In addition, additional funding is provided for-checks aimed at compensating local communities with many land-based wind turbines and photovoltaic installations in the vicinity.

In December 2023, the government reached *the Climate Agreement for more green energy from Solar and Wind on Land 2023*, which sets theframework to enable a four-fold increase of generation from solar and wind on land. The agreement paves the way for the

State to play an active role in planning major energy parks on land. To this end, a single entry point for the energy parks will be set up for government administration. In addition, favourable conditions are granted for the location of PtX plants and companies associated with installations in energy parks. Part of the agreement also includes an ambition to increase compensation for neighbours and communities.

A draft law amending the Planning Act was also adopted in April 2023. The amendment extends the scopeof the Planning Act to include climate in line with the environment, nature and growth and development, and the State oversightof municipalities' planning will henceforth include climate protection as a national interest. In addition, the legislative amendment makes it possible to plan for wind turbines and photovoltaic installations in nautical and freight landscapes. The amendments aim toensure a clear planning framework for RES installations.

To promote the expansion of onshore wind and solar energy, the government has set up a National Energy Crisis Loss (NEKST) to speed up the green transition in Denmark and ensure faster action on acute green challenges. Throughthe involvement of relevant societal actors, the NECSC Working Group More Solar and Wind on Land has identified, among other things, barriers to the agreed aspirations to quadruple sun and wind on land and continuously recommended to the government possible measures to accelerate theexpansion of renewable energy.

On 26 February 2024, the Working Group delivered its final report of 27 recommendations to the government, which set out, among other things, how to strengthen local support, speed up processes and better interaction between authorities, and use the land smarter when wind turbines and solar cells are installed on land.

Before then, the working group has also delivered interim recommendations to the government on a regular basis. In October 2023, they issued theirDelan recommendations for local support for renewable energy, contributing to the government*'s climate action – Together for greener energy from solar and onshore wind* from October 2023. In December 2023, the working group delivered its sub-recommendations on the complaints process, where several of the recommendations have already become legislative proposals.

Power-to-X

The path towards a green society must be achieved, inter alia, through direct electrification and indirect electrification via Power-to-X (PtX). PTX can contribute to an integrated and flexible energy system, integrating PtX into the energy system in a way that supports and complements existing supply sectors such as electricity, gas and district heating.

PtX technology makes it possible to produce fuels and chemicals that can replace fossil products in a numberof trouble sectors such as shipping, aviation and parts of industry. PTX can contribute to achieving the Danish climate targets and, in particular, play a role in achieving the climate neutrality objective.

The former government, together with a broad majority, concluded in the Danish Parliament's *Agreement on the Development and Promotion of Hydrogen and Green Fuels* on 15 March 2022 (PtX Agreement). The agreement aims to promote green hydrogen and green PtX products. It isunderstood that Denmark will aim for an electrolysis capacity of 4-6 GW in 2030, as far as possible on market terms and taking into account the security of supply of Denmark. The realisation of 4-6 GW of electrolysis capacity will increase the need for green power. *With the 2022 Climate Agreement on Green Power and Heat*, the parties to the agreement agreed to ensure framework conditions that would allow a four-fold increase in total electricity generation from solar and onshore wind by 2030, and decided to offer at least 9 GW of offshore wind for deployment by the end of 2030, with the possibility of overplanting. The flow from sea wind is expected to be used, among other things, by PtX plants in Denmark. The PtX Agreement will also support the realisation of Danmark's export and business potential in the PtX field, as well as contribute to lowering Denmark's global climate footprint and the achievement of national and international climate objectives. The PtX agreement thus states that the Danish efforts in the PtX field will contribute to the promotion of green hydrogen and green PtX products. As a result, Denmark aims to become a net exporter of green energy, including hydrogen and PtX fuels in 2030.

In addition, a bilateral declaration on cross-border infrastructure cooperation has been signed to supportexports of Danish-produced green hydrogen to Germany. With the 1th partial agreement: Ownership and operation of the future Danish pipe-bound hydrogen infrastructure, it was decided that the construction would take place on market terms and that the two statesells for gas transmission and distribution (Energinet and Evida) should be allowed to own and operate the hydrogen infrastructure. The Agreement on Economic Framework Conditions for Hydrogen Infrastructure signed on 5 April 2024 has provided clarity on, inter alia, the regulatory framework for the hydrogen market, which takes into account the fact that hydrogen is a start-up market associated withuncertainty. Moreover, a political decision on the ownership of underground hydrogen stocks in Denmark has not yet been taken.

A national framework regulation for hydrogen has been created at the turn of the year to 2023 by including hydrogen in the Gas

Supply Act. Work is under way to define detailed detailed rules for hydrogen, as part of the implementation of the sub-policy agreements on hydrogen infrastructure;

In addition to the policy objective on electrolysis capacity, the PtX Agreement also includes several initiatives, including a PtX tender to support industrialisation and upscaling of PtX production in Denmark. The total value of the tender is DKK 1.4 billion (2024 prices). The European Commission approved the tender model on 15 February 2023 and the tender was organised from 19 April 2023 to 1 September 2023. More than DKK four billion was applied for and a total electrolysis capacity of approximately 675 MW, i.e. more than three times the budget. Five projects won the tender and are expected to build 209 MW of electrolysis capacity by the end of 2027.

Biomass

In 2022, biomass accounted for approximately 63 % of the consumption of renewable energy in the form of straw, wood pellets, wood chips, biogasand degradable waste for incineration. Imports accounted for 38 % of the total consumption of biofuels in Denmark in 2022, mainly in the form of wood pellets (45 PJ) and wood chips (20 PJ).

From the 1990s to now, there has been a significant fuel switch in the production of district heating. The consumption of coal for district heating production has decreased over that period from almost 50 % to 5.8 % in 2022. By contrast, the share based on renewable energy isthe highest, from around 20 % to cover around 71 % of district heating production in 2022. The use of biomass for heat production is exempted from energy and CO_2taxes. A large proportion of biomass use for heat production takes place in large CHP plants.

Biomass (solid, gaseous and liquid) accounted for 2022 26 % of renewable energy for electricity generation.

Heating and cooling

The share of renewable energy in the Danish heating and cooling sector for heating and process energy in 2023 was estimated to be around 65 %, including biomass, biodegradable waste and waste heat. The figure indicates an increase in the RES share of around 13 % compared to the 2019 NECP. Article 23 (1) of the Renewable Energy Directive requires each Member State to increase the share of energy sourcesin the heating and cooling sector by at least 0,8 percentage points, as an annual average calculated for the period 2021-2025 and by at least 1,1 percentage points, as an annual average calculated for the period 2026-2030. However, Article 23 (2) (b) provides that if the share of renewable energy in the respective Member State's heating and cooling unitis above 60 % at the transposition deadline, this is deemed to meet the average annual increase aspresented in paragraph 1.

As the RES share in 2025 is expected to be above 60 %, it can be confirmed that Denmark is expected to be exempted from the requirement of Article 23(1) to (4) of VE III. Thus, the share of RES is above 60 % in both the period 2021-2025 and 2026-2030.

Denmark does not have a direct sectoral target for the share of renewable energy in heating and process energy. However, the share of RES increases from 65 % in 2023 to around 81 % in 2030, and it can therefore also be inferred that the high share of renewable energy in the heating and cooling sector will leadto compliance with the overall RES target from Article 3(1), which aims to achieve at least 42.5 % of the Union's gross final energy consumptionby 2030.

Biogas

Biogas is a green, climate-neutral gas produced mainly from biomass consisting of agricultural, industrial and household residues. They are therefore resources which would otherwise be burned in incinerators or spread on the fields from which they emit greenhouse gases to the environment. Instead, using biomass for biogas reduces emissions from agriculture and at the same time makes gas consumption more climate-friendly. The Government will both bring forward and increase biogas production, see below.

In 2012, three price supplements were introduced for electricity produced from biogas, two of which remain in force today. The first premium consists of a basic premium of DKK 0,825/kWh, adjusted by 60 % of the net price index. The second supplement is DKK 0,26/kWh electricity. It is linked to the market price of natural gas and includes a floor price. If the market price of natural gas falls below the floor price, then the premium increases – and vice versa. The third premium (phased out) introduced in 2012 provided each producer with an additional DKK 0,10/kWh of electricity but reduced by DKK 0,02/kWh every year and was phased out in 2020.

Similarly, for biogas, a support scheme for upgrading, process and heat was introduced in 2012. Under these schemes there is a basic supplement and a natural gas price supplement, which are adjusted once a year. The base supplement is adjusted by 60 % of thenet price index (upgrade and process). For the upgrade scheme, the basic supplement in 2023 is DKK 87,4/GJ. The natural gas price premium is linked to the market price of natural gas. If the market price of natural gas decreases, the premium – and vice versa

(upgrade, process and heat) increases.

The *June* 2018 Energy Agreement decided to phase out the current biogas support schemes by 2020. This means that no new plant can apply for aid under the closed subsidy schemes after 1 January 2020 and that existing plants will continue to receive support for a fixed depreciation period.

In June 2020, the Climate Agreement for Energy and Industry etc. 2020 agreed that future support for biogas and other green gases will be based on a tendering process – by 2030. In a follow-up agreement of 21 December 2021, it was agreed that tenders would be based on fixed price supplements and that eligible gases in the first tender have been upgraded to biogas and e-methanewith CO_2 from retrofit plants injected with hydrogen. The scheme is pre-notified to the European Commission and isawaiting approval under the State Aid Guidelines.

(ii) Estimated trajectories for the sectoral share of renewable energy in final energy consumption from 2021 to 2 030 in the electricity, heating and cooling, and transport sector

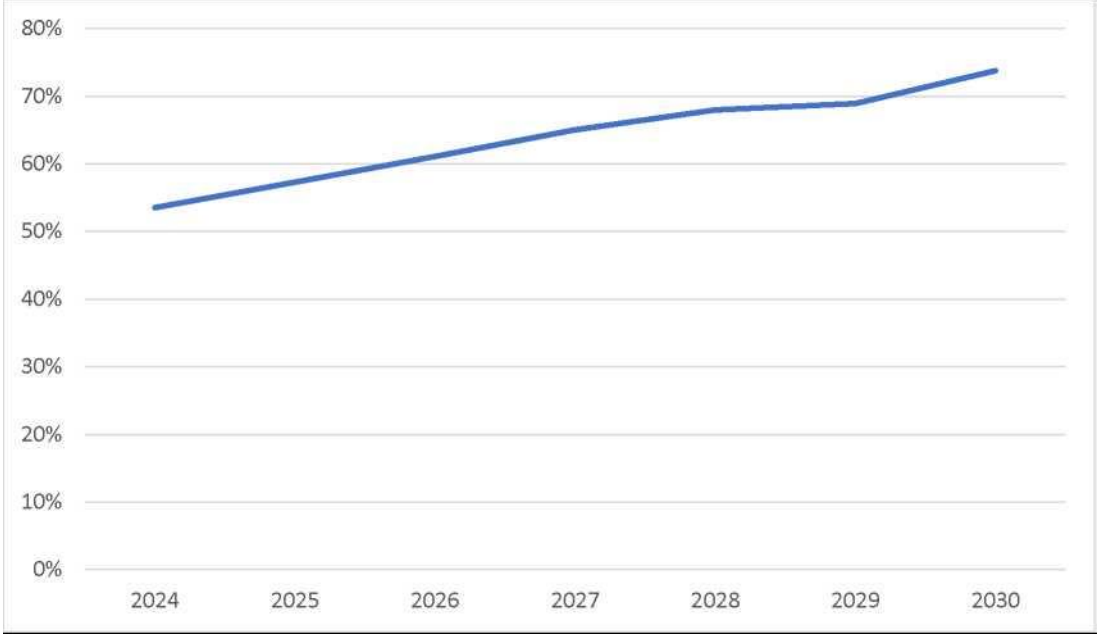
Climate projections

The projection from the *Climate Status and Outlook 2024* (KF24) shows that Denmark expects to reach an overall share of energy relatedto energy of 73.8 % in 2030 and the share of RES in electricity consumption is expected to exceed 100 % in 2028. We thereforesee that Denmark meets the EU's binding requirements on the basis of the objective criteria described in the formula in Annex 2 of the ManagementRegulation (2018/1999). On the basis of the formula, Denmark's share of renewable energy in final energy consumption must beat least 58 %, with a 42.5 % target, and 60 % in 2030 for an EU target of 45 %. Denmark is in dialogue with the Commission on the calculation formula.

The indicative projection for the share of energy from renewable sources from 2024 onwards is shown in Figure 5. Theprojection represents a frozen policy scenario and leads to considerable uncertainty. Therefore, the actual share of renewable energy may beneglected from this estimate.

Figure 5

Indicative projection of the share of energy from renewable sources in gross final consumption

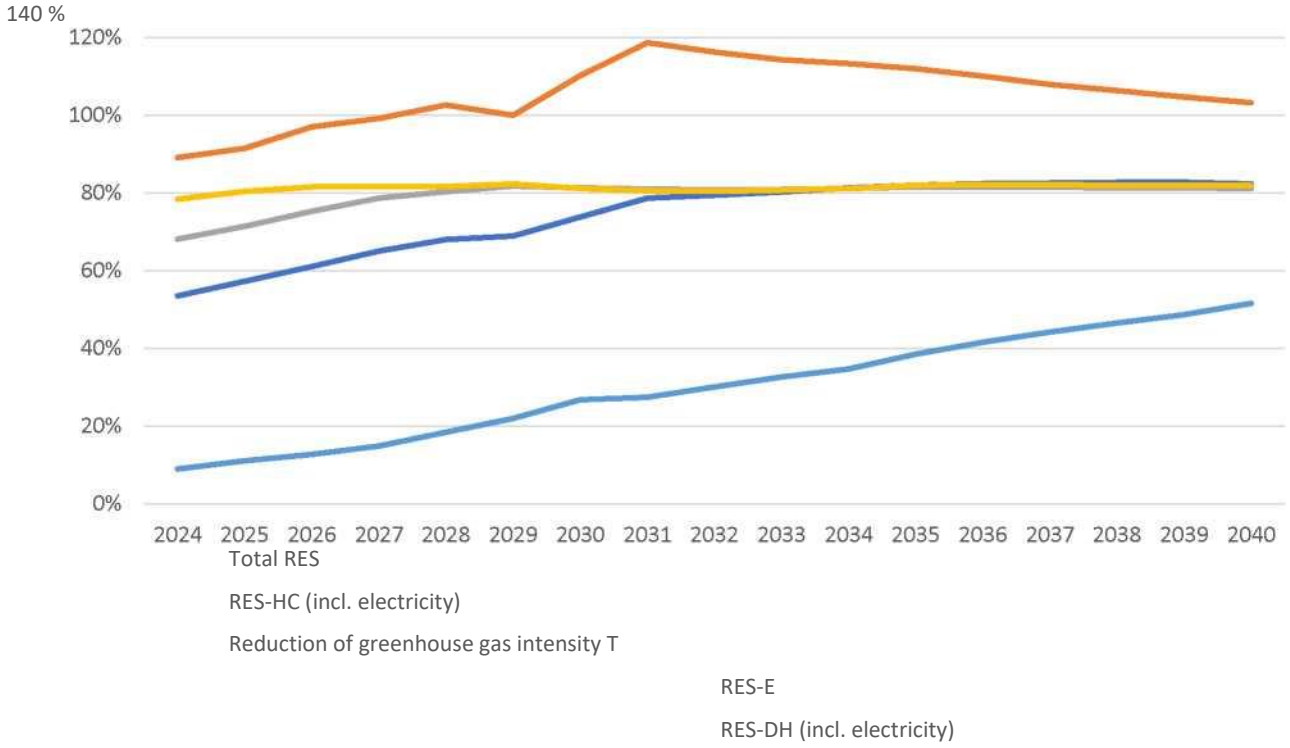


Note: [Text]
Source: Climate status and projection 2024

Denmark has currently not set individual targets for the share of renewable energy in the sectors. Projections for the RESshare of the sectors, based on modelling a frozen policy scenario, can be found in Figure 6. The revised Renewable Energy Directive (VEIII) indicates that Member States must ensure that the amount of renewable fuels and renewable electricity livingin the transport sector leads *either* to a share of renewable energy in the final energy consumption of the transport sector of at least 29 % by 2030, *or* to a greenhouse gas intensity reduction of at least 14.5 % by 2030 compared to the refree-efficiency scenario set out in the Directive. No policy position has been taken on which option Denmark sets out, but since it is already regulated after reducing greenhouse gas intensity, it is calculated in the chart in accordance with the requirement of 14.5 % reduction in greenhouse gas intensity. The method for calculating the reference value is slightly changed from 2030 to 2031, therefore there is a break on theball. If the share of renewable energy is used, this is also expected to be met in 2030.

Figure 6

Estimated projection for the sectors' share of renewable energy



Note: Transport is presented as reducing greenhouse gas intensity by at least 14.5 % in 2030 – compared to fossil reference (VE) Article 25, 1 (a) (ii) of the Directive
Source: Climate Status and Outlook 2024 and the Danish Energy Agency

Due to new investments in renewable energy, as well as a decision to phase out coal in the electricity generation sector in 2030, the share of RES in electricity consumption is expected to exceed 100 % in 2028. For the district heating sector, it is projected that 81 % of heat in the district heating sector will be based on RES in 2030. For the heating and cooling sector as a whole, the RES share is expected to reach 81 % in 2030. For transport, the greenhouse gas intensity is expected to be reduced by 27 % in 2030.

Indicative targets for innovative RES

Pursuant to Article 3(1) of the revised Renewable Energy Directive (VEIII), Denmark shall set an indicative target for innovative renewable energy technology of at least 5 % of newly installed renewable energy capacity by 2030. Denmark relies on the 5 % target and expects to meet the target, as the share of innovative RES is expected to be 24 % in 2030.

For Denmark, the calculation based on new capacity is expected to relate to:

1. Geothermia

2. Large heat pumps forproduction of district heating
3. Exploratory wind turbines
4. PTX, including e-methane
5. Renewable generation associated with energy islands
6. Storage capacity for stocks linked to wind turbines and photovoltaic parks;
7. Seasonal storage for solar thermal installations in the district heating sector
8. Pyrolysis gas

The inventory of the innovative target is shown in Table 9. The installation of RES electricity represents the largest share of the overall RES installation, cf. Pillar 1. The installation of large heat pumps, electricity storage and PtX plants are the main investments in innovative RES. Wind turbines coupled to electrolysers on energy islands are not assumed in the projection. If such plants are actually built, the share of innovative RES will increase significantly. The capacity for pyrolysis and seasonal stocks for district heating is assumed for 0 and is not shown in the table.

Table 9
Innovative objective

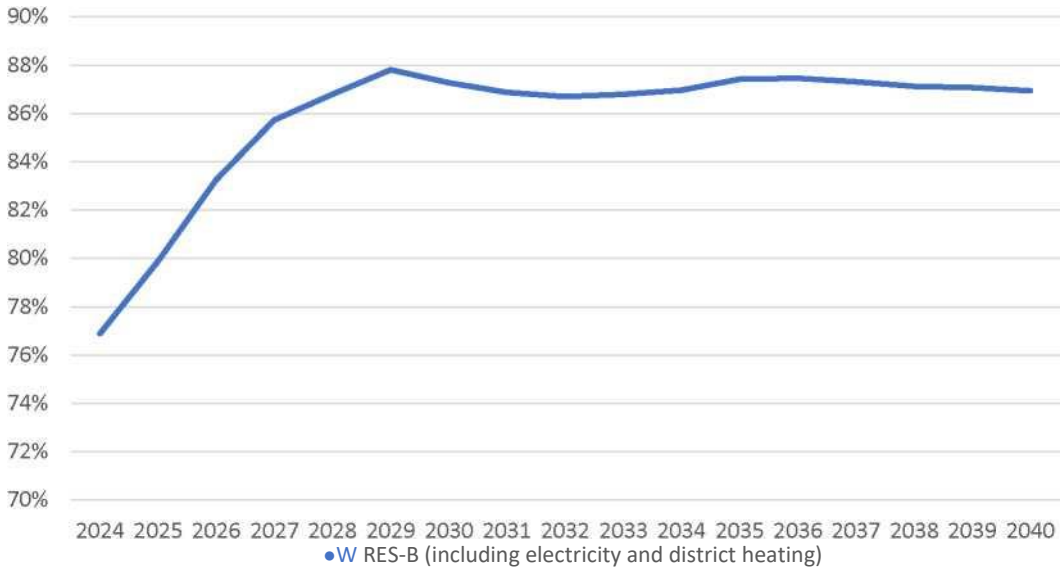
	Creation of new renewable energy capacity				Creation of new innovative renewable energy capacity (MW)						
					Electricity				District heating		
	Electricity	Remove-heat	Biogas	Heat pumps	Experimental-mills	Energy island	PTX	Stock	Heat pumps	Geothermia	Share (%)
2025	2820	580	120	140	0	0	360	100	130	0	16
2026	3150	2410	270	230	150	0	360	1030	360	0	31
2027	4360	2690	480	350	150	0	660	1030	690	0	32
2028	4340	2840	560	460	150	0	660	1030	930	0	34
2029	4980	3240	660	560	150	0	660	1030	1330	0	34
2030	9290	3530	790	670	150	0	660	1030	1540	100	24

Indicative targets for the share of renewable energy in the national building sector in 2030

Itfollows from the revised Renewable Energy Directive (VEIII) that Member States establish a national share of renewable energy inthe barley sector in 2030, consistent with indicative targets of at least 49 % share of energy from renewable sources in the buildings sector in the Union's final energy consumption level in buildings in 2030. Denmark relies onthe share of at least 49 %, and Denmark plans to overmeet this share significantly in 2030, cf. projections in KF24, as DK will have 87.3 %. Ve in the buildings sector in 2030.

Figure 7

Estimated projection of the RES share in the buildings sector for 2024-2040



Source: Climate Status and Outlook 2024 and the Danish Energy Agency

Reference is made to sections 2.2 (i) to (iii) and 3.2 (i), (ii) and (iv) for deepening political agreements, as well as agreed instruments that are expected tocontribute to achieving a possible target target for the share of renewable to heating of buildings.

In addition, reference is made to the requirements for renovation classes in Sections 280-282 and Sections 293-298 on heating,which lay down, inter alia, requirements on the use of renewable energy for heating23.

Targets for RES in industry

The revised Renewable Energy Directive (VEIII) introduced two new targets for RES in industry. On the one hand, an overall targetof 1.6 % annual pit rates for the periods 2021-2025 and 2026-2030. The target is assessed to be achievable, as projected in KF24. The projected rate of increase is 2,2 and 2,3 percentage points respectively in the two periods.

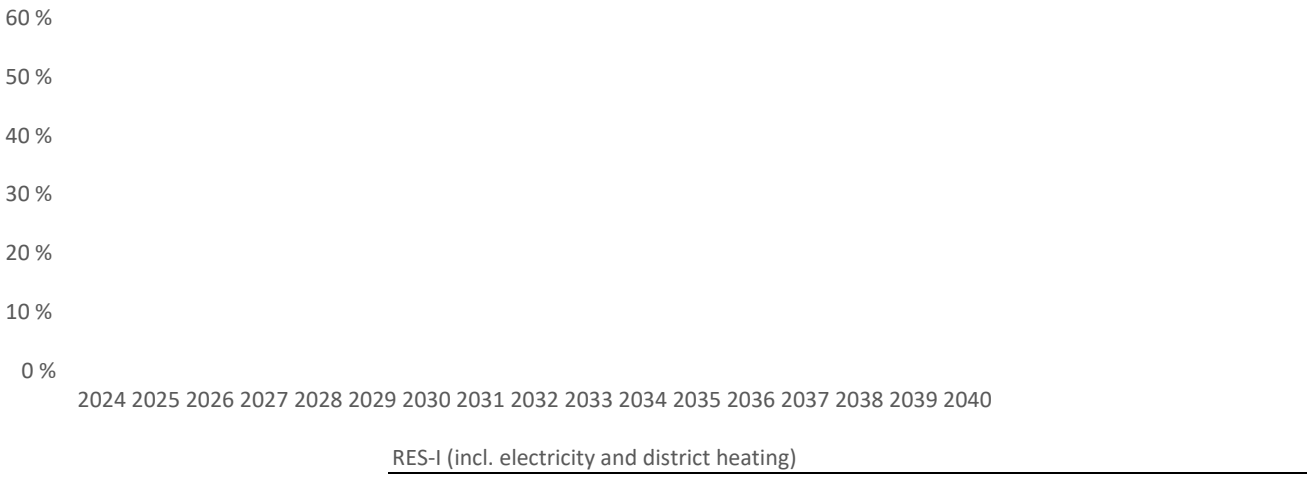
In addition, a target for green hydrogen in industry is introduced, where the contribution of RFNBO used for final energy and non-energy purposes is at least 42 % by 2030 and by 2035 60 % of hydrogen used for final energy and non-energy purposes in industry. Denmark expects to meet the target, as Denmark currently has a minimalt hydrogen consumption and consumption of hydrogen in 2030 and 2035 will rely largely on green hydrogen for RFNBO.

The revised Renewable Energy Directive (VEIII) introduced a reporting obligation in relation to expected imports and exportsof fuels of non-biological origin. See further comments on Table 19 in the section Completing new VEIII – NECP reporting obligations and timetable for other comments from EU-COM, etc. in section 3.1.2 (v).

Figure 8

Annual increase of RES share in industry for 2024-2040

2https://bygningsreglementet.dk/Historisk/BR18_Version3/Tekniske-bestemmelser/11/Krav/280_282
3https://bygningsreglementet.dk/Historisk/BR18_Version3/Tekniske-bestemmelser/11/BRV/Energiforbrug/Kap-1_7



Source: Climate Status and Outlook 2024 and the Danish Energy Agency

V in the transport sector

From 2022, Denmark introduced a national CO_2e-displacement requirement for fuels supplied to road transport, rail and non-road vehicles of 3.4 % increasing to 7 % in 2030. The Danish legislation also provides that in each of the years 20222029 there must be a reduction in life cycle greenhouse gas emissions per unit of energy from fuel supplied to trans ports andelectricity supplied for use in road transport vehicles of at least 6 % in relation to a reference value of 94.1 g/MJ.

Furthermore, the ReFuelEU Aviation Regulation sets an increasing blending requirement for sustainable aviation fuels starting from 2025, and FuelEU Maritime sets an increasing CO_2 e-displacementrequirement for shipping companies also starting from 2025. Both regulations are expected to increase the share of renewable fuels in maritime transport and aviation.

Denmark will comply with the requirements of the VEIII Directive for advanced biofuels and RFNBOs of 1 % in 2025 with the national CO_2e displacement requirement and by counting biogas injected into the Danish gas system when reporting to Eurostat. In addition,it has been decided to exempt Rønne-Køge Connection and Hou-Sævig from the CO_2e-displacement requirement in FuelEU Maritime until 2029. The extension options in FuelEU Maritime and ReFuelEU Aviation will not be used.

The *Agreement on Green Aviation in Denmark* of 15 December 2023 provides pooled funds to support a green domestic flight in 2025 and a fully green domestic aviation in 2030 based on sustainable aviation fuels.

The reduction in greenhouse gas intensity in the transport sector is estimated to be 27 % in 2030, see Figure 6. This means that the requirements of the VEIII Directive for the transport sector in 2 030 are expected to be exceeded irrespective of whether Denmark chooses to meet the requirement with a renewable energy share of 29 % or a reduction in CO_2e-intensity of 14.5 %.

(III) Estimated trajectories by renewable energy technologies, which the Member State expects to use to truly implementthe overall and sectoral trajectory for renewable energy from 2021 to 2030, including theexpected gross final energy consumption in Mtoeper technology and sector as well as the total planned installed capacity in MW (broken down by new rated power and repowering) for each technology and sector;

In order to reflect the EU Solar Strategy, which aims to bring the total EU solar PV capacity closer to 600 GW by 2030, the then government has reached an agreement with a broad majority in the Danish Parliament to ensure framework conditions thatwould allow a four-fold increase in total electricity generation from solar and rural wind by 2030. In addition, under the TEN-E commitment and through the North Sea Cooperation (NSOG) and Baltic Sea Cooperation (BEMIP), Denmark has submitted non-binding targets foroffshore wind deployment by 2030. For the North Sea area, 5.3 GW have been submitted and for the Baltic Sea 7.9 GW were submitted in 2030 for future and existing offshore wind farms.

Targets to produce renewable gases, in particular by helping to promote the production of sustainable biogas and biomethane production in the EU to 35 bcm by 2030.

There is a political ambition that Danish biogas production should correspond to 100 % of Denmark's total gas foruse by 2030. There are support schemes for the production and use of biogas, which are expected to supply around 1.4 billion metres of[3] biogas in 2030. Absent, a tender for biogas and other green gases in the gas system has been decided, which is expected to supply approximately 0.4 billion m[3] biometane in 2030.

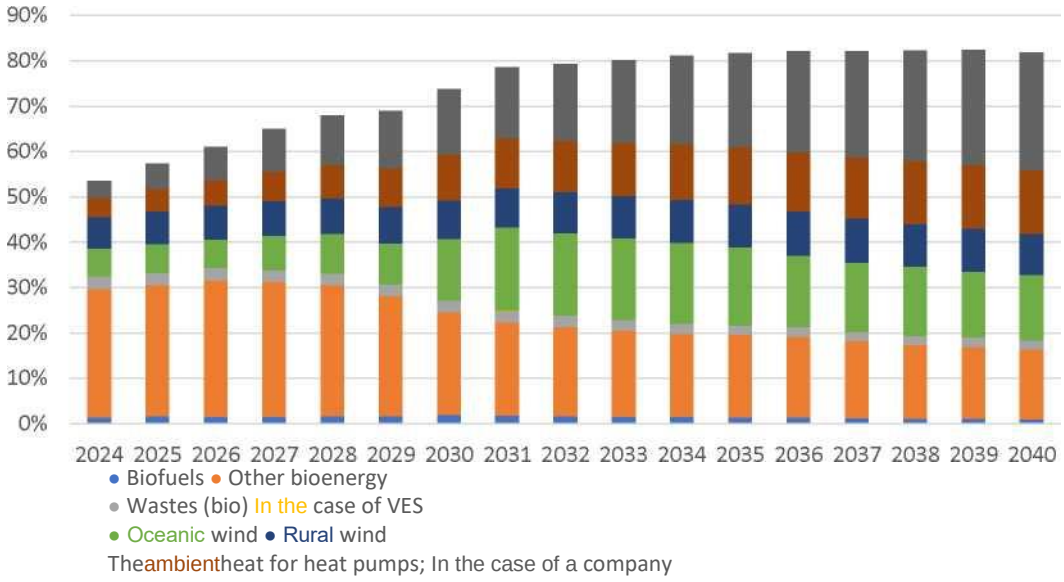
Hydrogen production in Mtoe and electrolysers capacity in MW.

The *Agreement on the Development and Promotion of Hydrogen and Green Fuels* aims for a Danish electrolysis capacity of 4-6 GW in 2030.

Denmark has not yet set individual targets for specific technologies to be used to achieve general and sectoralcifiic targets. Figure 9 is based on available modelling simulations and shows the estimated projection for the overall RES shares by technology.

Figure 9

Estimated projection for overall RES share by technology

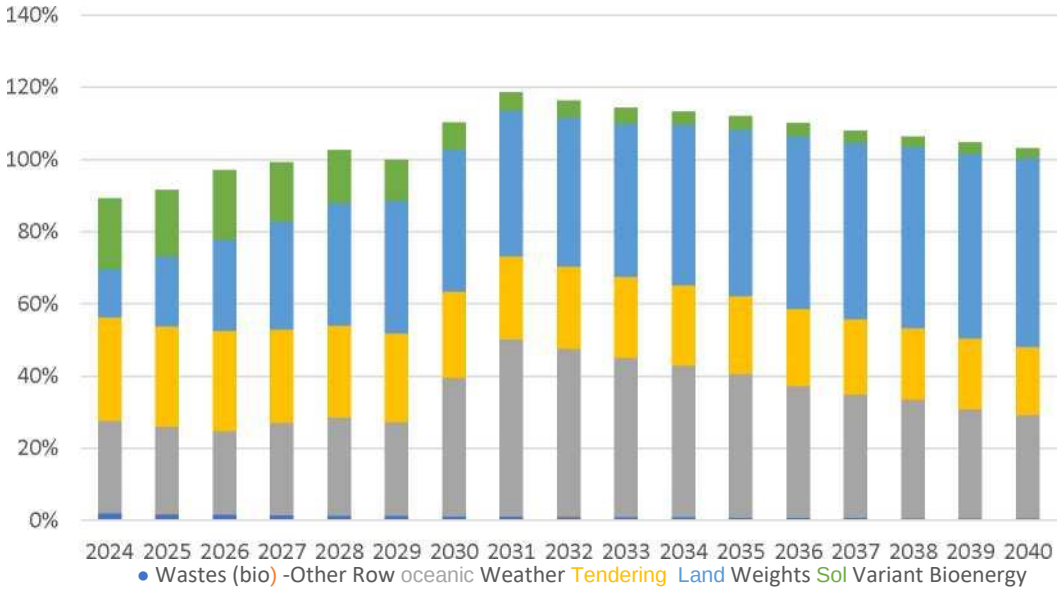


Note: To avoid double counting, hydrogen is not produced separately in the figure. The category "Other bioenergy" includes: biogas, upgraded biogas (green gas), wood chips, straw, wood pellets and firewood.
Source: Climate Status and Outlook 2024 and the Danish Energy Agency

Figure 10 shows that particularly sea wind is expected to increase significantly by 2030. This is partly due to a new offshore wind farm with a minimum capacity of 1.000 MW. The park will have a capacity of 1 GW. The park has been offered if theCouncil has been awarded and is expected to be completed in 2027. In addition, 6 GW of offshore wind are planned to be completed by the end of 2030, of which 4 GW are included. Due to their completion only at the end of 2030, they are only included in 2030 to a limited extent. The share of RES for electricity is therefore expected to increase to 111 % in 2030 and 119 % in 2031.

Figure 10

Estimated projection for RES-E, by technology



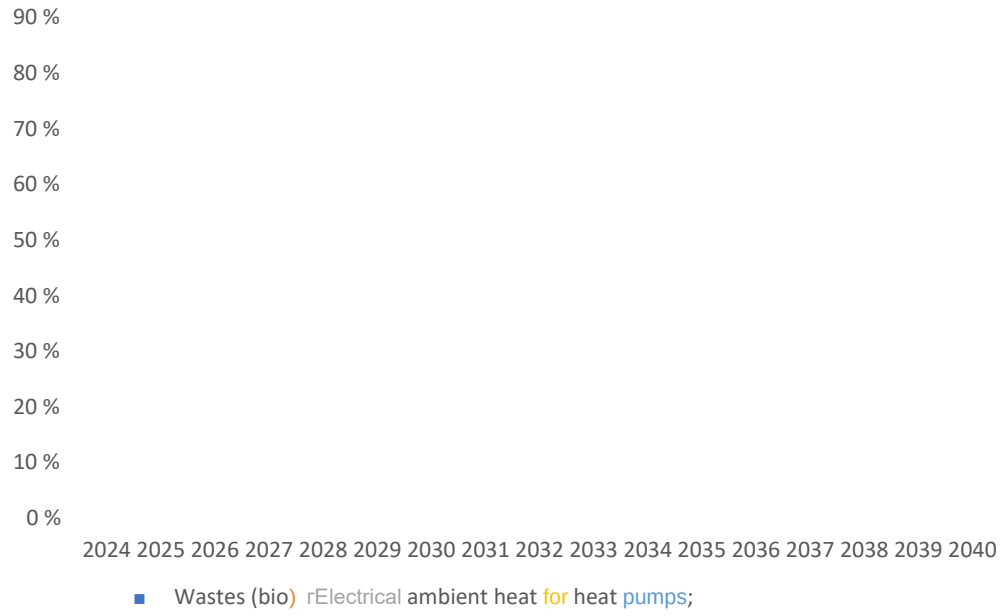
Note: To avoid double counting, hydrogen is not produced separately in the figure. The category "Other bioenergy" includes: biogas, upgraded biogas (green gas), wood chips, straw, wood pellets and firewood.
Source: Climate Status and Outlook 2024 and the Danish Energy Agency

The expected share of RES in the heating, cooling and district heating sectors, Figure 11 below, is expected to beachieved more significantly through the use of biomass and heat pumps, see Figure 11 and Figure 12.

For the heating and cooling sector, the share of RES is expected to increase from 68.1 % in 2024 to 81.3 % in 2030. The estimated increase is based on a frozen policy scenario and corresponds to an average increase over the whole period of 2 % per year. However,this ladder is mainly in 2024-2029, as the share of RES decreases slightly in 2030. These figures include only recyclable energy and bumpsfrom waste heat are therefore not included.

Figure 11

Estimated projection for RES-HC, by technology



Note: The category 'Other bioenergy' includes biogas, upgraded biogas (green gas), wood chips, straw, wood pellets and firewood.
Source: Climate Status and Outlook 2024 and the Danish Energy Agency

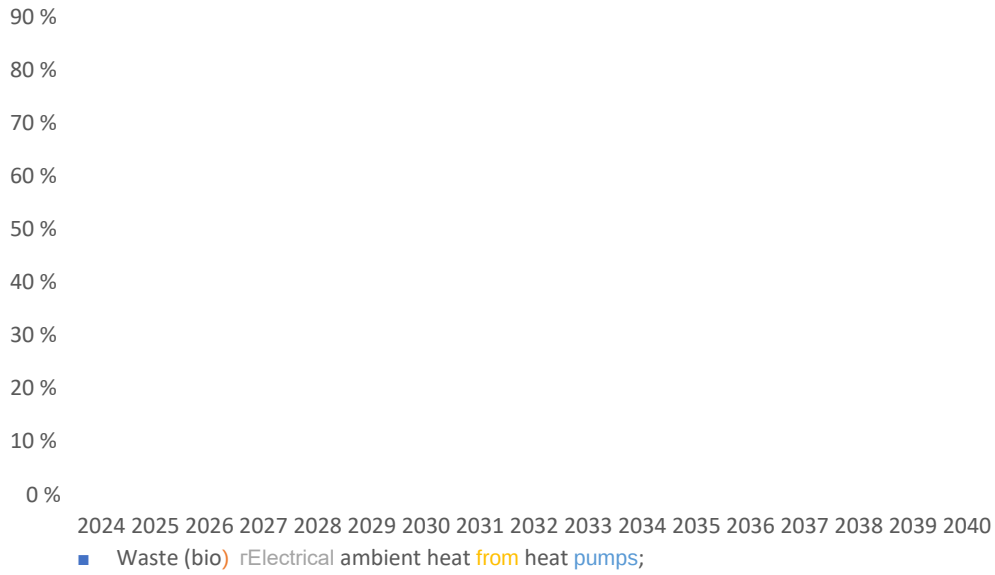
For the district heating sector, Graph 12 below, the share of RES is expected to increase from 78.4 % in 2024 to 81.2 % in 2030. The increase corresponds to an average increase over the period 2024-2030 of 0.44 % per year, or 1.6 % and -0.10 % for the periods 2024-2026 and 2026-2030.

The increase in the share of RES for the district heating sector comes largely from new heat pumps, rising from 4 % in 2024 to 20.6 % in 2030, as well as electricity from RES, which rises from 2.1 % in 2024 to 9.7 % in 2030. At the same time, the share of renewable energy for bioenergy decreases from 61.5 % in 2024 to 41.1 % in 2030.

These figures include only recyclable energy and waste heat contributions are not included. The share of RES in district heatingpure is not expected to be 100 % in 2030, due to non-biodegradable waste.

Figure 12

Estimated projection for RES-DH by technology

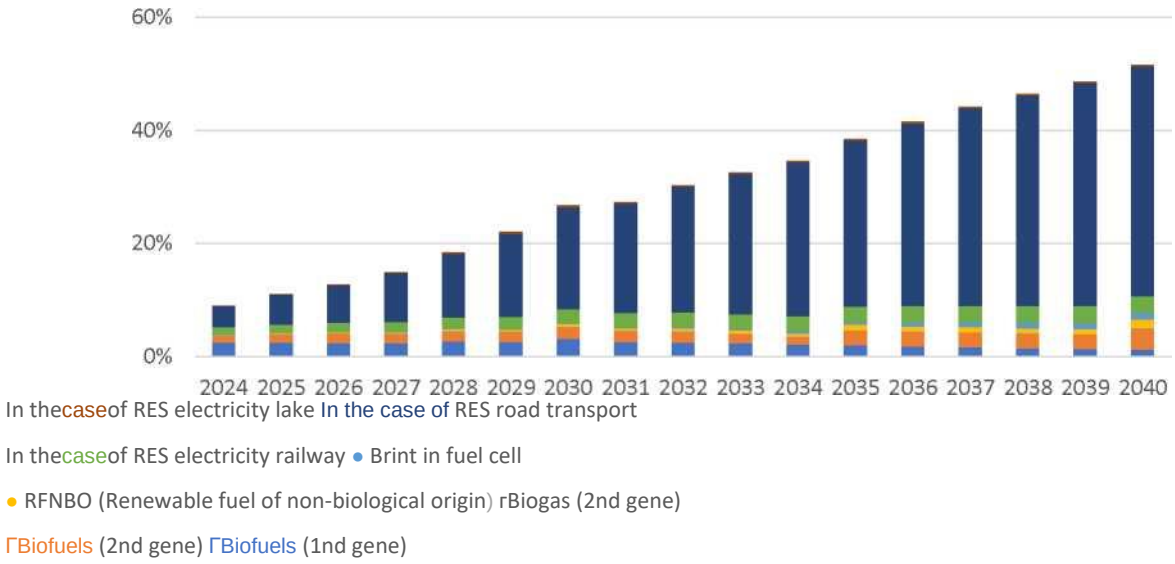


Note: The category 'Other bioenergy' includes biogas, upgraded biogas (green gas), wood chips, straw, wood pellets and firewood. The category "Electricity" includes electricity from renewable sources.

Source: Climate Status and Outlook 2024 and the Danish Energy Agency

Figure 13 below shows that the greenhouse gas intensity of the transport sector's energy consumption is expected to be reduced by 9 % points in 2024 and around 27 % in 2030. The increase in the period is mainly due to increased electricity consumption of electric vehicles, combined with higher share of renewable energy in electricity in the grid. The increase in the electrification of rail transport from 2027 is mainly due to new electric trains and electrification of the Fredericia/Ålborg train line, which is expected to enter into service by the end of 2026. Uncertainties with regard to future technological developments and other factors mean that these figures must be read with caveats.

Figure 13
Estimated GHG intensity reduction projection in the transport sector by fuel type



Note: Hydrogen not used in fuel cell is included in the category RFNBO.
Source: Climate Status and Outlook 2024 and the Danish Energy Agency

Table 10
Estimated energy consumption by technology and sector

Category	Unit	2024	2025	2026	2027	2028	2029	2030	2040
To be used as a-total useful energy-consumption	ktoe	8166	8671	9206	9762	10259	10481	11196	12683
Waste (bio)	ktoe	428	411	414	383	385	386	383	311
Biofuel	ktoe	211	239	231	220	252	239	279	148
Other RES	ktoe	1	1	1	1	1	1	1	1
Other bioenergy	ktoe	4313	4382	4522	4471	4344	4025	3456	2365
Electricity	ktoe	0	0	0	0	0	0	0	0
Ambientheat to heat pumps	ktoe	669	755	847	990	1101	1290	1532	2177
Sun	ktoe	561	833	1115	1405	1664	1928	2193	3993

Oceanic wind	ktoe	935	958	945	1142	1322	1382	2062	2221
Rural wind	ktoe	1048	1092	1130	1149	1190	1228	1288	1409
RES-H: C share	ktoe	4772	4932	5121	5274	5337	5385	5309	5264
Waste (bio)	ktoe	359	345	347	322	324	325	323	265
Other RES	ktoe	0	0	0	0	0	0	0	0
Other bioenergy	ktoe	3598	3654	3733	3730	3649	3447	3045	2147
Electricity	ktoe	70	103	117	156	187	247	334	602
Ambientheat to heat pumps	ktoe	669	755	847	990	1101	1290	1532	2177
Sun	ktoe	76	76	77	77	76	76	75	73
Oceanic wind	ktoe	0	0	0	0	0	0	0	0
Rural wind	ktoe	0	0	0	0	0	0	0	0
RES-E share	ktoe	3247	3597	3963	4414	4799	5020	5935	7737
Waste (bio)	ktoe	69	67	67	61	62	61	61	46
Other RES	ktoe	1	1	1	1	1	1	1	1
Other bioenergy	ktoe	710	722	781	732	686	569	403	213
Electricity	ktoe	0	0	0	0	0	0	0	0
Oceanic wind	ktoe	935	958	945	1142	1273	1308	2063	2148
Rural wind	ktoe	1048	1092	1130	1149	1190	1228	1288	1409
Ambientheat to heat pumps	ktoe	0	0	0	0	0	0	0	0
Sun	ktoe	485	757	1038	1328	1588	1852	2118	3920
RES-DH share	ktoe	2665	2749	2803	2807	2807	2832	2795	3049
Waste (bio)	ktoe	307	291	293	267	270	272	270	203
Other RES	ktoe	0	0	0	0	0	0	0	0
Other bioenergy	ktoe	2090	2129	2117	2014	1915	1734	1416	969
Electricity	ktoe	70	103	117	156	187	247	334	602
Ambientheat to heat pumps	ktoe	135	163	213	306	371	515	711	1209
Sun	ktoe	62	62	64	64	64	64	64	65
Oceanic wind	ktoe	0	0	0	0	0	0	0	0
Rural wind	ktoe	0	0	0	0	0	0	0	0

Table 11

Estimated installed RES capacity by technology and sector

Category	Unit	2024	2025	2026	2027	2028	2029	2030	2040
Electricity production capacity									
Waste	MW	106	109	109	104	104	104	104	103
Biogas	MW	133	133	132	132	132	132	132	63
Biomass	MW	1696	1705	1639	1639	1639	1639	1639	828
Oceanic wind	MW	2656	2656	2611	3619	3527	3705	7705	6857
Hydro	MW	7	7	7	7	7	7	7	7
Rural wind	MW	4963	5100	5210	5242	5371	5492	5702	5325
Solar	MW	4417	6649	8940	11289	13396	15564	17788	34921
Heat pumps	MW	5	5	5	5	5	5	5	0
District heating generation capacity									
Waste	MW	503	518	520	494	495	495	495	490
Biogas	MW	149	149	147	145	143	141	141	81
Biomass	MW	5991	6084	5622	5461	5300	5133	5085	3469
Geothermia	MW	8	8	8	8	8	8	8	8
Industrial heat	MW	368	373	385	437	437	465	465	480
Solar thermal	MW	1075	1075	1110	1112	1115	1115	1115	1132
Heat pumps	MW	607	661	977	1426	1753	2301	2582	3991
Heat pumps (waste heat)	MW	208	238	254	304	364	424	486	671
Heat pumps (geothermia)	MW	—	—	—	—	—	—	110	110

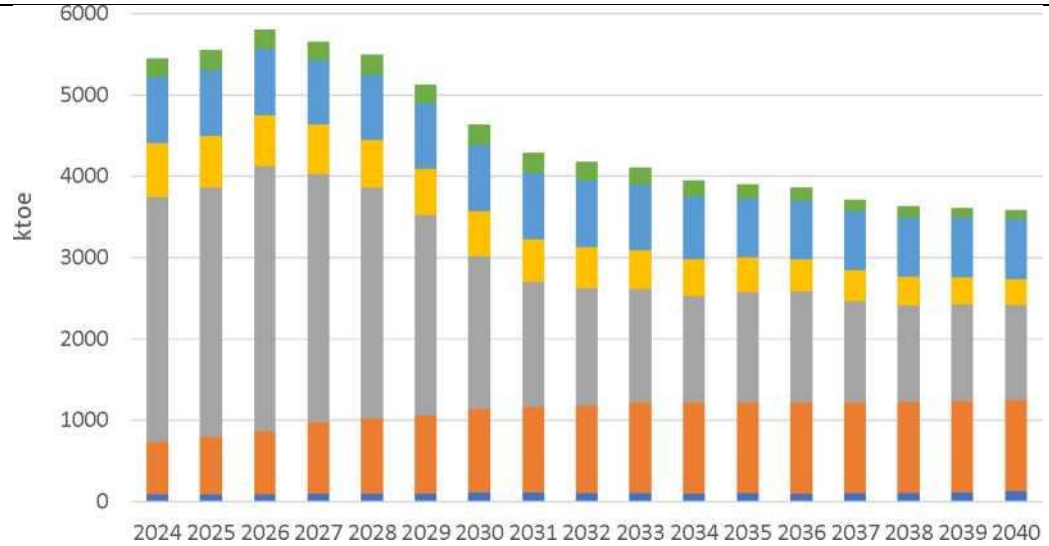
The volume of repowering projects depends on many factors, including specific market conditions and technological developments. Denmark has no specific objectives for repowering projects and the simulation for planned capacity does not differentiatebetween new capacity and capacity as a result of repowering. Therefore, there is no reliable data available onthe volume of repowering projects, including the split of total planned installed capacity into new capacity and repowe.

(iv) Estimated trajectories for bioenergy demand, broken down by heat, electricity and transport, as well as for the supply of biomass by feedstock and origin (distinguishing betweendomestic production and imports). For forest biomass, an assessment of its source and impact on the LULUCF sink

Theconsumption of bioenergy in Denmark has grown for several years and today (2022 data) represents around 70 % of total renewable energy consumption. Figure 14 shows the expected evolution by sector.

DAnmark has not currently set any individual targets for bioenergy demand, either aggregated or broken down by sector, import, etc. In 2023, biogas accounted for 38 % of total Danish gas consumption. The ambition is for biogas production in 2030 to cover 100 % of Denmark's gas consumption (source: kefm.dk). Climate depreciation 2024 shows that the overall useof bio fuels will continue at almost the same level until 2027, after which consumption is expected to decrease by 2040. Figure 14 shows the expected trend up to 2040.

Figure 14
Estimated projections for biofuels per sector, ktoe



In thecaseof a bio gas upgrade, the electric and district heating sectoris in the case of heating and heating in the Husarborsand the industrial and district heating sectorsin the case of industrialand transport.

Source: Climate Status and Outlook 2024 and the Danish Energy Agency

More than three quarters of the current consumption of solid biofuels are used for district heating and electricity production, and the use of solid biofuels for these purposes has almost quadrupled since 2000. The main reason for this development is that allof Denmark's coal-fired power plants have been converted into the use of biofuels.

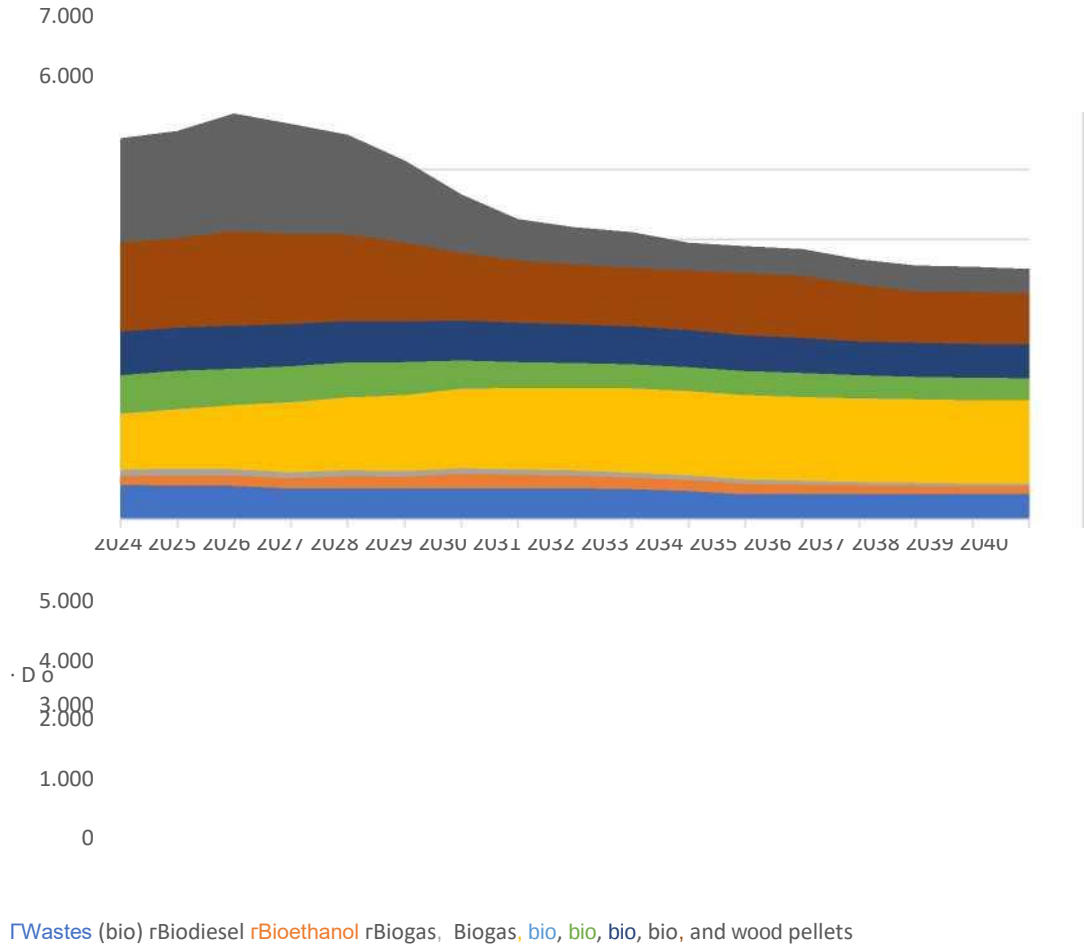
The use of biofuels in households today accounts for 18 % of the total consumption of solid biofuels. In households, biofuels are mainly used for heating using burning stoves (burners) and biomass boilers (wood pellets). In addition, households use biomethane from the natural gas network. In Denmark, there are energy and CO_2taxes on fossil fuels for heatingpurposes. For houses located outside areas with access to district heating and natural gas, the use of bioenergy for heating together with individual heat pumps is often the cheapest option. Work is ongoing to phase out the use of gas for heatingin households, including through the decoupling mechanism.

Today, industry and transport together use around 19 % of bioenergy. Consumption is expected to remainbroadly stable by 2024 according to the Klimapha Report 2028, after which it will start to decline.

Figure 15 shows the historical and expected use of energy from biomass by fuel type. The figure shows that woody biomass today (2023 data) accounts for 62 % of total bioenergy consumption. As mentioned above, woody biomass includes wood chips, wood wood wood pellets and wood waste. The forecast in Figure 15 shows that total consumption of woody biomass will decrease after 2026 by 2040.

Figure 15

Estimated biomass supply projection, by fuel type

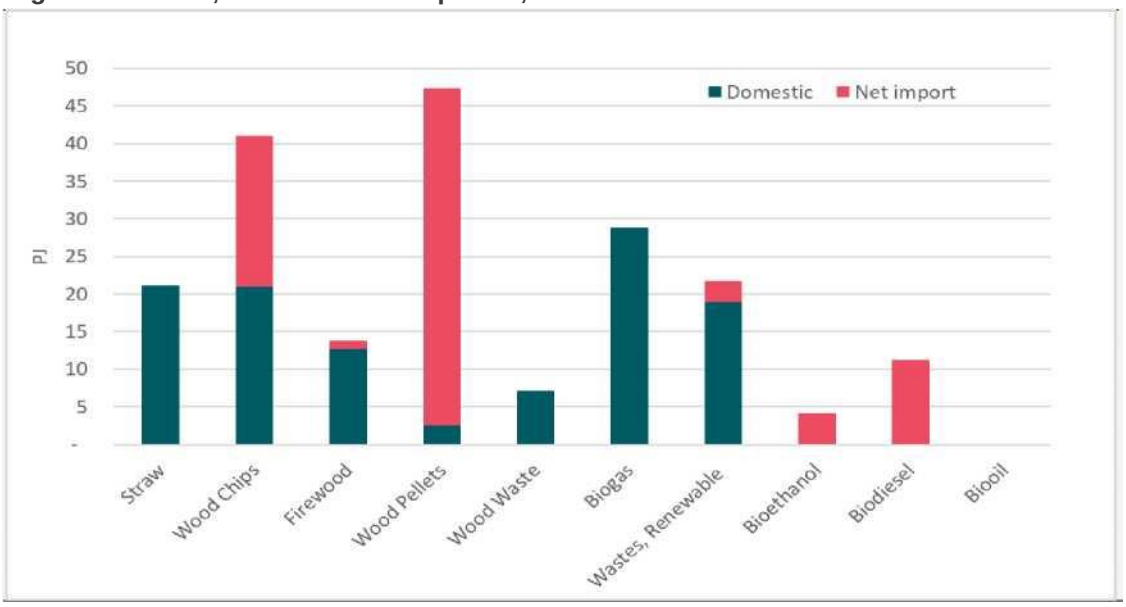


Source: Climate Status and Outlook 2024 and the Danish Energy Agency

Denmark uses both domestic biomass fuels and imported biomass fuels. Figure 16 shows different types of bioenergy by original sources and imports, based on 2022 data.

Figure 16

Origin of biofuels, domestic and imported, 2022



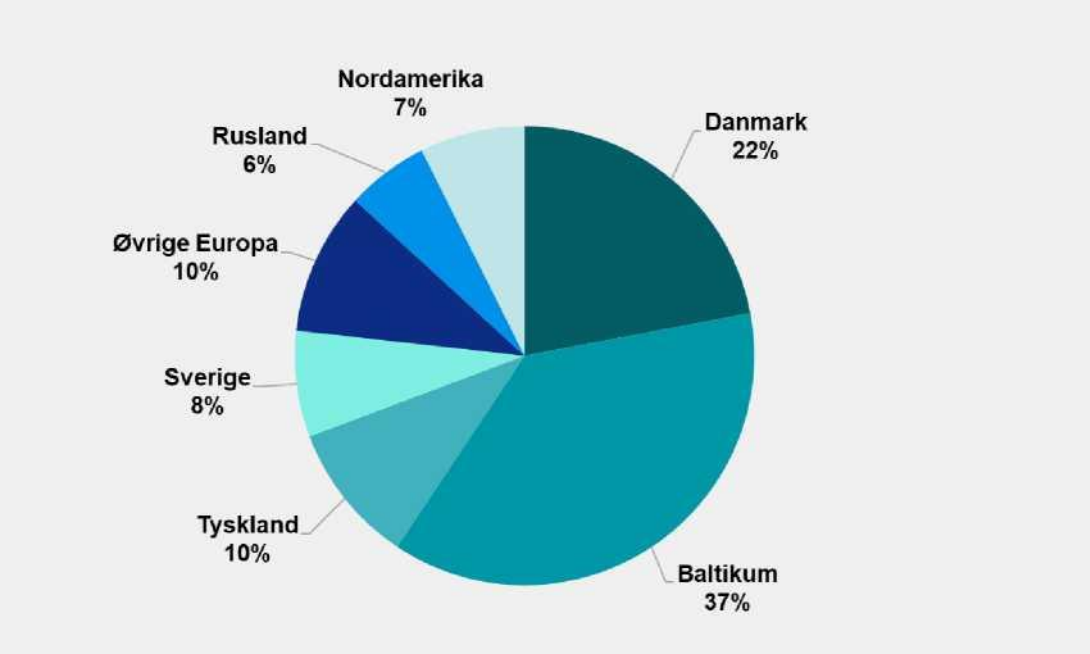
Source: Energy Statistics 2022, Danish

Figure 16 shows that import shares differ significantly between fuel types. Wood pellets, bioethanol and biodiesel areimported almost 100 % and wood chips are divided equally between imports and domestic sources, while the other types of biofuels and biofuels come mainly from domestic sources.

The Danish climate status and projection does not provide a forecast for the origin of biofuels, but it would be a reasonable assumption to say that the 2021 picture is also valid for the near future. However, EU sanctions on timber from Russia and Belarus have meant importers have had to find new sources of specific wood pellets. The main importing countries forwood pellets and wood chips for the production of electricity and district heating in Denmark are shown in Figure 17 below, based on data for 2021.

Figure 17

Geographical origin of the total consumption of wood pellets and wood chips for electricity and district heating production in Denmark in 2021



Source: Global Afrapping 2023, Background Note No 103

Solid biofuels include the consumption of wood, straw and bio-waste for the production of electricity and heat in households, industry and the collective supply (electricity and district heating). The increase in consumption over the 2010s is due, inter alia, to the conversion of a number of centralheat and power plants into the full or partial use of biomass for the production of electricity and heat rather thannatural gas and coal.

Half of Denmark's total consumption of wood fuels, i.e. both wood wood, wood waste, wood chips and pellets, is imported. Thus, 48 % of the total volume of wood used for the production of electricity, district heating and individual heat in Denmark in 2021 was Danish, while 52 % was imported.

Looking only at the consumption of wood pellets and wood chips, more than one fifth of the total volume of wood pellets and wood-chips used to produce electricity and district heating in Denmark in 2021, Danish origin, i.e. the wood comes from Danish forests, etc. The Baltic accounts for just over one third (37 %) of the total, and the rest comes from a wide range of countries such as Germany, Sweden and North America. There is a significant difference between the geographical origin of wood chips and wood pellets. Thus, 51 % of tiles' consumption for the production of electricity and district heating in 2021 is of Danish origin, but only4 % of wood pellet consumption (see Figure 16).

Sustainability requirements for biomass

A large part of the Danish share of RES is based on imports of woody biomass for burning.

Denmark has implemented4 the VE II Directive (Articles 29, 30 and 31) and a broad political agreement on woody biomass5 from October 2020. The Danish legal requirements on the sustainability of biomass for the production of electricity, heating and cooling entered into force on 30 June 2021. Denmark's implementation imposes stricter requirements on woody biomass than the VEII Directive, while the Act implements theDirector's requirements for the sustainability of solid and gaseous biofuels for electricity and heat production for the other categories of biomass.

The tighter Danish implementation includes lowered installation limits for heat and CHP plants, which means that more installations are covered. There are also requirements for several categories of biomass, namely wood from the wood industry, hedgerows, etc.

4Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 – on the promotion of the use of energy from renewable sources
5Agreement on sustainability requirements for woody biomass for energy (kefm.dk)

(non-forest) and additional requirements for forest biomass. Finally, it requires older installations to be subject to (higher) fossil greenhouse gas saving requirements in the supply chain.

The sustainability requirements should reduce as much as possible the risk of using "unsustainable produced biomass" in Denmark, i.e. biomass with a high climate or biodiversity impact. At the same time, the requirements are formulated flexibly for reasons of security of supply and consumers' heating prices.

In order to ensure a stable supply of wood pellets to private households, etc. during the supply crisis 2022, a targeted relaxation was temporarily facilitated, exempting importers and producers selling wood pellets for individual heating in households,etc. from sustainability requirements. The temporary relief expired on 30 April 2024.

Danish forest regulation

The management of Denmark's forests is governed primarily by the Forestry Act. It lays down rules for the operation of land subject to protection, which accounts for approximately 70 % of Denmark's forest area. Non-forested forest land includes, among others, less privately owned forests and areas with Christmas trees and ornamental green planted on agricultural land. The law aims to preserve and protect the country's forests and increase forest area. The law also aims to promote the sustainable management of the country's forests. Denmark's implementation of the sustainability criteria from the Renewable Energy Directive II covers all forests. This includes, among other things,the requirement to restore forest land harvested for the production of biofuels.

(v) Where applicable, other national trajectories and objectives, including those that are protractedor sector-specific (e.g. share of renewable energy in district heating, use of renewable energy in buildings, renewable energy produced by cities, renewable energy communities and renewable self-consumers, energy recovered from sludge captured through wastewater treatment);

National objectives to establish renewable energy communities in each municipality with a populationof more than 10.000 people.

Denmark has its well-developed collective electricity grid due to the relatively high population density, a history ofcitizen electricity production and the immediate absence of regulatory barriers to establishing renewable energy communities. Denmark has therefore not implemented any new measures aimed at ensuring a renewable energy community in all municipalities with a population of more than 10.000 citizens.

Offshore renewable energy development targets in the Marine Plan

In the period 2022-2025, the Danish Energy Agency shall carry out a comprehensive fine-screening and sensitivity mapping on the Danish marine hall in order to obtain an overview of possible environmental impacts and challenges of large-scale sea wind and to assess the overall potential of marine wind in the Danish sea basins. The project will contribute to better and better informed decisions on the development of marine wind in Danfield in the future. The project is independent of the Marine Plan but will provide input for the future marine planning of marine wind. In addition, through the North Sea Cooperation (NSEC) and Baltic Sea Cooperation (BEMIP), Denmark has notified offshore wind capacity in 2023 for a non-binding agreement on offshore renewable development by 2050. In the North Sea cooperation, Denmark helps to ensure that the full offshore wind potential is achieved, and in this context Denmark has reported 35 GW of marine wind in 2050. For the Baltic Sea, 7.9 GW have been reported in 2030.

A political agreement was reached on 7 June 2023 with all parties to the Danish Parliament to update Denmark's maritime plan with approximately 31.000 km^2 for renewable energy and energy islands, which corresponds to approximately 30 % of Denmark's marine space. The marine plan itself does not include renewable energy development targets. Targets for offshore development are included in various energy and climate agreements. Designations in the Marine Plan may change, including due to the assessment of the need for additional space for renewable energy.

Development of marine wind by 2040

The graph below shows the overall development of marine wind capacity in the Climate Status and Outlook 2024 (KF24). The KF24 is based on a "frozed scenario", which is why it simply includes already agreed sea-wind developments. The projection assumes an increase in the period up to 2030, mainly due to the supply of 6 GW of radial offshore wind, after which it will decrease slightly by

2040 due to the dismantling of older offshore wind turbines6.

Figure 18
Marine wind in Denmark (MW)

Source: Climate Status and Outlook 2024 and the Danish Energy Agency

2.2 Energy efficiency dimension

(i) The elements set out in Article 4(b);

1) *The indicative national energy efficiency contribution to achieving the Union's energy efficiency target of at least 32.5 % in 2030 as referred to in Article 1(1) and Article 3(5) of Directive 2012/27/EU, based on either primary or final energy consumption, primary or final energy savings or energy intensity. Member States shall express their contribution in terms of absolute level of primary energy consumption and final energy consumption in 2020, and in terms of absolute level of primary energy consumption and final energy consumption in 2030, with an indicative trajectory for that contribution from 2021 onwards. they shall explain their underlying methodology and the conversion factors used;*

With the adoption of the recast EED from 2023, an increased common EU energy efficiency target has been adopted, which would reduceenergy for use as a whole in the EU by 11.7 % in 2030. The target consists of two parts: a binding EU target of 11.7 % reduction in final energy consumption and an indicative target of 11.7 % reduction in primary energy consumption.

Denmark's contribution to the binding target is based on the Commission's original baseline and theformula in Annex 1 of the recast EED. For the final energy consumption target (FEC), the indicativecontribution of Dan mark is a maximum consumption of 13,73 Mtoe or 575 PJ in 2030.

For the indicative target for primary energy consumption (PEC), Denmark's contribution is a consumption of 15,35 Mtoe or 643 PJ in 2030.

Table 12

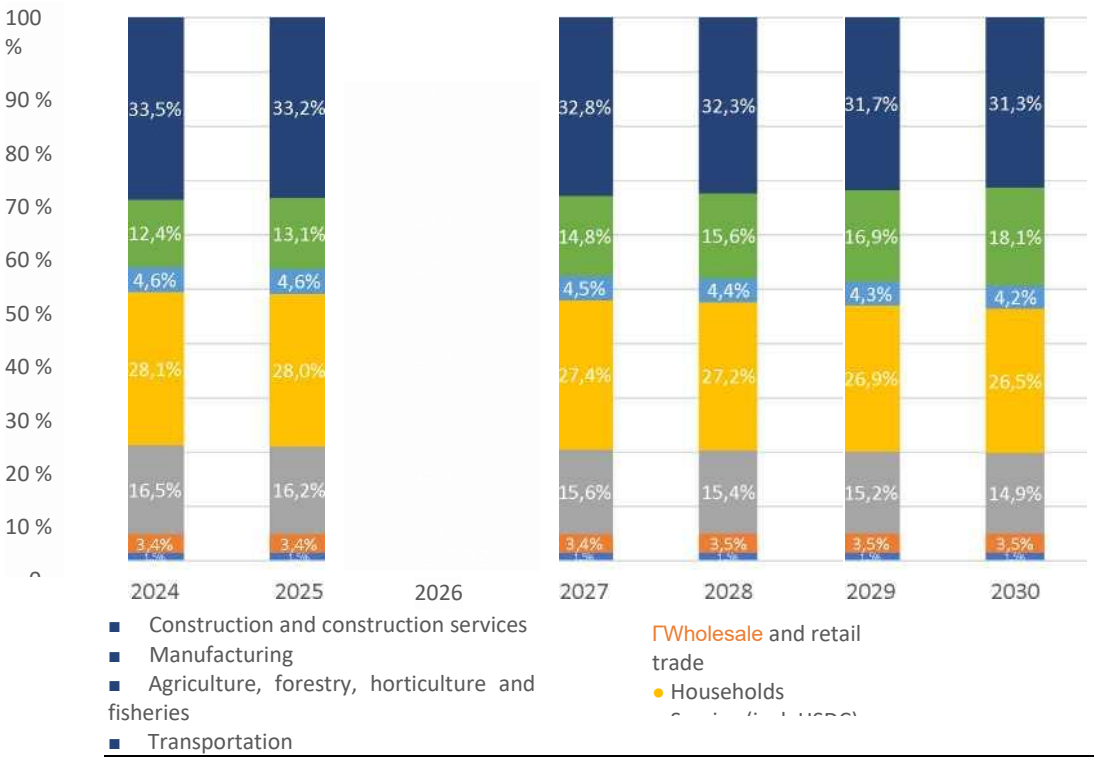
6https://www.kefm.dk/Media/638503433080965897/7.%20KF24%20sektorforuds%C3%A6tningsno- TAT% 20el% 20 and% 20district warm.pdf

Indicative trajectory for contributions, PJ											
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
FEC	559	574	571	581	580	579	578	578	577	576	575
PEC	683	719	670	662	671	664	664	658	656	637	643

Note: For FEC 2020-22 is the year of statistics. 2023 is from KF24, while 2024-2029 is the linear reduction towards the 2030 contribution of 575. For PEC, 2020-2022 statistics are years and 2023-2 030 are CDF24. Corrected for ambient heat, energy for non-energy purposes and including international aviation.

Figure 19

Projection of the share of final energy consumption by sector



2) *The cumulative amount of end-use energy savings to be achieved in the period 2021-2030 under Article 7(1)(b) on energy savings obligations under Directive 2012/27/EU.*

With the recast EED from 2023, Member States shall achieve cumulative end-use energy savings equivalent to new savings each year from 1 January 2021 to 31 December 2030 of at least:

i) 0.8 % of annual final energy consumption from 1 January 2021 to 31 December 2023, measured on average; over the most recent three-year period prior to 1 January 2019;
ii) 1.3 % of annual final energy consumption from 1 January 2024 to 31 December 2025, measured on average; over the most recent three-year period prior to 1 January 2019;
iii) 1.5 % of annual final energy consumption from 1 January 2026 to 31 December 2027, measured on average; over the most recent three-year period prior to 1 January 2019;
iv) 1.9 % of annual final energy consumption from 1 January 2028 to 31 December 2030, measured on average; over the most recent three-year period prior to 1 January 2019.

The cumulative amount of energy savings in final consumption to be achieved over the period 2021-2030 shall be based on final energy consumption (excluding consumption for non-energy purposes) in 2016, 2017 and 2018. The calculation is based on Eurostatdata (Final energy consumption Europe 2020-2030). The data and calculation are shown in Table 13 and Table 14.

Table 13
Annual energy consumption for Denmark

	2016	2017	2018	Average
PJ	607,0	610,3	609,9	609,01
Mtoe	14,50	14,58	14,57	14,55

ANM: Eurostat data, Final energy consumption Europe 2020-2030.

Table 14
Denmark's energy savings obligation

	0.8 %	1.3 %	1.5 %	1.9 %
Annual savings (PJ/Mtoe)	4,87/0,12	7,92/0,19	9,14/0,22	11,57/0,28
Total cumulative liability 2021-2030 (PJ/Mtoe)		386,1/9,22		

3) *The indicative milestones of the long-term strategy for the renovation of the national stock of residential buildings and are non-residential buildings(both public and private), the roadmap with the domestically established measurable progress indicators, a evidence-based estimate of expected energy savings and additional benefits, and the contributions to the Union's energy efficiency targets as set out in Directive 2012/27/EU in accordance with Article 2a of Directive 2010/31/EU;*

Please refer to section 2.2 (ii) on the LTRS etc.

4) *The total floor area to be renovated or equivalent annual energy savings to be achieved from 2021 to 2030, in linewith Article 5 of Directive 2012/27/EU on the exemplary role of public bodies' buildings.*

The European Commission's recommendation 10 to Denmark's draft NECP of December 2023 was to estimate the total energy-savings in the public sector, as well as the total area to be renovated annually, as a result of Article 5 and 6 of the 2023 recast EED. It should be noted that a decision on the commitment is expected in 2025, which is why finalestimates are not provided.

(ii) The indicative milestones for 2030, 2040 and 2050, the domestic measurable progress indicators, a faith-based estimate of expected energy savings and additional benefits and their contribution to the Union's islands, included in the roadmaps set out in the long-term strategies for the renovation of the national stock of residential and non-residential buildings, both public and private,in line with Article 2a of Directive 2010/31/EU.

Denmark notes with satisfaction that the European Parliament and the Council of the European Union approved the recast EPBD on 12 March and 12 April 2024 respectively, and is now starting work on the implementation of the Directive from the date of its entry into force on 28 May 2024 until the transposition deadline of 29 May 2026. A comprehensive analysis of the final requirements is now underway andcan be implemented in Denmark. Reporting on upcoming requirements for an updated National Building Renovation-Plan (NBRP) will be part of Denmark's upcoming NBRP, which is expected to be notified according to the expected deadlines in Article 3 of the recast EPBD.

For Denmark's current LTRS, which was notified to the European Commission on 10 March 2020 and 22 June 2021, reference is made to the previously submitted draft update of the[7] NECP.

(iii) Where applicable, other national objectives, including long-term targets or strategies and sector-specific targets and national objectives in areas such as energy efficiency in the transport sector and as regards heating and cooling;

Transition in the transport sector
See sections 3.1.1 and 3.1.2

Phasing out fossil heating
See Section 3.3 (i)

2.3 Dimension related to security of energy supply

(i) The elements set out in Article 4(b);

In 2019, the Danish government, together with a majority in the Danish Parliament, adopted a new Climate Law. The Climate Law sets a target of a 70 % reduction in greenhouse gas emissions relative to 1990 and climate neutrality by 2050. Since 2020, the Danish Parliament has adopted a number of major climate agreements, including the *Climate Agreement for Energy and Industry, etc. 2020* and *Climate Agreement on Green Power and Heat 2022*. The 2020 Climate Agreement aims to develop, expand and integrate green technologies in the energy sector and industry, ensuring a greenhouse gas reduction of 3.4 million tonnes of CO_2e by 2030. The 2022 Climate Agreement aims to quadruple electricity production from onshore solar and wind energy, as well as the possibility of a five-fold increase in offshore wind power, and sets the ambition for Denmark to be 100 % equipped with green gas by 2035 and that from 2030 there will be no homes heated with gas.

Danish society depends on maintaining a high level of security of energy supply. A secure and stable singlegiant supply benefits the country's citizens and businesses. Denmark is working to undergo a cost-effective green transition of the energy sector, where security of supply remains a high priority. To this end, increasedrenewable energy supply, electrification, sector integration,the use of flexibility in electricity consumption and power generation, energy efficiency and continued high interconnectivity with neighbouring countries and market development shall be ensured.

Denmark is a small open economy with a significant geographical location in the North Sea and the Baltic Sea, linkingScandina vien to Kontinental Europe. This means that the Danish options for importing and exporting different forms of energy are unique. Denmark is working to make the best use of these opportunities and to ensure the necessary physical andregulatory frameworks for international trade and cooperation.

Both gas, oil and electricity are working to ensure good international cooperation, both in terms of exchange and common understanding of the risk landscape. Regional cooperation in the Nordic region among regulators and at TSO level helps to support an integrated electricity system across borders.

There is currently a transformation of the energy sector in Denmark as part of a green transition. One element of this is the electrification of energyconsumption in heat and transport. Another element is the phasing-out of a number of thermal power plants over the coming years, while new power generation plants based on solar and wind energy are being set up. This reduces dependenceon energy imports from third countries. However, this also means that Denmark will have a more weather-dependent electricity system based on fluctuating electricity production. The need for flexibility and dispatchable technologies to balance the electricity system will therefore increase in the coming years.

Section 3.3 describes in more detail the 2022 energy crisis resulting from Russia's invasion of Ukraine and the actions taken at national and European level.

Responsibility for security of energy supply

7 https://ens.dk/sites/ens.dk/files/EnergiKlimapolitik/udkast_til_ajourfoering_af_danmarks_nationale_energi-_og_klimaplan.pdf

The Minister for Climate, Energy and Supply has overall responsibility for the security of energy supply in Denmark. The Minister also sets a planning target for the level of security of electricity supply under an Act which entered into force in 2018. The technical-monitoring and safeguarding of security of supply for electricity and gas is carried out by the national TSO (Energinet).

Each TSO shall be responsible for ensuring the existence of sufficient generation capacity or imports, network adequacy at transmission level and balancing of the system and maintaining security of supply, together with the efficient useof the interconnected electricity supply system and gas system. Each TSO shall be responsible for the sector contingency plans in both the electricity and gas sectors.

The electricity sector contingency plan covers the entire electricity grid connected to West and Eastern Denmark. It shall be

developed taking into account the cross-border effects on neighbouring countries and the exchange links. The plan describes how the TSO plans to deal with an emergency situation across the Danish electricity grid in a coordinated manner, ensuring at the same time consistency withthe situation at DSO and generation level. In addition, please describe how the TSO plans to handle cybersecurity incidents in the Danish electricity grid, focusing on the responsibility of the TSO, DSOs, electricity generators and balance managers, communication requirements, situation reporting requirements, etc. The same considerations apply to the contingency plan for the gas sector and are therefore not described in detail. In addition to the contingency plans, there is a national risk preparedness plan and for gas an action plan and anemergency supply plan in line with the EU Regulation on risk-preparedness in the electricity sector, EU Regulation 2017/1938 on measures to ensure security of gas supply and sector-specific EU regulation. These plans shall be updated at least every four years on the basis of a national and several regional risk assessments of the supplycorridors in which Denmark's energy systems are part.

In the field of oil, security of supply is ensured, inter alia, through the maintenance of emergency stocks under the IEA and EU regulation, as well as plans for consumption reduction measures and, ultimately, the possibility of prioritising oil consumers.

Security of electricity supply

Security of energy supply is not defined in Danish legislation, but a definition of the concept of securityof electricity supply is given in Section 984 (5) of the Electricity Supply Act No 11 of 12 May 2021. Security of electricity supply is defined as: *Likelihood that electricity is available to consumers when requested*. Denmark has a planning target for the level ofsecurity of electricity supply, which is set once a year by the Minister for Climate, Energy and the Minister for Supply. This is clear from Section1358 (47) of the Systems Alert Order (Order No 5 of 24 November 2023). The latest target is for 2033 and is 36 interruption minutes on average for an electricity consumer of one year. The 36 interruptions minutes are distributed in 29 minutes related to the distribution network and 7 minutes related to power adequacy, system security and transmission grid.

The planning target has been established on the basis of recommendations made by the Danish TSO Energinet in their annual statement onsecurity of electricity supply. The statement on security of electricity supply shall include an inventory of the statistical ELFOR security of supply, an assessment of future security of electricity supply and forecasts thereof, information on new measures necessary to maintain the established level of security of electricity supply and information on their costs. The framework for Energinets' statement for security of electricity supply is laid down in Section 38 of the System Liability Order.

The security of electricity supply in Denmark is challenged by a number of trends related to the green transition. This is particularly the case for the electrification of the heating and transport sector, as well as the installation of major demand facilities such as PtX and data centres, which greatly increases electricity consumption by 2030 and 2050. In addition, the phasing out of thermal power plants and theexpansion of ELPRO reduction from solar and wind takes place at the same time as rapid steps towards 2030 and beyond, leading to more fluctuating electricity generation. At the same time, several of Denmark's neighbouring countries on which Denmark depends on being able to import theelectricicity in situations of low electricity production from VE, even in the process of major transformation of their energy system, which may increase the risk of imbalance between production and consumption of electricity.

These trends create both network adequacy challenges, where grid expansion may find it difficult to keep up with both solar and wind expansion and rising electricity consumption. It also poses challenges with power adequacy, where periods of lack of solar and wind, combined with high consumption, can create power shortage situations. At the same time, fewer regulated power plants in the system may make it more difficult to obtain the necessary ancillary services.

To address these security of electricity supply challenges, Denmark is working on various solutions to this end. In this context, the-following can be mentioned, among other things:

On 25 June 2022, the Government and a number of parties from the Danish Parliament signed *the Climate Agreement on Green Power and Heat 2022.* With the agreement, the parties want to ensure framework conditions that will allow for a four-fold increase in total electricity generation from solar and rural wind by 2030 and allow the supply of at least 4 GW of offshore wind for realisation by 2030, which could help to cover the new electricity consumption coming from electrification.

Flexibility from both electricity consumption and electricity generation is essential to ensure a high level of security of electricity supply in the future, bothto power adequacy and grid adequacy. For this purpose, analyses have been launched through the climate agreements on green power and heat, including for flexible grid connection conditions and grid products. There are no specific objectives for how much flexibility is to be used in the system in the future. Flexibility shall be used where it is the most cost-effective solution. Therefore, Denmark is working to ensure the right regulatory framework for this to happen. However, the new rules ofthe Elmar kedsRegulation will set an indicative target for non-fossil flexibility in Denmark once the flexibility needs have been estimated.

To support the electrification of the system and the use of flexibility, digitalisation is needed in the electricity sector. The Danish

Energy Agency is therefore actively working on the digitalisation agenda for the supply area.

In the future, PtX could potentially play a significant role in the Danish energy system. Depending on whether the market expansionfor PtX follows the political ambitions, PtX plants can account for a significant part of the electricity consumption in Denmark, as it aims for 4-6 GW of electrolysis capacity in 2030, cf. the *Agreement on the Development and Promotion of Hydrogen and Green Fuels* of 15 March 2022. In the future, these installations could contribute to the flexibility of the electricity system. Efforts are being made to ensure the most appropriateparameters for flexibility to benefit the system and to create the right price signals to place the installations in the grid ina facial way.

Denmark already has a high capacity on international connections, which contributes significantly to the adequacy of the power. Maintainingthese connections and new connections is important for Denmark to maintain a high level ofelectricity supply security and therefore remains a priority. Both existing and new cross-border links will contribute positively to new objectives, such as those set out in the Green Deal and RepowerEU.

Denmark has the objective of establishing two energy islands – one in the North Sea and one at Bornholm, which was agreed with the Climate *ofSpeech for Energy and Industry, etc. 2020* of 22 June 2020. The electricity and foreign connections produced can contribute to the securityof electricity supply in Denmark and the countries associated with the energy islands.

An additional element that can help to support the security of electricity supply in Denmark is energy efficiency, asreducing the right electricity consumption will make it easier to ensure sufficient generation to cover it. See section 2.2 for objectives in thisregard.

More storage capacity is also a way to ensure security of electricity supply. Denmark has no concrete objectives for storage capacity, as we are still assessing the need and the right solutions to maintain the planned futuresecurity target for electricity supply. By ensuring the right price signals in the market, storage solutions are expected to becomeetable in cases where this is a cost-effective solution. Support may also be sought for electricity storage projects which are in the expansionphase through the EUDP. However, the new rules in the Electricity Market Regulation will set a target for non-fossil flexibility, including the contribution of energy storage in Denmark, once the flexibility needs have been estimated.

In the short term, Denmark is also working to ensure a high level of security of electricity supply, including in response to energy scrub. This has included the postponement of the closure of three power plants until August 2024. See more in the section onsecurity of electricity supply under point 3.3.

In the area of preparedness, work is ongoing on regulatory updates. This includes both more ambitious regulation with increased requirements for companies in the electricity sector, the inclusion of new companies and the implementation of the NIS-2 and CER Directives.

Weather

With the increased levels of greenhouse gases in the atmosphere, it is expected that more and more severe weather phenomena will occur. Weather phenomena of a more serious nature may have a negative impact on the robustness of Denmark's energy system. In particular, weather phenomena such as storms, droughts, forest fires and increased water levels may have an impact on the electricity grid, sources of supply and energyefficiency in general.

Extreme weather conditions may affect power generating installations. More extreme weather conditions with more severe storms may lead to the need to protect installations against changing weather conditions. However, the effects are limited in Denmark, as Denmark's electricity production is largelystaggered from wind energy and wind turbines are protected against high wind speeds. At the same time, the vulnerable electricity grid will be buried into the ground wherever possible. Wind turbines are disrupted in strong wind, which means that electricity production also stops. However, strong winds typically occur only in parts of Denmark at the same time, so the shutdown of wind turbines will typically only be convenient.

Weather conditions may affect electricity prices in Denmark. For example, increased precipitation in Sweden and Norway will mean more hydropower production, while higher temperatures in Norway and Sweden will reduce electricity consumption for heating in these countries. Both of these factors will reduce electricity prices in Denmark.

Heat supply

Weather phenomena of a more serious nature have the potential to affect heat generators. Several of the large condensing CHP plants are located at the water and, in order to protect against increased water levels, dam installations and water protection may be needed, whether in the case of new investments or non-depreciated installations. However, this is not considered to be a risk before

the water level increases by several metres, which will potentially only happen several hundred years in the future. However, there may be incidents where water levels rise temporarily, which may have negative consequences for plants located in the water. In addition to increasing electrification of the heating sector, there is a greater need for stable electricity generation, whichmay be affected by climate change, as illustrated above. However, this can be partly addressed through increased use of heatstocks, which contribute positively to the flexibility of both the electricity and heating sectors. In general, climate change is not considered to pose a major risk to the security of heat supply.

Biomass

Higher temperatures, longer growing seasons and higher atmospheric CO_2content, all other things being equal, can lead to higher plant growth and thus higher domestic biomass production. However, an increase in drought and pests (beetles, fungi, etc.) may move in the opposite direction. If winds wipe out larger areas of trees (storms), this could reduce the price of woody biomass in the short term, but may increase it in the longer term. Increased demand for biomass for purposes other than electricity and heat production, including for new uses, is likely in the future to increase competition for biomass and thus, all other things being equal, potentially to increase the price of wooden energy. Finally, the biomass land used by Denmark for energy production is not assessed as being at risk of desertification.

Security of heat supply

Danish heat consumption consists mainly of district heating, which currently heat around 70 % of Danish households. The leading householdsare heated by individual heating such as heat pumps, electric panels or oil, gas and biomass heaters.

In Denmark, district heating is produced from a variety of energy sources and technologies, thus the district heating sector has high diversity in production, providing resilience and flexibility in the sector. The production takes place, inter alia, from renewable energy-sources such as renewable electricity, bioenergy, biogenic waste, biogas, waste heat, solar energy and geothermal energy in combination with heatstorage, and from fossil fuels such as fossil waste, coal and natural gas. In addition, short disruptions in heat supply are not critical as it takes a long time to cool down buildings. The supply of heat is therefore considered less critical than electricity and gas for theacidification.

The remaining households, which are not heated by district heating, are heated with individual solutions as described above. In particular, households with wood pellet pine and oil boilers are considered more critical as they are heat consumers dependent on one energy source. However, households with oil boilers are expected to switch to alternative renewable energy solutions over time, as the private economyis a less attractive solution than, among others, district heating and heat pumps. For example, wood pellet pine are initiatives to ensurethe acidification safety of biomass described in section 3.3 (i).

As a result of the war in Ukraine and the two EU directives NIS2 and CER, new contingency legislation is expected in areas such as district heating and cooling. In concrete terms, preparedness requirements will be imposed on companies in the sector. Preparedness shall ensure that businesses and facilities critical to supply are protected and that there are plans for rapid restoration of supply in the event of disruption.

Against the backdrop of the war in Ukraine and the resulting uncertainties regarding the supply situation and relatively high energy prices, a number of measures were adopted in 2022 to increase the independence of imported gas and oil, including measures to increase the supply ofdistrict heating and renewable energy, thereby strengthening security of supply and the green transition. The actions are described in section 3.3.

On the basis of a number of political agreements, cf. Section 3.3., an increase in electrification of the Danish heating sector is expected by 2035. This is due, inter alia, to the expectation of increased installation of individual heat pumps, as well as the phasing-out of fossil fuelin district heating production, where specifically electric boilers and collective heat pumps in combination with heat cakes are expected to replace fossil production. This will have a positive effect on the security of gas supply as it will release gas, including inter alia to non-protected customers, see section 3.2. At the same time, however, this leads to a number of points of attention in relation to thesafety of electricity (see section 3.2).

Security of oil supply

Denmark has a high level of security of oil supply. Denmark has oil emergency stocks equivalent to 81 days of consumption. In addition, commercial oil stocks are added. Both emergency stocks and commercial stocks may consist of one of crude oil and/or of variouspetroleum products, including petrol, diesel and jet fuel.

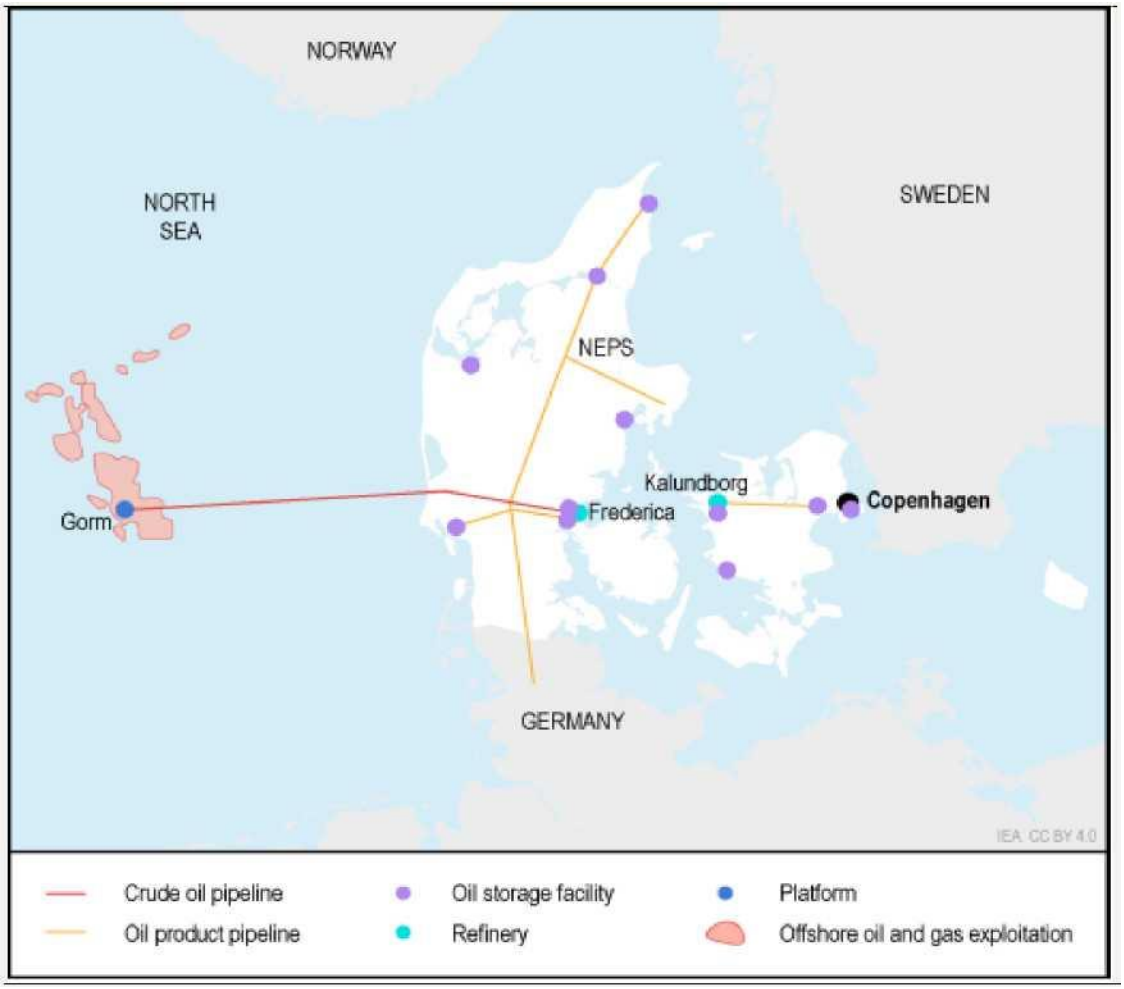
Denmark is itself a producer of oil, but also operates on the world market. Oil is easier to import than gas, as it can be imported from a larger part of the world by ship. Denmark imports and exports both crude oil and petroleum products from/to many different countries

and there are large variations in trading partners from year to year. This underlines the flexibility of the market.

Denmark has two refineries in Kalundborg and Fredericia, both of which can receive crude oil directly via ports. Fredericia can also receive directly from the North Sea drilling platforms via pipeline. Denmark has a total of 16 oil ports. A description

and assessment of the Danish oil infrastructure is included in the latest IEA Energy Policy Review Denmark 2023 (pages 130-135). This also includes the map below.

Figure 20



Danish oil infrastructure

InMarch 2017, the then government concluded an agreement with the Dansk Undergrunds Consortium (DUC) to secure investments in future oil and gas production in the North Sea. Among other things, the agreement secured the reconstruction of the Tyra fieldand introduced an injacking window for hydrocarbon recovery from 2017-25 in order to strengthen investment conditions.

As part of the March 2017 agreement, the Danish Parliament adopted new legislation amending the Underground Resources Exploitation Act and theOil Pipeline Wen to ensure better conditions for third party access to infrastructure in the Danish part of the North Sea. The amendment became effective from January 2018.

Agreement on the future of oil and gas extraction in the North Sea of 3 December 2020 was concluded between S, V, DF, RV, SF, K and M7. The core of the agreement is that no oil and gas should be extracted in the Danish North Sea after 2050 and that there is an end to tender rounds inviting more oil exploration in the Danish part of the North Sea.

The parties to the agreement also agreed on the importance of having stable, reliable and predictable opportunities and conditions for the exciting permitsand remaining activities up to the 2050 end date. The parties to the agreement also agreed that until the end date

7In the context of governmental cooperation with S and V, acceded to the Agreement in principle.

of 2050, it should continue to be possible to apply for new exploration and production authorisations following the miniround and the neighbouring block procedures respectively. The amendments to the North Sea Agreement were implemented by a legislative amendment of 14 December 2021.

Security of gas supply

The Danish gas system consists of gas production plants and pipelines in the Danish part of the North Sea, a transmission system and a distribution system. In addition, the gas system consists of a gas processing facility and two underground storage facilities. To this, there are connections abroad: to Germany, where the gas can be both exported from and imported into Denmark; to Sweden, which imports all of its gas from Denmark; and to Poland. The expected flow will be from Norway to Poland, but it is also possible to retrieve gas from Poland via Faxe Entry. In March 2024, the Tyra complex returned to operation after being renovated inautumn 2019. In addition, Denmark has relatively high production of upgraded biogas compared to the rest of the EU, corresponding to approximately 38 % of Danish gas consumption in 2023.

The flexibility and resilience of the Danish gas infrastructure can be assessed using the N-1 formula, cf. Regulation 2017/1938 on security of gas supply. This Regulation requires Member States to comply with the infrastructure standard or the so-called N-1 formula. The calculation of N-1 is used to estimate whether the gas infrastructure in an area has sufficient capacity to meet total gas demand. This is assessed in case of disruption of the largest infrastructure unit (N) during a day of exceptionally high gas demand, with a statistical probability of once for 20 years (a 20-year event). The largest infrastructure unit is currently North Sea Entry Point (Baltic Pipe). With Tyra back into operation, it is the second largest infrastructure unit and increases the overall capacity of the gas system. The n-1 calculation is therefore made for two scenarios, including and excluding flows from the Tyra fields.

Gas consumption this day (20-year event) of 17.2 million m^3 is not much higher than the 16.2 million $m^{3\ per}$day that can be retrieved from the two gas storages. The total entry capacity is 58.3 million $m^{3\ per}$day without the Tyra platform and 66.5 million m^3per day with Tyra in operation again. Of this, the North Sea Entry point represents the largest singular capacity of 27.4 million $m^{3\ per}$day.

The n-1 calculation gives 284 % for Denmark without Tyra. With Tyra back into operation, N-1 is calculated at 332 %. This means that thescheme's criterion of N-1 being a minimum of 100 % is met in both scenarios with a large margin.

Overall, the calculations show that in both cases the Danish gas system has a high resilience for potential gas infrastructure losses and that no further investment in additional measures is needed. Denmark therefore has no objectives in this area.

(ii) National objectives with regard to increasing: diversification of energy sources and supply from thirdcountries in order to increase the resilience of regional and national energy systems;

The domestic production of natural gas in the North Sea and of biogas is significant. However, until the entry into operation of theTyra field, the sewing has also been dependent on imports, including from Norway, which in this context is a third country (outside the EU). DaNmark does not have objectives to cope with domestic supply without contributions from third countries. The establishment of Baltic Pipe has allowed increased imports from Norway, thereby reducing indirect imports of Russian gas through theEuropean gas system through Germany. With the entry into operation of the Tyrafield, Denmark will again become a net exporter of gas and thus-undependent on imports from third countries.

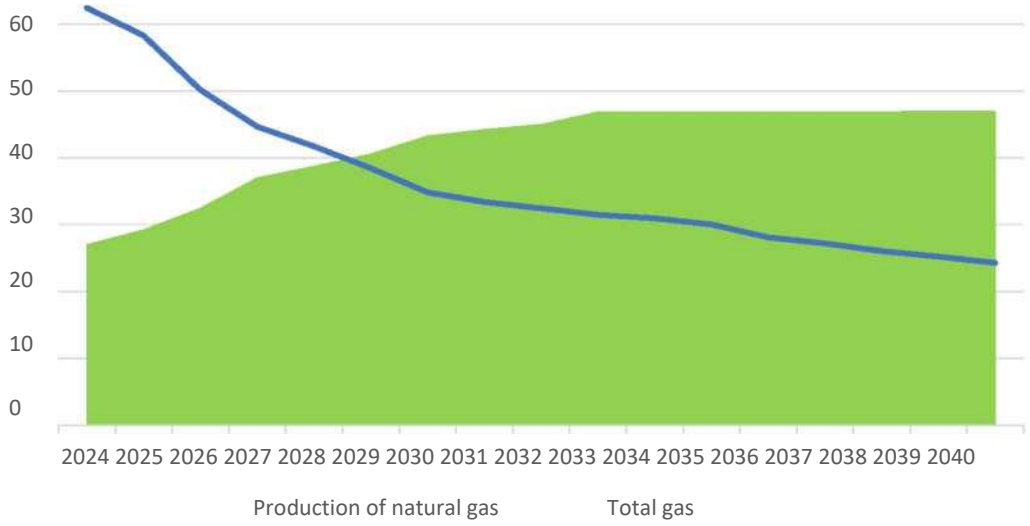
(iii) Where relevant, national objectives with regard to reducing dependence on energy importsfrom third countries in order to strengthen the resilience of national and regional energy systems;

Gas

Denmark does not have national objectives to reduce energy import dependency on third countries, as these dependencies are limited due to the diversification of energy sources and the production of oil and gas in Denmark. Section 3.3 below describes, inter alia, EU crisis response. In addition to this, a significant increase in green gases in the Danish gas system is estimated until 2030 and according to KF24 Denmark is expected to produce more green gas in 2029 than we consume. This helps to meet the ambition of *the Climate Agreement on Green Power and Heat 2022* that Danish biogas production will correspond to 100 % of Denmark's total gas consumption by 2030. The national production of green gases contributes both to green transition in hard-to-electrify sectors and makes Denmark independent from natural gas imports.

Figure 21

Gas consumption and green gas production (PJ)



Source: Climate status and projection 2024 and the Danish Energy Agency

While biogas production is increasing, the renovation of the Tyra field was completed in March 2024. This means that Denmark again became a net exporter of gas after being a net importer since November 2019. This includes the first five years of the Danish Energy-Agency's forecast for the production of gas.

Table 15
Forecast of production of gas

	2023	2024	2025	2026	2027
SALGSGAS, billion NM3	0,85	2,67	3,22	2,94	2,76

Source: Resources and Prognoser, Danish Energy Agency, aug. 2023

Production is expected to exceed consumption in 2024 until around 2042, cf. the Danish Energy Agency's resource statementand language for oil and gas. The forecast for sales gas indicates the quantities that the Agency expects to be technically feasible to produce. Actual production may depend on sales on the basis of current and future gas sales contracts.

(iv) National objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage

Denmark has not yet launched initiatives aimed directly at increasing the flexibility of energy sources. However, there are a number of actions that indirectly contribute to increasing the flexibility of energy sources in the electricity and heating sectors, and the initiatives are described in the three sections above. In addition, Denmark shows a positive trend in the expansion of heating stocks and the number is estimated at 436 accumulation tanks (heat cakes) on the basis of 2022 data. The tanks are connected to both small local district heating networks and larger installations and district heating networks. Typically, the large tanks will be located in larger cities where there will be a higher heat demand and flexibility needs in the energy system, while smaller tanks will be connected to smaller district heating networks. The tanks are typically dimensioned according to the heat demand and the size of the tanks ranges from 1.5 m^3 to 5 500 m 3, with an average size of 2 280 m^3 (cubic metres). If an installation produces heat with solar heat or a heat pump, there will often be an accumulation tank. Thus, it will be possible to fill the tank when the sun tracks or when the electricity price is low. This leadsto greater resilience and flexibility when it comes to the production of energy from intermittent renewable sources. It is therefore also assumed that heat stocks will spread independently where necessary and where needed. This is because, where appropriate, heating stocks also contribute positively to the economy ofexisting and/or new RES projects, where appropriate.

2.4 Dimension Internal energy market

2.4.1 Electricity interconnectivity

(1) The level of electricity interconnectivity that the Member State seeks to achieve in 2030, in the light of the objective of a level of interconnection of the electricity network by 2030 of at least 15 %, with a strategy in which the level from 2021 onwards has been determined in close cooperation with the Member States concerned, taking into account the2020 connexion target of 10 % and the following indicators of the urgency of takingmeasures:

1) ***price differential in the wholesale market exceeding an indicative threshold of EUR 2/MWh between Member States, regions or bidding zones;***
2) ***nominal transmission capacity of interconnectors below 30 % of peak load***
3) ***nominal transmission capacity of interconnectors below 30 % of installed renewable energy production.***

Each new interconnector shall be subject to a socioeconomic and environmental cost-benefit analysis and implemented only if the potential benefits outweigh the costs

Denmark's current level of interconnectivity is 48.3 %, significantly higher than the 15 % targeted by the EU for 2030. The level of interconnectivity has been calculated as the ratio between imports of interconnectivity capacity and netproduct capacity for 2021.

In 2022, Peak load was 6.117 MW, corresponding to a ratio between import interconnector capacity and peak load of 139.1 %. Leak load data has been retrieved via Energinets' data service. In 2022, ve production capacity was 10.164 MW, meaning that the ratio between imports of interconnectivity capacity and VE production capacity was 83,7.

Denmark has not set specific targets for interconnectivity in 2030, inter alia in view of the high level of interconnectivity. Nevertheless, international connections have long been essential for the security of electricity supply in the Danish electricity system. New interconnectors have been evaluated in cooperation with other Member States and take into account the overall socio-economic value andsecurity of supply.

Expected interconnectivity in 2030

For the purpose of Energinet's task of developing the infrastructure of the energy system, the Danish Energy Agency draws up an annual set ofanalyses for releases to Energinet. The analysis assumptions indicate a likely evolution of the Danish electricity and gas system by 2050. Analysis assumptions still show a high degree of interconnectivity, with an expected import capacity in 2030 of 12.25 GW compared to an expected installed generation capacity of 37.6 GW. In 2030, interconnectivity is thus expected to be 31.7 %, which is high but somewhat lower than today (48.3 %). This is mainly due to a massive expected deployment of solar cells, which is expected to increase from 3 070 MW in 2022 to 17.744 MW in 2030.

2.4.2 Energy transmission infrastructure

- ***(I) Key projects on electricity and gas transmission infrastructure and, where appropriate, modernisation projects needed to achieve the objectives and targets under the five dimensions of the Energy Union Strategy.***

PCI – Projects of Common European Interest

Denmark has nine PCI projects that have been included in the EU list of PCIs for the TransEuropean Energy Infrastructure. The projects contribute separately to the Energy Union objectives of energy security, energy efficiency, innovation, decarbonisation and the internal energy market. The Danish PCI projects include three offline network projects, four hydrogen and electrolysis projects and two CO_2projects. In addition to the two CO_2storage projects in Denmark, the potis tens of Danish catch sources and stocks involved in two additionalCO_2projects (ECO2CEE and EU2NSEA). Denmark is working proactively towards the EU's energy objectives in cooperation with several neighbouring Member States. The nine Danish PCI projects are listed below.

Offshore grid projects

- North Sea Wind Power Hub. Concerning planning for North Sea nodes connected to Denmark, Germany and the Netherlands via. transmission connections.

- TritonLink, an offshore hybrid connection between Denmark and Belgium.
- Bornholm Energie, an offshore hybrid connection between Denmark and Germany.

Hydrogen and electrolysis projects

- Green Hydrogen Hub Denmark, a compressed air energy storage project.
- DK Hydrogen Pipeline West, a hydrogen interconnector between Denmark and Germany. Denmark and Germany signed a Joint Declaration of Intent in March 2023, where the parties commit to support the deployment of hydrogen infrastructure between Denmark and Germany with a view to establishing a cross-border hydrogen infrastructure connecting Danish green hydrogen producers with German customers.
- Jyske Banke electrolysis plant.
- Danish Hydrogen Storage, a Danish hydrogen storage project.

CO_2*projects*

- Bifrost, a transport and CO_2 storage projectin the North Sea.
- Norne, a CO_2storage and transport infrastructure project developed in cooperation with actors from Denmark, SVErich, Belgium and the UK.

There is also the Viking Link project, a 765 km electricity connection between Denmark and the United Kingdom, which was put into operation at the end of 2023. The project contributes positively to the security of energy supply in both countries and the EU's energy ambitions. In addition, 400 kV connection between Endrup (DK) – Klixbüll (DE) is expected to be completed and put into operation in 2025. The Interconnector between Denmark and Germany increases the security of supply and system stability of the electricity grid and, in particular,market penetration in the EU.

Bornholm Energie

The Bornholm Energie is a joint project with Germany, involving both the establishment of a minimum of 3 GW of offshore wind as well as a viablering of an electricity trading link between Denmark (Zealand) and Germany to ensure the exchange of green electricity across the border. 3 GW of sea wind is built between 15 and 45 km from the south-western coastline of Bornholm and collected in a substation in South Bornholm. Green electricity is transported from there by cable to Germany and Zealand. Bornholm's central location in theLake East allows Bornholm to act as the place where the current is captured from the offshore wind turbines.

The political agreement between Denmark and Germany was reached on 26 July 2022. The*Memorandum of Understanding (MoU)*provided for the establishment of Bornholm Energie as a "*joint project*" within the meaning of the Renewable Energy Directive between Denmark and Germany. Based on the MoU, the Danish system operator of the transmission network (TSO) Energinet and the German TSO, 50Hertz, concluded on 11 November 2022 an agreement on the sharing of ownership of electrical installations, costs and revenues. The MOU was followed on 1 June 2023 by a legally binding agreement (Intergovernmental Agreement) between Denmark and Germany, reaffirming the agreed principles of cooperation.

The two TSOs are working on the establishment of a common timetable for, inter alia, the provision of cables and transmission equipment. Energy grids and 50Hertz launched tenders for cables and stations at the end of November 2023. The Danish Energy Agency has held a market dialogue in autumn 2023 and is currently under consideration for the timing of launching the offshore wind supply.

Most recently with the *Supplementary Agreement on a tender framework for 6 GW of offshore wind and energy island of Bornholm* of 30 May 2023, it has been politically decided to seek completion of the Bornholm energy island, including associated sea wind, by the end of 2030.

Energy island North Sea

The North Sea Energy island aims to harness the potential of Danish offshore wind resources and the flow from the energyisland can be exported to our neighbouring countries, thus contributing to the green transition in Denmark and Europe. It is expected that the energy island willrely on the free movement of energy across national borders via interconnectors between Denmark and one or more partnercountries.

The North Sea Energy Island is expected to be located around 100 km out of the North Sea with grid connection on the west coast of Jutland. The energy island is established as a flexible concept, allowing for the continuous expansion of the energy island and sea wind.

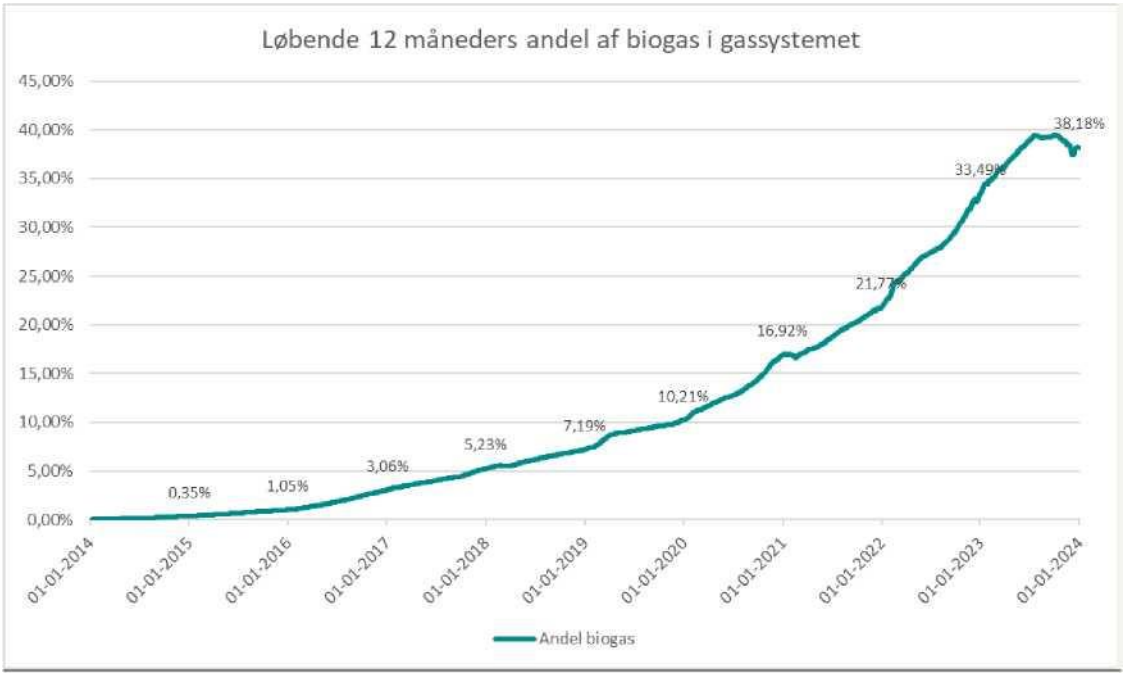
Gas

As regards gas infrastructure, the Danish TSO, Energinet, and the Polish TSO Gaz-System, have established the Baltic Pipe pipeline, allowing up to 10 bcm of Norwegian gas to be transported annually to Poland through the Danish gas infrastructure andconnecting the Danish and Polish gas markets. The Baltic Pipe project had the status of a PCI project. The project wascrushed in 2022 and entered into partial operation on 1 October 2022. Since 30 November, Baltic Pipe has been in full operation and isnow transporting gas with the full capacity of 10 bcm per year. The entry into operation of Baltic Pipe supports the security of gas supply in Denmark as it allows Danish gas companies to purchase gas directly for the Danish gas market, for which agreements have already been concluded. The project enhances diversification, market integration, price convergence and security of supply, mainly in Denmark and Poland, and thereby in Sweden, Central and Eastern Europe and the Baltic region. Denmark meets the requirements for security of gas supply by complying with the infrastructure standard N-1 > 100 % at an N-1 = 284 % and 332%, without and including the Tyra complex.

Biogas

Upgraded biogas has historically had a relatively low contribution to security of supply, as the share of biogas in the gas system has been limited and natural gas supplies from the North Sea and Germany are good. The share of upgraded biogas in the gas system, thereby contributing to security of supply, has increased significantly in the last few years. This shows theproportion of biogas in the Danish gas system in the current year.

Figure 22
Biogasan share as a percentage of gas consumption



Source: Energy data service

Production is relatively stable throughout the year, while gas consumption is significantly higher in winter than in summer, so thatthe part of upgraded biogas will be relatively smaller in winter than in summer. In order to give a more accurate picture of the evolution of the biogas share, it is calculated with a moving average over 12 months.

As more biogas plants are set up connected to the distribution system, there will be cases where biogas production exceeds local gas consumption, e.g. in summer when gas consumption is generally low. In some cases, this is addressed by connecting distribution networks, while in other cases there is a need to be able to return (return) gas to thetransmission belt stemet to supply a larger area. This means a completely new way of driving the gas system, as excess gas in the distributionsystem needs to be compressed to high pressure (from 40 to 80 bar) in order to be transported in the transmission system.

In January 2023, energy grids have been approved by six new return facilities, the establishment of an M/R station and a press-station. The need for the new plants is due to a periodic surplus of upgraded biogas in parts of the gas distributionsystem. The surplus creates challenges as a result of increased production of upgraded biogas and reduced gas consumption. Energy grids assume that the biogas surplus in 2022 to 2052 will cumulatively be Nm19 billion to 10 billion if the plants are notestable. The installations concerned are the following:

- Establishment of an M/R station at Smorup and a compressor station at M/R Haverslev (Nordjylland)
- Establishment of a return installation; by M/R Herring. (Midtjylland)
- Establishment of a return installation; by M/R Dørskov (South Jutland 1)
- Establishment of a return installation; by M/R Ll. Selskar (South Jutland 2)
- Establishment of a return installation; by M/R Seed (Sønderjylland)
- Establishment of a return installation; by M/R Vissenbjerg (Funen)
- Establishment of a return installation; by M/R Køge (Zealand)

Ongoing needs analysis and start operations from 2026-2029 and existing return facilities are being developed in parallel.

Upgraded biogas injected into the gas system contains a higher level of oxygen compared to natural gas. Oxygen is a by-product of sulphur feathers inthe biogas upgrade process. The oxygen content allowed in the gas is primarily regulated by national rules and standards and as a result may vary from country to country. In Denmark, the oxygen content of biogas injected into the gas network shall not exceed 0.5 %. In Germany, the oxygen content requirements depend on the gas pressure and whether there are oxygen sensitive facilities connected to the gas grid, such as gas storage, where oxygen has the potential to increase the risk of corrosion in gas installations with water. Stocks in Northern Germany do not accept gas containing more than 0.001 % oxygen. (10 ppm). With increasing volumes of injected biogas in the gas system, different oxygen content requirements pose a challenge for the export of gas to Germany.

Operational solutions have been implemented in cooperation with the North-German TSO, Gasunie Deutschland, to address the differentnational requirements on oxygen content. However, Denmark would prefer harmonised limit values for oxygen content so that upgraded Danish biogas can be exported to Germany.

The above electricity and gas infrastructure projects are important to deliver on the Energy Union dimension, such as a fully integrated internal energy market with security, solidarity and trust. The projects are based on the needs to ensure a well-fuelled-energy market as well as security of supply.

(II) Where applicable, key infrastructure projects planned, other than projects of commoninterest.

The four Scandinavian TSOs shall cooperate on Nordic network planning. Most recently, an outlook report Nordic Grid Development Perspective 2021 202was published in1. Cooperation will focus on forecasting and adaptation of RES – and primarilywhere developing concrete links can contribute to integration, including the reduction of bottlenecks. In 2019, five investments in Nordic international connections were proposed for the first HYPERLINK "https://www.statnett.no/globalassets/for-aktorer-i-kraftsystemet/planer-og-analyser/nordic-grid-development-perspective-2021.pdf"time. At present, the state of play of relations from Danmark is as follows: One part of the connection between Eastern Denmark and Sweden has been renovated, while the renovation of the other part owned by Energinet has been approved and is thus renewed. A final decision on the renovation of the oldest part of the axis link between West Denmark and Norway has not yet been taken.

Energy grids and Svenske Kraftnät are well prepared for the Kontiskan connection between Jutland and Sweden.

In 2021,the Minister for Climate, Energy and Utilities approved the establishment by Energinet, together with Evida, of a gas pipeline to Lolland and Falster. By extending the gas system to Lolland and Falster, it is possible to supply Nordic Sugar's two sugar plants with gas instead of coal and oil. In addition, further production of upgraded biogas can be established because the pipeline also provides the possibility to send upgraded biogas to other parts of the country if more than local consumption is produced.

Figure 23
Gas pipeline to Lolland and Falster

Source: Energy grid,

Theproject is planned for deployment in late summer 2024. The capacity of the Lolland-Falster gas pipeline projectat full utilisation is 290 million m^3 per year.

Hydrogen infrastructure

Interactions between electricity and hydrogen markets are expected to play a key role in integrating more RES into the energy system, while PtX fuels can be used as an alternative to fossil fuels, especially where direct electrification isnot feasible or cost-efficient. Flexibility from PtX plants can support an energy system with cost-effective use of theelectricity grid and contribute to ensuring a high level of security of supply in times of high electricity prices. In order to exploit the full flexibilisation potentialof PtX plants, hydrogen infrastructure and storage options are a prerequisite. This is because electrolyserscan produce hydrogen when electricity prices are low and at the same time it is possible for reconversion plants to produce more stable, because the plants can be supplied with hydrogen from the hydrogen infrastructure in periods when electricity prices are high and the electrolysis is not in operation.

The *Agreement on the Development and Promotion of Hydrogen and Green Fuels* of 15 March 2022 decided that the necessary framework should be created to enable the construction of hydrogen infrastructure for transport in pipes and underground storage in Danmark. With the *1th partial agreement: Ownership and operation of the future Danish pipe-bound hydrogen infrastructure, it* was decided that the construction would take place on market terms and that the two state companies for gas transmission and distribution (Energinet and Evida) should be given the opportunity to own and operate the hydrogen infrastructure. The *Agreement on economic framework conditions for hydrogen infrastructure* concluded on 5 April 2024 provides clarity on, inter alia, the regulatory framework for the hydrogen market, which takes into account that hydrogen is a start-up market subject to uncertainty. Moreover, a political decision on the ownership of underground hydrogen stocks in Denmark has not yet been taken.

A national framework regulation for hydrogen has been created at the turn of the year to 2023 by including hydrogen in the Gas Supply Act. Detaileddetailed rules for hydrogen have been developed in the context of the implementation of the sub-policy agreements on hydrogen infrastructure.

National targets for the deployment of necessary infrastructure for the use of alternative fuels in the Union, vehicles, ships and aircraft;

There are currently no specific objectives in this area.

In July 2023, the European Parliament and the Council adopted the Regulation on the deployment of alternative fuels infrastructure and repealing Directive 2014/94 (the AFI Regulation). The AFI Regulation entered into force in October 2023 and startedto run from 13 April 2024.

Among other things, the AFI Regulation sets mandatory minimum national targets for the deployment of alternative fuels infrastructure in the EU for road vehicles, trains, vessels and stationary aircraft.

In recent years, Denmark has launched a number of initiatives in the field of road transport that are expected to significantly promote the deployment of publicly accessible recharging points in the period up to 2030. This includes, inter alia, support poolsfor the co-financing of recharging points in, inter alia, housing associations, on private and municipal land, as well as a dedicated financial envelope of DKK 500 million for the deployment of recharging points on the State road network, which can be used to support a high level of service for uploadingon the longer car trips along the State road network.

It is expected that the economic framework will establish 34 recharging pools with a total of 438 lightning recharging points and that virtually all long journeys on the state road network can be carried out in electric cars without any rerouting and that waiting time to allow will not exceed two minutes in the busiest hour of the year. Denmark lists 25 recharging pools for heavy goods transport by road to ensure compliance withthe requirements of the AFI Regulation. For this, a total envelope of 763 million (2024 prices) has been allocated.

The AFI Regulation introduced national fleet-based requirements for light-duty vehicles on publicly available recharging power per electric vehicle and plug-in hybrid vehicles to ensure that the uptake of light-duty electric vehicles in Denmark is matched by the sustainablering of sufficient publicly accessible recharging infrastructure.

The AFI Regulation also contains requirements for Member States to deploy alternative propulsion infrastructure for heavy-duty vehicles, including maximum distance requirements between refuelling and recharging infrastructure, requirements for the deployment of hydrogen infrastructure, as well as requirements for recharging power output and minimum targets for alternative fuels for ships in ports, as well as electricity supply to aircraft at stands in airports.

In the maritime domain, the AFI Regulation lays down electricity supply requirements for Member States as well as requirements for floating meat-tank-tank infrastructure for quayside ships in certain ports. In the field of aviation, the AFI Regulation lays down requirements for power supply at airports at stands for commercial air transport.

In the area of ferries and ports, funding has also been allocated to support the green transition of domestic ferries. As regards the power supply for stationary aircraft at the main airports (Copenhagen Airport, Billund Airport and Aalborg Airport), the requirements of the AFI Regulation are expected to be met in 2025, but not in 2030.

2.4.3 market integration

(I) National objectives relating to other aspects of the internal energy market, such as increasing systemflexibility, in particular in relation to the promotion of competitive electricity prices in accordance with commonsectoral law, market integration and interconnection, which aim to increase the tradable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, redispatching and curtailment and real-time price signals, including a timetable for when the objectives are to be met.

Objectives for flexibility and Demand side response

Denmark has not yet set a target for flexibility and Demand-side response, as this has only become a requirement as a result of the

recent EU negotiations in the field of electricity market reform. In line with the Electricity Market Regulation, this target shall be set on the basis of a flexibility needs assessment and shall be an indicative national target. An indicative target for non-fossil flexibility is expected to be included in the NECP in 2027.

Market Option 3.0

In June 2021, the Danish Energy Agency published a report with recommendations for a new market model in Denmark. This report is known as market model 3.0 (MM3.0). Market Option 3.0 was launched by the Energy Agreement of 29 June 2018. The aim of the-report is to continue developing the market model towards a more flexible electricity market that supports the transition to a climate-neutral society. The aim of MM3.0 is therefore to develop a flexible electricity market. The report contains 13 main recommendations in 5areas for action, with 23 concrete proposals for action following up on the recommendations. Some of these proposals for action are based on the requirements of the EU Clean Energy Package (2019/943) as well as the EU Electricity Directive (2019/944).

Five key challenges have been identified as MM3.0 trying to address:

1. The shift from thermal capacity to renewable, variable technologies means that electricity generation becomes more dependent on weather, thus reducing flexibility.
2. Increased electricity production from decentralised renewable energy sources increases the pressure on the electricity grid, as it needs to be transported over longer distances.
3. The green transition results in an increased demand for electricity, for example, for heat pumps, electric cars, industry, trade and households, and has the potential to create major imbalances when wind and solar are unavailable.
4. The decommissioning of thermal power plants creates a need for new solutions to ensure the robustness of the electricity grid.
5. The transformation in neighbouring countries creates a need for other tools to complement interconnectors to: ensure the adequacy of the system.

Denmark follows a market-driven approach to harness the most cost-effective and innovative solutions forthe outcomes of a system based mainly on variable renewable energy. In this respect, the new market model will provide the framework for achieving the most cost-effective solutions to maintain an operational system and with a sufficient level of flexibility.

MM3.0 identifies five focus areas, each focusing on different parts of the electricity sector, each containing a number of recommendations and suggestions for amendments to the current legislation:

1. All actors must be able to contribute to a flexible electricity market.
    a. The framework structure for aggregators shall support the development of business models that are understandable and simple from a consumer perspective.
    b. Rules for aggregators need to further develop and ensure against distortions in the market.
    c. Rules on smart meters and billing shall support the use of flexibility and support smart and flexible; roll-out of heat pumps and recharging point infrastructure for electric cars.
    d. The development of the framework for energy communities must ensure a balance with the costs and savings generated by energy communities in the energy system (was implemented through the revision of the Electricity Supply Act in 2020, which implemented the 2019 Electricity Market Directive).
    e. In dialogue with the industry, the Danish Energy Agency will work on how to increase transparency in orderto keep prices of aggregator products, for example through a portal allowing comparison of available pro ductson the market.
    f. Energy grids need to accelerate and strengthen their pilot projects and open door approach for new players (this is and has been an effort by Energinet since 2021).

2. A flexible electricity market must ensure a robust and balanced energy system.
    a. There must be increased transparency in relation to the need for flexibility in balancing the electricity grid.
    b. The above is supported by a needs assessment by Energinet and a 'trend analysis' indicating the need for different ancillary services for the next 3-5 years.

    c. Energy networks should analyse whether scarcity prices can be used to strengthen price signals in the balancing market and whether this could increase the incentive for operators to ensure balancing capacity.
    d. The Danish Energy Agency shall analyse how incentives for the use of renewable energy and flexible technologies can be further developed.
    e. Denmark should work internationally to share Danish experience in balancing fluctuating renewable energy and, at the

same time, ensure that no obstacles arise in international requirements for renewable energy to participate in balancing markets.

f. Renewable energy should be integrated in a way that ensures that the resilience of the system is maintained. In this context, Energinet will start analysing the effects of the transition towards renewable and fluctuating energy.

g. There must also be an increased focus on grid connections and how installations can contribute to the resilience of the electricity system.

3. The flexible electricity market must ensure a cost-effective expansion of the electricity grid.
   a. DSOs are required to produce and publish network development plans (implemented through the revision of the Electricity Supply Act in 2020, which implemented the 2019 Electricity Market Directive).
   b. DSOs shall publish anonymised consumption and production data.
   c. DSOs must have the possibility to procure flexible resources under market conditions (was implemented through the REVI of theElectricity Supply Act in 2020, which implemented the 2019 Electricity Market Directive).
   d. Continued coordination between TSOs and DSOs shall ensure the efficient use of local flexibility.
   e. Sales bids in the balancing market should include a geographical location and thus make it easier for Energinet to balance the network.
   f. Further work needs to be done in order to gain experience with tools that can limit local bottlenecks.

4. DSO regulation shall promote a flexible electricity market.
   a. There must be a continued demarcation between monopoly and competitive tasks in order to ensure cost-efficient expansion of the electricity grid;
   b. Incentive-based framework regulation shall ensure a cost-effective and secure operation of the electricity grid (during-withdrawal).
   c. The allocation of DSOs should support well-functioning electricity supply infrastructure.

5. The electricity market model should be at the forefront of developments.
   a. MM3.0 should be continuously adapted to promote flexibility through proactive experience gathering and inclusion of stakeholders.
   b. The Danish Energy Agency will carry out an analysis with the aim of quantifying new and existing players that have the potential to provide flexibility.

Market Option 3.0 is a number of suggestions on how a new model for the electricity market in Denmark can be key to a climate-neutral society. The vision of MM 3.0 is to create an electricity market that effectively integrates high-loss renewable energy atthe best price – for the benefit of citizens, businesses and the green transition.

The market model must ensure a balanced energy system that makes the best use of renewable generation – even when wind is strongest and the sun shines. This requires much flexibility across the energy system, more than we have today. Therefore, the market model must support the electrification of industry, heating and transport, so that the energy we make in surplus in one sector can be used and benefit another.

Market coupling

Market coupling in wholesale day-ahead and intraday timeframe is already well developed in Denmark.

Since June 2018, all bidding zones have been coupled through single intraday market coupling (SIDC).

At the Nordic level, a continuous development of the ancillary services market has been pursued, which has resulted, inter alia, in a common Nordic market for manual frequency restoring reserves (mFRR). These markets are partly integrated with neighbouring countries or are in process towards it, as part of the implementation of EU Regulation (2017/2195) – setting guidelinesfor balancing electricity.

Interconnector capacities and flows

With regard to cross-border trade in electricity, Denmark is subject to EU regulation. The regulation of the Clean Energy Package (EU 2019/943) requires 70 % of the capacity of the international connection to be made available to the market. Compliance with the 70 % requirement is therefore an ongoing target that Denmark aims to achieve.

(ii) Where applicable, national objectives relating to non-discriminatory participation of energy, demand response and storage, including via aggregation, in all energy markets, includinga timetable for the achievement of the objectives;

The Danish electricity market is open to participation for RES, consumption flexibility and storage, including aggregation. The Danish TSO is subject to legislation requiring all their activities to contribute to creating the best possible competition on electricitymarke.

See section 2.4.3 (i), the Danish Energy Agency's reporting on market model 3.0 has set out a number of recommendations for-convenience to improve the framework for flexibility and active customers in Denmark, including a framework for aggregators. Several of these recommendationshave been implemented, while analytical work is still ongoing for others.

Aggregators and consumption flexibility

Denmark foresees an increasingly important role for consumption-based resources to contribute to an integrated, market-based and flexible energy system. A large number of electric boilers are already installed and can offer their services in all markets from spot to primary reserves. To encourage participation in aggregated demand response, Denmark is continuously working to improve market regulation with the aim of reducing barriers for, inter alia, smaller (decentralised) market participants such as small industry and households.

Balancing in local networks

With increasing shares of decentralised generation and new consumption due to electrification of heating and transport, the Danish electricity grids will be challenged on a more local scale. The aim is that such local challenges should primarily be addressed byeasy market-based arrangements in order to achieve the most cost-effective solutions.

Integration of RES

In order to facilitate further system integration of RES, in particular as a result of Article 20 of Directive 2023/2413 (amendments to the RES Directive), there is a need to revise the legislation (i.e. Danish orders) to lay down the following rules:

- Rules extending the possibilities for DSOs to collect data on installations – both those connected to the grid and those not connected – to measure the potential for flexibility, etc.
- Rules requiring DSOs to publish data on the flexible potential as well as on the generated electricity from self-consumers and energy communities.
- Rules requiring the publication of information on battery systems, including on batteries in electric cars, taking into account other similar rules stemming from Regulation 2023/1542 (Batteries Regulation), which will enter into force in 2026.
- Rules setting out the requirements for charging stations. This will have to take into account similar rules in the Building ExecutiveBoard.

In addition, it may be added that there is an entirely new Order in preparation for the publication of system data held by DSOs and the Danish TSO (Energinet). The publication requirements include not only data referred to in Article 20a of the Renewable Energy Directive, but also capacity data, consumption and production data, etc.

(iii) Where applicable, national objectives with regard to ensuring that consumers participate in the most energy-efficientand benefit from self-generation and new technologies, including smart meters;

Remote electricity meters

Under the Implementing Regulation 2013/1358 on remotely read electricity meters and measuring the final consumption of electricity, DSOs were required to install remotely read electricity meters in private homes and businesses for all (100 %) consumers in Denmark. This was to be done by 2020 at the latest.

Denmark has recently achieved the target of deploying remote electricity meters to all consumers by the end of 2022. This allows

consumers to participate in the electricity market through quick and easy switching, dynamic price contracts andaggregation. The 2018 Energy Agreement also supports the objective of increasing the use of data and digital solutions and the creation of a smart and flexible electricity system.

Autoproducers

It is now possible for consumers to self-generate electricity under the most recently updated settlement and measurement rules. Net settlement is being phased out on an ongoing basis, and only a few autoproducers with an older net settlement agreement have the possibility to obtain net settlement via the old method. Today, the rules support the co-existence of production and consumption. This is beneficial to everyone, as it is currently not possible to store the power on a large scale via batteries. As a result, autoproducers are currently settled on the basis of the electricity consumed at the same time as it is produced via what is known as currentsettlement. This ensures that all actors in the electricity market have the same framework conditions to consume and sell their electricity, while contributing to a fair and efficient electricity system.

(iv) National objectives to ensure the adequacy of the electricity system and the flexibility ofthe energy system with regard to renewable energy production, including a timetable for when the objectives are to be met;

Security of electricity supply

Denmark has one of the highest levels of security of electricity supply in Europe. Every year, the climate, energy and supply mine setsa planning target for the security of electricity supply 10 years in the future. In February 2024, the target for 2033 is set at 36 interruption minutes – i.e. the number of interruptions that electricity consumers will experience on average in one year. Of this, the target is related to power adequacy and the transmission network of 7 interruptions minutes (29 minutes relate to grid adequacy in thedistrict network). This target has been set in the knowledge that Danish electricity production needs to better and better fit renewable energy production. The Danish objectives for security of electricity supply are described in more detail in Section 2.3.

(v) Where appropriate, national objectives to protect energy consumers and improve the competitiveness of the retail nergiemarket;

In general, Denmark aims to have highly competitive retail markets. The full roll-out of remote reading electricityis likely to affect the retail sector in the form of new products and services in the coming years, and Denmark will closelyfollow developments. Consumer protection and competitiveness in the retail sector are addressed in many policies and actions. Future developments in the electricity sector will create more complexity and, as in many other sectors, digitalisation will also play an important role in electricity. The Danish government wishes to address the challenges for consumers and published its consumer policy strategy focusing on 'the consumer in a digital world' in May 2018. The strategy sets out a number of objectives that are also relevant for the electricity sector.

The aim of particular importance for the electricity sector is to make it easier and more confident for consumers to make decisions; they must have easy access to their data so that they can create value on the market; and consumer information requirements need to be targeted so thatusers are not overburdened. All consumers have access to their consumption data at real-time level via the electricity meter, as wellas timeni level through a dedicated website attached to the DataHub.

In 2021, the Utilities Regulator prepared for the new supervisory tasks under Order No 2648 of 28 December 20218. It specifically concerns obligations and legal obligations related to the supply of electricity to consumers, including several legal ones;

8 https://www.retsinformation.dk/eli/lta/2021/2648 https://www.retsinformation.dk/eli/lta/2021/2648

8The Danish translations of the relevant EU acts use the term 'households' and 'households' synonymous. In the English versions, onlythe term 'households' is used. In the Danish context, the term 'households' is thus used consistently.

obligations for electricity suppliers to ensure a number of basic consumer rights for electricity consumers. Be thenotice contains, inter alia, specific requirements regarding the content of contracts related to the supply of electricity, changes to the terms of the contract, and statutory requirements for prior notice before changes to contractual terms.

2.4.4 energy poverty

Denmark generally has a well-developed social safety net which guarantees the right to welfare benefits in case of unemployment, illness and other needs. It should be noted at the outset that Denmark does not have an official poverty threshold.

However, Denmark is obliged to assess the number of energy poor households[9]9. It follows, inter alia, from Article2 (52) of the Energy Efficiency Executive Board that the assessment must take into account at least the following factors: insufficient financial resources, insufficientdisposable income, high energy costs and poor energy efficiency in housing. Therefore, the following three indicators are assessed at the core of a Danish delineation of energy poverty, *cf. Table 16*. It should be noted that there are both data and statistical uncertainties in quantifying the number of households on the basis of the chosen indicators.

Table 16
Overview of indicators

Indicator	Description	Data sources
Low-incomehouseholds	An e-family10 is in a low-income-group if the entry of thee-family in terms of equivalised disponible income is less than 50 % of the medianboom in the population for one year.	Own calculations based on equilibrium availablefrom Statistics Denmark
Households in low energy performance dwellings	Buildings with energy label E or worse are definedas low energy performance barley.	Own calculations based on the Register of Buildings and Housing and the Danish Energy Agency with energy labels
High energy consumption in the Household Ninegene	High energy consumption (measured insingle giunits) is calculated as the households (operationaliseret as e-families)in which the incineration is calculated as higher than twice the Danish medianuse. Energy consumption is calculated as the household's energy foruse divided by the equivalised number of persons in the household	Own calculations based on the Register of Buildings and Housing. Data on energy consumptionare taken from reports from oneof the energy supply companies. Data will be provided tothe Vurningsty Agency, which will place them at yourdisposal.

Source: Ministry of Climate, Energy and Utilities

The three indicators are composed of two different models, which together define energy poverty in a Danish context. Figures from 2022 have been used for the models.

9Households are operationalised through the term "e-families" used by Statistics Denmark. 'E-families' are defined as e*n or more persons; living at the same address, which has certain links with each other. A family consists of a single person, of a couple or of a non-resident child under the age of 18. Residents under 25 years of age count as parents' families if they do not have children themselves, are not married or previously married and are not part of a cohabiting partner;*

par.

An approach to delineation is based on low-income households, where housing has a low energyperformance at the same time. This approach estimates around 28.000-29.000 households with low income and dwellings in energyclass E or lower, corresponding to around 0.9 % of all Danish households.

Another approach that can be taken is low income and housing has a low energy performance, while householdshave high energy consumption. This approach estimates around 7.000-29.000 households with low income and dwellings in energy class E or lower, as well as high energy consumption, which will correspond to 0,2-0.3 % of all Danish households.

On the basis of the two models, it is stated that there are approximately between 7.000 and 29.000 in the target group in Denmark. This corresponds to a share of approximately 0,2-0.9 % of all Danish households. The spread also reflects the data and statistical uncertainties associated with the two inventory methods. The range from 0.2 % to 0.9 % of all Danish households is not estimated to represent a significant number of households. Denmark considers that the issue is based on a social policy dimension, which is addressed by existing and new measures, including through targeted social benefits, *cf. Section 3.4.4.* Therefore, speci does not currently exist withregard to the number of targeted national objectives in Denmark's energy policy. In addition, different heat pools exist that provide homeowners with financial support for energy renovations, *see Section 3.4.4*.

2.5 dimension of research, innovation and competitiveness

(I) National objectives and funding targets for public and, where possible, private research and innovation related to the Energy Union, including, where appropriate, a timetable for when the objectives should befilled;

Research, development and demonstration of energy technologies and new green solutions are a prerequisite for achieving Denmark's target of70 % reduction in greenhouse gas emissions by 2030 compared to Denmark. The 1990 level, as well as the long-term climateobjectives of climate neutrality by 2045 and climate neutrality by 2050. At the same time, efforts contribute to developing and supporting Danish power positions in the energy sector and green solutions, thus providing a basis for growth, exports and jobs.

As part of the 2018 Energy Agreement, Denmark undertook to use a minimum of DKK 580 million in 2020 for research, expansion anddemonstration of energy technology, and to gradually increase state funding for research, development and demonstration in the field of energy technology and climate to a minimum of DKK 1 billion in 2024.

With the agreement on the distribution of the research reserve etc. in 2024 and the Finance Act 2024, the Danish Government and a broad majority in the Danish Parliament have earmarked DKK 2.6 billion for ambitious and green research initiatives in 2023. In-addition to maintaining the level of green research funding from the research reserve agreement in 2023, the government and the parties to the agreement agree to maintain the level of green research funding from the research reserve agreement ofat least DKK 2.4 billion per year until 2025 inclusive.

A mapping exercise by the Ministry of Education and Science shows that in 2022 approximately DKK 4.6 billion was distributed to green research and innovation projects from public research and innovation funding funds and programmes, three key private funds and the EU's Horizon 2020 framework programme.

Denmark launched in 2020 a National Strategy for Green Research and Development The Future of Green Solutions – Strategy for-Infers in Green Research, Technology and Innovation. The strategy aims to ensure targeted, coherent and strengthened green research and innovation efforts in response to the most important challenges to develop responses to meet Denmark's climate targets and where research and industrial strengths are well placed to develop new technologies and create export opportunities and green jobs in Denmark.

With the strategy, Denmark has identified four missions in areas that are particularly strategically important and require targeted research, development and demonstration efforts to meet Denmark's climate targets:

- Capture and storage or use of CO_2
- Green fuels for transport and industry (PtX, etc.)
- Climate- and environment friendly agriculture and food production
- Circular economy with a focus on plastics and textiles

(ii) Where available, national 2050 objectives related to the promotion of clean energytechnologyo gier and, where applicable, national objectives that include long-term targets (2050) for the

deploymentof low-carbon technologies, including for the decarbonisation of energy- and carbon-intensive industrysectors and, where applicable, for related carbon transport and storage infrastructure;

The Government of Social Democracy, Venstre and Moderates has brought forward the climate neutrality objective from 2050 to 2045 and set a target of 110 % reduction by 2050 % in. Level 1990.

Developing new green solutions plays a key role in achieving Denmark's long-term climate goals. Denmark has therefore launched a wide range of initiatives and allocated significant funding to this end. With the National Strategy for the Future of Green Solutions, Denmark has identified four strategic areas, cf. above, where research, development and demonstration efforts are particularly needed to achieve long-termobjectives.

However, it is clear that there is a need to strengthen the knowledge base to assess impacts and prioritise research and innovation-actions, as well as to further strengthen the overview and coordination of overall efforts.

An expert group on the impact of research on the green transition was set up in June 2022. The expert group has been tasked with developing an analytical framework to assess the impact of research and innovation efforts on the development and maturation of solutions that contribute to the reduction of greenhouse gas emissions. Work to be completed by 2024.

The Danish Research and Innovation Policy Council (DFiR) has published the report Climate Targets and Funds 2022, which in its surveysummarises the paradigm shift in funding for green research and innovation announced in the Climate Act 2020. The report contains nine concrete recommendations from the Board for the continuation of green research and innovation efforts. The 2023 Climate Programme states that, among other things, the government will present a policy response on green research and innovation aimed at accelerating the development of green solutions and supporting the achievement of the objectives of the Climate Law. In 2024, the Danish government will take a position on funding for research missions focusing on forward-looking efforts, including the long-termobjectives beyond 2030.

(iii) Where applicable, national objectives with regard to competitiveness

There are no national objectives in terms of competition.

3 policies and measures

3. 1 dimension related to decarbonisation

3.1.1 greenhouse gas emissions and removals

(I) Policies and measures to achieve the target set out in Regulation (EU) 2018/842, as set out inpoint 2.1.1 of this Section, and policies and measures to comply with Regulation (EU) 2018/841, covering all key emitting sectors and sectors for the enhancement of removals, with one per perspective to the Union's climate-neutralityobjective set out in Article 2(1) of Regulation (EU) 2021/1119;

Existing policies and instruments (implemented or adopted)

Denmark's policies and instruments implemented and adopted on 1 January 2 024 are shown in Table 17. The policies andoperations listed in Table 17 include policies and instruments that will contribute to the achievement of the commitment set under the ESR and help to comply with the LULUCF Regulation.

Most energy consumption policies and instruments will have an impact on both ESR and CO_2emissions under the EU ETS. The list includes all important sectors in terms of greenhouse gas emissions and removals. Further information on Denmark's climate policy in general and the policies and instruments listed in Table 17 are included in Annex 8.

The effects of the existing instruments as of 1 January 2 024 are included *in the Climate Status and Exploration 2024 of the 'frozen policy' or 'with existing measures' scenario, the so-called WEM projection* scenario, reported in Chapter 4.

Table 17
Overview of Denmark's portfolio of existing climate-relevant policiesand instruments (implicit and adopted)

Name of mitigation action (PAM) CC = crossing TD = Taxes Leniency Duties EN = Energy (without BU, TR HO) BU-Business TR = Transport HO = Households IP = Industrial successes- and product use AG = Agriculture LU = LULUCF WA = Waste G = Groups of PAMs	Single PAM or group of PAMs	Name of PaM or group of PAMs in national language	Effect $MtCO_2$ 2025	Effect $MtCO_2$ 2030
0-CC-01: Funds for sup-porting Capturing and storing CO_2 (CCS)	Single	Pool for capturing andring CO_2 (CCS) [DKK 26.8 billion]		— 2,3
0-CC-02: Market-based subsidy pool for cap-Turing and storing CO_2	Single	Market-based toshoot for the capture and storage of CO_2 [1. CCUS]		— 0,4
0-CC-03: Technology-neutral funds for sup-porting CO_2 capture, etc.	Single	Technology-neutral pool for $CO_{2\ catch}$, etc. (NECCS)		— 0,5
0-CC-04: Investment in green research, devel-opment, and demon-stration	Single	Investing in green research, development and demonstration		
1-TD-01b: Mineral-oil Tax Act	Single	The Mineral Oil Tax Act		IE (1-TD-03)
1-TD-02: Gas Tax Act	Single	Gas Tax Act		IE (1-TD-02)
1-TD-03: Coal Tax Act	Single	The Kulaf Tax Act (only the former of the fossil energy tax increase for industries of DKK 6/GJ)		— 0,5
1-TD-04: Electricity Tax	Single	Electricity Tax Act		

1-TD-05: Co2 tax on energy products	Single	$CO2_{Tax}$Act (only the effect of green treasuresreform 1, 2022)	— 2,5
1-TD-06: Green Owner Tax – a fuel-efficiency-dependent annual tax on motor vehicles	Single	Fuel consumption of theTax Act	
1-TD-07: Registration Tax – a fuel-efficiency-dependant registration tax on passenger cars and vans	Single	Registrationtax (only the effect of the 2020 switchover)	— 0,5
1-TD-08: Tax on HFCs, PFCs and SF6 – equivaLent to the CO_2 tax	Single	CFC Charges Act (CO_2– equivalent taxes on the stronggreenhouse gases HFCs, PFCs and SF6)	
1-TD-09: Tax on meThane from natural gas fired power plants – equivalent to the CO_2 tax	Single	Part of the CO_2tax ceiling, where-methane-reduction can compensate for-the CO_2tax under Section 9d)	
1-TD-12: Expansion of low process electricity tax for charging electric and plugin hybrid cars that subscribe to driving power through a busiNess service until 2031	Single	Extension of low pro- electricitytax to Oplad electric and plug-in hybridcars subscribing to traction currenteasy-service until 2031	
1-TD-13: Increase in CFC tax [enhancement of 1-TD-08]	Single	Increase of $CO_{2\ equilibrium}$– Valente taxes in the CFC Tax Act	
1-TD-14: Mileage-based toll for trucks	Single	Kilometre basedtolling for lorries	— 0,3
1-TD-08: Tax on HFCs, PFCs and SF6 – equivaLent to the CO_2 tax	Single	CFC Charges Act (CO_2– equivalent taxes on the stronggreenhouse gases HFCs, PFCs and SF6)	
2-EN-01: EU-CO_2– emission trading scheme for electricity and district heat production and certain industrialsuccesses (including. Business) and aviation from 2012 (EU ETS). From 2024 EU ETS also cover the maritime sector and from 2025 ETS2-sec- TORS including buildings,	Single	EU Emissions Trading Directive (EU ETS)	

road transport and ADDItional sectors.			
2-EN-02: Biomass Agreement (Agreement on the use of biomass in electricity production)	Single	Biomass agreement	
2-EN-03: Price suppleand subsidies for renewable energy pro- duction	Single	Price supplement and support for renewable energy production	
2-EN-04: Tenders for offshore wind Turbines	Single	Provision of oceanic wind	
2-EN-06: Energy performance and-demonstration	Single	Energy Development and DemonstrationPro Graph (EUDP)	
2-EN-07: Liberalisation of waste incineration plants	Single	Competitivecreation of incinerating-capacity	
2-EN-08: Phasing out fossil fuels and promoting locally based heat by adjustment of requirements for district heating projects	Single	Adjusting project awarenessto promote fossil gas, sector coupling and local renewable energy production.	
2-EN-09: Establishment of two energy countries	Single	Establishment of two singleislands	
2-EN-10: Stop oil and gas extraction in the North Sea in 2050 and cancellation of 8th and future tender Rounds	Single	End of oil and gas extraction in the North Sea in 2050 and cancellation of 8 and future outward biddingrounds	
3-BU-09: Mandatory En-ergy Audit for large En-terprises	Single	Energy audit requirements for larger companies	
3-BU-11: Denmark's Ex-port and Investment Fund (EIFO)	Single	Danish Exports and Investment Fund (EIFO)	
3-BU-13: Bond for energy savings in gov- ernment buildings	Single	Requirements for energybills in state-barley	
3-BU-14: Competitive subsidy scheme related to private enterprises	Single	The Business Pool	— 0,3
3-BU-15: Subsidy scheme for energy Reno-vations in public builds-(municipalities and regions)	Single	Grant pool for energyrenovations inoff-site buildings	

3-BU-16: Targeted support for horticulture	Single	Targeted support for glarusnerves	
3-BU-17: Energy efficiency efforts	Single	Energy efficiencymeasures	
3-BU-19: Green reinsurANCE facility in EKF – now Denmark's Export and Investment Fund	Single	Green reinsurance cilityin EKF – now Danmarks Export and In InvestmentFund (new) [EM PAM A]	IE (3-BU20)
3-BU-20: Green capital injection in Vaextrafonden – now Denmark's Export and Investment Fund	Single	Green capitalinjection into Vækstfonden – now Danmark's Export and Investment Fund (new) [EM PAM B]	— 0,2
3-BU-21: Subsidy scheme related to CO2-intensive enterprises. The scheme will be partially subsidised the investment cost in projetcs that will lead to a de- crease in CO2 EMISsions (NEW)	Single	Subsidy schemerelated to CO2-intensive businesses. TheOrdnin gen will partially support investment-costs in projects that will lead to a decrease in CO2 emissions (NYT)	
3-BU-22: Competitive subsidy scheme related to CO2-intensive enterprises. The scheme will subsidise incurred operating costs due to Decarbonisation Requirements (NEW)	Single	Competitive toshooting scheme related to CO2-intensiveindustries. The scheme will support companies facing increased operating costs due to decarbonisation requirements (NYT).	
4-TR-01a: EU demands on vehicle manufacturers to deliver fuel effi- cient cars and vans	Single	EU requirements for VehiclePro Deployment Centre for the provision offuel-efficient bee and vans	
4-TR-07: Spatial planting	Single	Spatial planning	
4-TR-10: Electrification of parts of the rail infrastructure structure	Single	Electrification ProGrapm	
4-TR-12: Investment in a tunnel under the Fehmarn Belt	Single	Investment in a tunnel under the Fehmarn Belt	
4-TR-13: Use of climate – freely-friendly asphalt for all wear layer replacements on the state road network in 2020	Single	Use of climatefriendly asphalt by changingwear layers on the state road network by 2035.	

4-TR-16: Allocated funds of DKK 250 million for green buses and green vehicles for themale responsive transport.	Single	Pool for green buses and green flex traffic	
4-TR-17: Requirements to promote green taxis (Energy and Environment- mental requirements for taxis)	Single	Requirements to promote green taxis (Energy and environmental requirements for taxis)	
4-TR-19: Implementation of pool for green transport in 2020 (DKK 75 million)	Single	Implementation of a pool for green transport in 2020 (DKK 75 million)	
4-TR-20: Minimum implementation of the Fuel Quality Directive (FQD)	Single	Minimumsimplification of the brandsquality directive (FQD)	
4-TR-21: Advancing and adding the existing pool for green transport	Single	Bringing forward andincreasing the existingpool for green transport	
4-TR-22: Co_2 Displace- ment requirements for RE fuels	Single	$Co_{2\ displacement}$requirements for renewable fuels	— 1,4
4-TR-23: Allocated funds for green transport – The ferry subsidy scheme to- sup port the green convergence of domestic ferries 2021-2022.	Single	Green Transport Pool – Ferry Pool for the green transition of domestic ferries 2021-2022.	
4-TR-25: Climate – free cooperation agreements on green public transport	Single	Climatecooperation agreements on green public transport	
4-TR-26: Government subsidy for the PUR- chase of four battery trains and charging in- frastructure for battery trains in Holstebro and Skjern, see agreement on IP35	Single	State subsidy for thepurchase of four battery trains and charging infrastructure for battery trains in Holstebro and Skjern, cf. agreement on IP35	
4-TR-27: Funds have been seen aside for a green mobility model, where the trafficv. that form the basis of decisions in the	Single	Funding has been allocated to a green mobilityprogramme, where the traffic models onwhich decisions are based are further developed;	

transport area are fur- ther developed, cf. agreement on IP35		in the field of transport, see agreement on IP35
4-TR-28: Funds to im— prove cycling facilities all-round the state road network, see agreement on IP35	Single	Pools to improve cycling facilities along the state road network, as agreed on IP35
4-TR-29: Plan and funds (approximately 100 million) euro) for the establishmentof 25 recharging stations for heavy vehi- Cles, see agreement on IP35	Single	Plan and funds (approx. EUR 100 million) for the deployment of 25 recharging points for heavy-duty vehicles, see IP35 agreement
4-TR-30: Funds for advi— sory centre for bicycle promotion	Single	Funding for theAdvisory Centre for CyclePromotion.
4-TR-31: Funds set aside for the promotion of infrastructure for CY- cling, see agreement on Green transformation of road transport 2020.	Single	Funds allocated to the promotion of infrastructure forCycles, see Agreement on Green Transformation of RoadTransport 2020.
4-TR-32: Support for charging infrastructure for battery trains on the private railway lines. In- frastructure Plan 2035 (IP35).	Single	Subsidies for charging infrastructure for battery trains on private railways. Infrastructure plan 2035 (IP35).
4-TR-33: Funds for the devlopment of charging infrastructure for light duty vehicles, infrastructure plan 2035 (IP35).	Single	Pool for charging infrastructure, Infrastructure Plan 2035 (IP35).
4-TR-34: Port subsidies scheme to supportestablishments of e.g. who, Piers, road in- frastructure at the port and on shore power supply, see agreement on Infrastructure Plan 2035 (IP35)	Single	Port pool for which grants may be requested for, for example, theconstruction of berths, jetties, theroad-line structure of the port and any infrastructure for OPS, see Infrastructure Plan 2035 Agreement (IP35).
4-TR-35: Port and FISH ING subsidy scheme to promote a green transition of ports and transition efforts within FISH- ing and related ancillary industries.	Single	Port and Fisheries Pool to promote a green transition of ports and conversion efforts inthe fisheries and relateddownstream industries.

4-TR-36: Co_2– neutral charging infrastructure on the state railways	Single	Co_2 –Neutral charging infrastructure on the StateBasin	
5-HO-01: Minimum energy requirements for buildings and Energy performance certificates for buildings	Single	Requirements in theBuilding Order – Energylabelling of buildings	
5-HO-02: Eco-design and Energy labelling of electric apliances	Single	Eco-design and Energy Product-labelling	
5-HO-03: Substitution of individual oil, gas and pellet based furnaces		Scrapping scheme for oil bovines: Subsidies for the scrapof oil, gas and wood pellet furnaces by convolution-to heat pump	
5-HO-04: Better houses	Single	Better Book Scheme	
5-HO-05: Strategy for Energy renovation of buildings	Single	Long-term RenovationStrategy	
5-HO-07: Green Renovations of social housing sector solutions	Single	Green renovations of social housing (Green Housing Agreement 2020)	
5-HO-09: Increase in allocated funds for phase-out oil and gas boilers until 2025 [= 5-HO- 03 and 5-HO-08 further extended]	Single	Increased poolsfor oil and gas furnaces by 2025	— 0,35
5-HO-10: Grants for green housing im provements (the Building Pool)	Single	Subsidies for green housing-improvements (green clean-up, building coilJen)	
5-HO-11: Grants for individual heat pump when Scrapping Otor gas boilers (The Scrapping Scheme)	Single	Subsidies for individual heat pumps by scrapping oil or gas furnaces	IE (5-HO-09)
6-IP-01: Regulation of use of HFCs, PFCs and SF6 (phasing out most of the uses) – Statutory order on fluorinated greenhouse gases	Single	Order on thegreening of certain strialgreenhouse gases	
7-AG-04f: Environmental Approval Act for live stock holdings	Single	Act on the environmentalapproval of animal husbandry	
7-AG-06: Biogas plants – reporting of annual	Single	Biogas plant –rapping of annual bond date —	— 0,45

Mandatory leak detection and repair		risk leakagesprings and repairs (Me tankcontrol of biogas plants)	
7-AG-13: Agreement on Nature (the natture Package)	Single	Nature package	
7-AG-15: Pool for the promotion of biogas and other green gases by tender	Single	Pool to promote biogas and other green gases through tenders	
7-AG-16: Separate nitrogene standards for humus soils	Single	Separate nitrogen standards for hollow musk soils	
7-AG-17: Adjustment of utility requirements for live slurry and manure	Single	Adjustment of exploitativeseed requirements formanure	
7-AG-18: Promotion of fertility and spraying, etc. on § 3 areas (Protected ar EAS)	Single	Prohibition of fertilisation and spraying, etc. on Section 3 (Protected Nature)	
7-AG-19: Support for biogas (for transport and process)	Single	Aid for biogas (for transport and process)	IE (7-AG-20)
7-AG-20: Subsidy for upgrading and Purification of biogas	Single	Subsidies for the upgrading and purification of biogas	— 0,7
7-AG-22: Ecological area support (Ecoscheme)	Single	Organic Area Aid (Ecoscheme)	IE (G21 (1))
7-AG-23: Environmen-Tally and climate-friendly grass (Ecoscheme)	Single	Environment-climate grass (Ecoscheme)	IE (G21 (1))
7-AG-24: Plants (Ecoscheme)	Single	Plants (Ecoscheme)	IE (G21 (1))
7-AG-25: Biodiversity and sustainability (Ecoscheme)	Single	Biodiversity and sustainability (Ecoscheme)	IE (G21 (1))
7-AG-26: Implementation of 'targeted regulation'	Single	Implementation of regulatory fitness	IE (G21 (1))
7-AG-28: Environmental and climate technology	Single	Environmental and climate-mecology	
7-AG-29: Organic investment support	Single	Organic investmentaid	

7-AG-30: Collective ac-tions measures to re-duce nitrogen emmissions	Single	Collective nitrogen viruses: nitrogen wetlands, mini-wet areas, afforestation and lowland projects in wetlands	IE (G21 (1))
7-AG-31: General Reduc — tion request for cat — TLE	Single	Overall reduction — requirements for bovine animals	IE (G21 (1))
7-AG-32: More frequent discharge of pipe manure	Single	More frequent shut-down of pig slurry	IE (G21 (1))
7-AG-33: CAP law	Single	CAP Act	
7-AG-34: Implementa — selection of the EU's policy	Single	Implementation of the EU agricultural policy	IE (G21 (1))
7-AG-35: Conditionality (GAEC requirements)	Single	Conditionality (GAEC — requirements)	IE (G21 (1))

8-LU-01: Ban on burning STRAW on fields	Single	Ban onstripping straw on fields
8-LU-04: Public affor-estation (state and mu-nities)	Single	State afforestation
8-LU-08: Establishment of the Danish Climate Forest Fund to support climate fights	Single	Establishment of the Your ClimateForest Fund to support climate action
8-LU-11: Support for regeneration of Peatland (CAP + national)	Single	Lowland projects, climate-low-lying projects (CAP + national)
8-LU-12: Extensification of carbon rich soils (Ecoscheme)	Single	Extensification with shallow/low-lying land (Ecoscheme)
8-LU-13: Private esteries	Single	Private afforestation
8-LU-14: Temporary removal in logging	Single	Temporary reduction in harvesting
8-LU-15: Permanent ex-tensification (new)	Single	Permanent extensivefarming
9-WA-01: A ban of landfill of combustible waste.	Single	Ban onincinerated waste
9-WA-02: The waste tax	Single	The Waste and Raw MaterialsAct
9-WA-03: Weight-and-volume-based pacag- ing taxes	Single	Weight and volumetric taxon packaging

9-WA-06: Implementation of the EU landfill directive	Single	Implementation of the EU Landfill Directive
9-WA-09: Subsidy programme for bio covers on landfills	Single	Subsidies for biocovers in landfills
9-WA-10: Promotion of free plastic bags and thin plastic bags	Single	Prohibition of freepot bags and thinplums
9-WA-11: Triple the tax on carrier bags and dissable tableware	Single	Tripling the tax on carrier bags and a walkingservice
9-WA-12: Requirements for the availability of direct recycling at municipal recycling stations	Single	Requirements for the possibility of direct re-use at municipal recyclingstations
9-WA-13: Streamlining the sorting and Collection of business household-like waste	Single	Streamlining of blackring and collection of commercial-household waste
9-WA-14: Streamlining and mandatory Collection schemes for household waste	Single	Streamlining and bindingschemes for household waste
9-WA-15: Streamlining with mandatory Collection scheme for household textile waste	Single	Streamlining with obli gasretrieval scheme for household textile waste
9-WA-16: Waste sorting in the public space	Single	Waste separation in public spaces
9-WA-17: Requirements for the municipalities on tenders for bulk waste schemes with re-sorting with regard to higher real recycling and reuse	Single	Requirements for municipalities to offer large scale drainage schemes, etc. post-sorting, with a view to more effective recycling and reuse
9-WA-18: Demand for narrowler losses in recycling plastic	Single	Requirement for minor losses in the recycling of plumssticks
9-WA-19: Target of 50 % reduction of certain plastic takeaway PACKaging by 2026	Single	Target of a 50 % reduction in certain takeaway plastic packaging by 2026
9-WA-20: National amendment of ex- tended producer re- sponsorship for pack	Single	National implementationof extended produ%responsibility for embalbrine

9-WA-21: Target of 50 % sorting of plastic for re-cycling in the agricul-Tural sector	Single	Target of 50 %black plastic for usein the agriculturalsector		
9-WA-22: Target of 50 % sorting of plastic for re-cycling in the construction sector	Single	Target of 50 %black plastic for usein the construction sector		
9-WA-23: New model for waste man Leniency to ensure incurred re-cycling	Single	New model ofwaste-to-sight to ensure increased recycling		
9-WA-24: Productivity gain on incurred recovery of plastics through the synergy effect be- Tween a clear frame- work for the sector, the market gaining access to living household and acquired waste and the expansion and streaming of waste streams	Single	Productivitygains from increased recycling of plastics through synergies between a clear framework for the sector, access to both household and acquired waste, and the increase and streamlining of waste streams;		
9-WA-25: Ceiling over nineTrous oxide emissions from large treatment plants	Single	Cap on nitrous gasemissions from large abatement plants		
G20 (1): The green house agreement 2020 (19 May 2020)	Group (included 5-HO-07)	Green Housing Agreement 2020 (19 May 2020)	— 0,0	— 0,1
G20 (2): The climate plan for a green waste sector and circular economy (16 June 2020)	Group (include 9-WA-12 to 9 WA-25 and 2 EN-07)	Climate plan for a green waste sector andcircular economy (16 June 2020)	0	— 0,7
G20 (3): The climate agreement for energy and industry, etc. 2020 (22 June 2020)	Group (include 0-CC- 01 and 0 CC-02) [the forms group G13]	Climate agreement for energy and industry, etc. 2020 (22 June 2020)	— 1,3	— 2,7
G20 (4): The agreement on the future of oil and gas extraction in the North Sea (3 December 2020)	Group (included 2-EN-10)	Agreement on the future of oil and gas extraction in the North Sea (3thDecem ber 2020)	0	— 0,0
G20 (5): The agreement on green transformation of road transport (ex-cluding kilometer-based road tax for trucks) (De c.4, 2020)	Group (include 1-TD- 07 and 4 TR-22)	Agreement on green modeof road transport (excluding mileage baseand tolls for truckpoles) (4 December 2020)	— 0,9	— 1,9

G20 (6): The agreement on the Finance Act for 2021 and the agreement on stimuli and green recovery (6 Decmentary 2020)	Group	Agreement on the 2021 Finance Law and agreement on stimuli and greenrecovery (6 December 2020)	— 0,2	— 0,2
G20 (7): The agreement on a green tax reform, phase 1 (8 December 2020)	Group [the forms group G12]	Green treasuryreform agreement, Phase 1 (8th de-item 2020)	— 0,5	— 0,5
G21 (1): The agreement on the green transfor-mation of agriculture (October 4, 2021)	Group (include 7-SG-30 to 7-AG-34)	Agreement onthe greening of agriculture (4 October 2021)	— 1,2	— 1,9
G21 (2): The sub-agreement on investments in a continually greener Denmark 2022 (decem ber4, 2021) and the agreement on the Fi-nance Act for 2022 (De-coefficients 6, 2021)	Group	Partial agreement onInvest ringer in a continuing Greening Denmark 2022 (4 December 2021) and ofthe Finance Act for 2022 (6 December 2021)	— 0,5	— 0,5
G22 (1): The agreement on green tax reform for industry, etc. (June 24, 2022)	Group (included 0-CC-01)	Agreement on green treasuresreform for industry, etc. (24 June 2022)	— 1,3	— 4,3
G22 (2): The agreement on kilometric road tax for trucks (24 June 2022) and the agreement on kilometer-based road tax for trucks (29 March 2023)	Group (included 1-TD-14)	Agreement on kilometerba-sread toll for heavycars (24 June 2022) and Agreement on kilometerbasread toll for heavycars (29 March 2023)	— 0,3	— 0,4
G22 (3): The climate agreement on green electricity and heat 2022 (25 June 2022)	Group	Climate agreement on green power and heat 2022 (25 June 2022)	— 0.4	— 0,4
G23 (1): Implementation of the EU CO_2 EMIS sion-trading scheme (This is the gross effect, see proposal for an act on CO_2 quotas. An estimate of the total effect will be available with the overall proposal for disability.)	Group (EU)	Implementation of the EU CO_2emissions trading vote (this is the net effect, see for-amendment to the Act on CO_2allowances).	— 0,0	— 0,4
G23 (2): Supplementary agreement on tender frameworks for 6 GW	Group	Supplemental agreement for6 GW and Bornholm Energie dated 30 May 2023 [2]		

and Energy Island Bornholm of 30 May 2023 [2]				
G23 (3): Supplementary agreement to the Agreement on inflation Assistance 2023 of 28 March 2023 [3]	Group	Addendum to the Inflation Aid Agreement 2023 of 28 March 2023 [3]		
G23 (4): Agreement on setting the energy crop limit of 3 April 2023 [4];	Group	Agreement on the establishment of energycrop grass of 3 April 2023 [4]		
G23 (5): Adaptation of Høvsøre Test Center from the Agreement on good framework conditions for testingtype and series 0 wind Turbines of 15 december 2021 [5]	Group	'Adaptation of Høre Testcenter' from the Agreement on good framework conditions for testing prototype and series 0 wind turbines of 15 December 2021 [5];		
G23 (6): Agreement on Kilometer-based toll for trucks of 29 March 2023 [6]	Group (included 1-TD-14)	Agreement onKilometerba lastedcar toll of 29 March 2023 [6]		
G23 (7): Agreement on Green Aviation in Denmark of 15 December 2023 [7]	Group	Green Air Transport Agreement in Denmark of 15th-de c.2023 [7]	0,0	— 0,1
G23 (8): Finance Act 2024 [8] (Extension of the district heating pool, Increase of the basic deduction for electric cars and Reprioritiza- tion of funds from the building pool to the CRF.)	Group	Finance Act 2024 [8] (For the-extension of the remotepool, increase of the basic allowance for electricclay and reprioritisation of funds from the Jen buildingplot to the Climate Forest Fund.)		
G23 (9): Climate agreement on more green en- ergy from solar and wind on land 2023 of 12 December 2023 [9]	Group	Climate agreement on greener solar and wind on land 2023 of 12 December 2023 [9]		
G23 (10): Fit for 55: REVIsion of the EU EMISsions trading system ETS [10] (Separate emissions tradingconditions for road transport, housekeeping and small energy and industrial installations (ETS II), Faster phasing out of free Allowances in ETS I, Inclusion of shipping in	Group (EU)	Fit for 55: Revision of the EU ETS[10] (Separate ETS for road transport, heating of-households and small energy and industrial installations (ETS II), faster phasing out of free allowances in ETS I, In-inclusion of shipping in ETS I		

ETS I and Faster reduction in the quota		and Quick Reduction in the Quota cap)			
G23 (11): Fit for 55: REG- ulation ReFuel EU Avia- tion [11]	Group (EU)	Fit for 55: Regulation ReFuel EU Aviation [11]			
G23 (12): Fit for 55: REG- FuelEU Maritime [12]	Group (EU)	Fit for 55: Regulation FuelEU Maritime [12]			
G23 (13): Fit for 55: REG- on deployment of alternative fuels in- frastructure (AFI regulation) [13]	Group (EU)	Fit for 55: Construction of alter- native propellants infrastructure (AIF Regulation [13]			
G24 (1): Agreement on disbursement of the transition support from Green tax reform for in- dustry, etc. (March 19, 2024)	Group	Agreement on the implementation of the greening tax reform aid for industry, etc. (19 March 2024)	— 0,1	0,1	—
G24 (2): Agreement on partial disbursement of Green Fund (April 15, 2024)	Group	Agreement on partial- implementation of the Green Fund (15 April 2024)	— 0,3	0,3	—

Note: [2] supplemental agreement on tendering frameworks for 6 GW and Bornholm Energy Island of 30 May 2023:
https://kefm.dk/Media/638211994684127079/Till%C3%A6gsaftale%20om%20ud-budsrammer%20for%206%20GW%20hav-vind%20og%20Energi%C3%B8%20Born-Holm% 20FINAL.pdf
[3] Addendum to the Inflation Aid Agreement 2023 of 28 March 2023:
https://kefm.dk/Me-dia/638156073944935305/Aftaletekst%20-%20till%C3%A6gsaftale%20til%20af-tale%20om%20inflationshj%C3%A6lp.pdf
[4] Agreement on setting the energy crop limit of 3 April:
https://kefm.dk/Me-dia/638169728186309636/Aftaletekst-energiafgr%C3%B8der.pdf
[5] 'Adaptation of Høre Testcenter' from the Agreement on good framework conditions for testing prototype and series 0 wind turbines of 15 December 2021:
https://im.dk/Media/637752562138085047/Aftale%20om%20gode%20ramme-vilk%c3%a5r%20for%20test%20af%20prototype-%20og%20serie%200-vindm%c3%b8ller.pdf
[6] Agreement on Cilometer-based truck tolls of 29 March 2023:
https://skm.dk/media/qgsjpbhi/aftaletekst-om-kilometerbaseret-vejafgift.pdf
[7] Green Aviation Agreement in Denmark of 15 December 2023:
https://skm.dk/media/nxucpgyd/aftaletekst-groen-luftfart-i-danmark.pdf
[8] Finance Act 2024 (Extension of the district heating pool, increase of the basic allowance for electric cars and reprioritisation of funds from the building pool to the Climate Forest Fund):
https://fm.dk/media/27362/aftale-om-finansloven-for-2024.pdf
[9] Climate agreement on greener solar and wind on land 2023 of 12 December 2023:
https://kefm.dk/Media/638379734168312589/Klimaaf-tale%20om%20mere%20gr%C3%B8n%20energi%20fra%20sol%20og%20vind%20p%C3%A5%20land%202023.pdf
[10] Fit for 55: Revision of the EU ETS [10] (Separate ETS for road transport, heating of households and small energy and industrial installations (ETS II), faster phase-out of free allowances in ETS I, Inclusion of maritime transport in ETS I and Quick reduction in the cap):
https://eur-lex.europa.eu/legal-con-tent/EN/TXT/?toc=OJ%3AL%3A2023%3A130%3ATOC&uri=uri-serv%3AOJ.L_.2023.130.01.0134.01.ENG
[11] Fit for 55: The ReFuel EU Aviation Regulation:
https://www.consilium.europa.eu/en/press/press-releases/2023/10/09/refueleu-aviation-initiative-council-adopts-new-law-to-decarbonise-the-aviation-sector/
[12] Fit for 55: FuelEU Maritime Regulation:
https://www.consilium.europa.eu/en/press/press-releases/2023/07/25/fueleu-maritime-initiative-council-adopts-new-law-to-decarbonise-the-maritime-sector/
[13] Fit for 55: Alternative Fuels Infrastructure Regulation (AFIR):
https://www.consilium.europa.eu/da/press/press-releases/2023/07/25/alternative-fuels-infrastructure-council-adopts-new-law-for-more-recharging-and-refuelling-stations- across-europe/

Additional policies and measures

As shown in Chapter 4, the effects of Denmark's portfolio of existing policies and measures, as included in the April (updated June) 2024 WEM scenario projection (KF24), will not in themselves be sufficient to achieve the target under the ESR. Taking into account the partial reduction effect of the diesel and road tax in the *Agreement on the partial implementation of the Green Fund* of April 2024, the overall reduction gap compared to Denmark's commitments 2021-2030 is estimated to be reduced to around 0.1 million tonnes of CO_2e in 2030. This is the subject of discussions in the Green Tripartite on measures to help reduce emissions under the burden sharing agreement, including the "Expert Group on Green Tax Reform" models for, inter alia, a CO_2tax on agriculturalinputs. All options presented by the Expert Group are estimated to close the remaining reduction gap under the burden of thesharing agreement. See also chapter 5.

(ii) Where relevant, regional cooperation in this area

Denmark participates in regional cooperation through the Nordic Council of Ministers, founded in 1971. The Council consists of several councils where cooperation on climate change takes place through the Nordic Council of Ministers for Environment and Climate (MR-MK).12

Relevant ministers of the Nordic countries and Greenland, the Faroe Islands and Åland meet twice a year. As part of their political work, they address the guidelines for cooperation, joint Nordic action on climate and environment, Nordic cooperation in the international context and strategic issues. In Denmark, the sector is represented by the Minister for the Environment onenvironmental matters and by the Minister for Climate, Energy and Supply on climate cases.

The Nordic Council of Ministers' vision is to become the world's most sustainable and integrated region by 2030. Against this background, MR-MK aims to influence and play a role in regional and international processes, including ifm. UN Climate for Action, Circular Economy in the EU, OECD and UN, International Plastic Negotiations, HELCOM and OSPAR, as well as in the Arctic and the Barents region. In 2019, Nordic ministers of state signed a statement that the Nordic country will work for CO_2neutrality both domestically and internationally. As a follow-up, through the project Climate Change in the Nordics, the Nordic Council of Ministers has created a forum for exchange of experience and knowledge sharing on the green transition in the Nordic region. The Nordic countries are also cooperating on sustainable solutions in areas such as transport, construction, food and energy, on the sustainable use of Norits nature and sea, and on promoting the circular economy and sustainable consumption. Furthermore, the environment and climate sector is working activelywith Nordic climate and environmental diplomacy to contribute to positive developments in international environmental and climate cooperation, including by promoting Nordic green solutions in the rest of the world.

The Nordic Council of Ministers for Environment and Climate (MR-MK) has an Environment and Climate Executive Committee (EK-MK), which prepares and follows up on the work of the Council. The Nordic Environment and Climate Executive Committee (EK-MK) has, among other things, set up a working committee (AU) composed of representatives of national climate and environmental authorities to plan and coordinate its activities. In addition, the sector consists of six working groups reflecting the focus areas of MR-MK:

- Nordic Circular Economy Working Group (NCE)
- Nordic working group for Climate and Air (NKL)
- Nordic working group for Chemicals, Environment and Health (NKE)
- Nordic working group for Biodiversity (NBM)
- Nordic working group for Sea and Coast (NHK)
- Nordic Working Group on Environment and Economy (NME)

In addition, the countries also cooperate through the Nordic Environmental Development Fund (NMF), on the Svanen eco-label under the Northern Irish EnvironmentalFinance Company (NEFCO), as well as the Nordic Council's environmental award.

(iii) Without prejudice to the applicability of State aid rules, financing measures, including Union support and the use of Union funds, in this area at national level, where applicable

Reference is made to item 5.3.

3.1.2 renewable energy

(I) Policies and measures to achieve the national contribution to the Union's binding 2030 target for renewable energy as well as trajectories referred to in Article 4(a) (2) and, where applicable or then existing, the elements referred to in point 2.1.2 of this Annex, including sector-specific and nology-specific measures;

In 2020, the Danish Parliament adopted the Danish Climate Law. The aim of the Act is for Denmark to reduce greenhousegas emissions in 2030 by 70 % compared with 1990 levels. The Act includes a legally binding target of reducing greenhouse gases by 70 % by 2030 (compared to 1990 levels). In May 2021, a majority in the Danish Parliament agreed to set an indicative greenhouse gas reduction target for 2025 of 50-54 % in 2025 compared to 1990. Following this, the government has most recently broughtforward

12https://www.norden.org/da/node/24

the climate-neutrality objective from 2050 to 2045, setting a new target of 110 % reduction in 2050compared to 1990.

Measures targeting the development of renewable energy in the electricity sector

In the coming years, renewable energy capacity is expected to expand significantly. In the electricity sector, new capacity isexpected to be solar cells and wind turbines.

In order to contribute to the above objectives, the *Climate Agreement on Green Power and Heat 2022* agreed that the government will ensure framework conditions that will allow a four-fold increase in total electricity generation from solar and rural wind by 2030. Following this, in December 2023, the government reached *the Climate Agreement for more green power from Solar and Wind on Land 2023,* providinga framework that helps to enable a four-fold increase of generation of electricity from solar and wind on land. Among other things, the agreement paves the way for the state to play an active role in planning onshore energy parks.

Since 2012, a number of political agreements have been reached on offshore development in Denmark. This applies to *the Energy Agreement of 2012,ENER gifts of 2018*, *Climate Agreement for Energy and Industry, etc. 2020*, the *Supplementary Agreement on Ownership and Construction of Energy Islands, etc.* of 2021 and the underlying preparatory lots of 2021 and 2022, the *Supplementary Agreement on Energø Bornholm 2022*, the Fi Nanslovenfor 2022, and the *Climate Agreement on Green Power and Heat 2022 and Supplementary Agreement on a tender framework for 6 GW of offshore wind and energy island of Bornholm* from 2023.

In accordance with the 2012 Energy Agreement, the Horns Rev 3 offshore wind farms are 406 MW and Kriegers Flak of 605 MW in August 2019 and September 2021 respectively. In addition, the coastal parks of the 2012 Energy Agreement, Vesterhava South of 170 MW and VesterhavNord 180 MW, were put into operation at the end of 2023 and early 2024 respectively.

In the 2018 Energy Agreement, it was agreed that three new offshore wind farms would be built by 2030. The tender for the first 1GW of Thor offshore wind farm has been decided and is expected to enter into operation in 2027. The second Hesselø offshore wind farm has been delayed due to soft seabed challenges, but has been offered in 2024 and is expected to be put into operation in 2030 with a capacity of 800-1.200 MW. The third park decided the parties to the Climate Agreement *for Energy and Industry, etc.* 2020 shall be realised as part of the Bornholm Energy Island.

With the Climate Agreement for Energy and Industry, etc. 2020 the parties wished to build two energy islands with 3 GW in the North Sea in the first phase and a space of at least 10 GW in time, and at Bornholm with 2 GW, on condition that the projects were profitable. With the Finance Act for 2022, it was decided to offer a further 2 GW of offshore wind, of which the Bornholm Energy Island wasprovided with 1 additional GW with the Supplementary Agreement on the Bornholm Energy *Island 2023*. The energy island of Bornholm is to be realised by the end of 2030 and the potential for the realisation of the first phase of the North Sea Energy island of 3 GW is being explored.

In the *Climate Agreement on Green Power and Heat 2022*, it was decided that an additional minimum of 4 GW of offshore wind would be offered forescalation by the end of 2030.

With *the Supplementary Procurement Framework Agreement for 6 GW of offshore wind and energy island of Bornholm* of 30 May 2023, the terms of the tender for 6 GW of radial offshore wind farms and 3 GW for the Bornholm energy island were decided. All 9 GW have the possibility of transplantation, which the Tieltpot could lead to a total of 14 GW or more if the market uses the freedom to optimise land use and expand more than the minimum capacity in the areas.

Thus, in the context of the above energy and climate agreements since 2018, tenders have been decided for 1 GW and political agreements have been reached to offer at least 6 GW of radial marine wind and 3 GW of offshore wind in connection with the Bornholm energy island to be set up by the end of 2030.

In addition to the State tenders, the Open Doors Scheme has been in place since 1999, a market-driven scheme under which the pro jektdeveloperhimself applied for authorisation for a project of a self-chosen size and location at sea. The Danish Parliament has adopted a legislative proposal to close the open-door scheme for new commercial projects in order to bring the rules of the Renewable Energy Act intoline with EU law. It will continue to be possible to apply for the construction of smaller testing projects. The amendment will enter into force on 1 July 2024. Six open door projects assessed in accordance with EU law may continue under-current arrangements. Of this, behind one of the six projects (Omø South), has subsequently chosen to withdraw their application tobage.

Measures targeting the heating and cooling sector

A number of political agreements have been reached over the last few years, aiming, inter alia, to phase out the use of fossil fuels in the heating and cooling sector. These include, inter alia, *the Energy Agreement 2018*, the *Climate Agreement on Energy and Industry, etc. 2020* and *Climate Agreement on Green Power and Heat 2022*. This section covers both the phasing out of fossil fuels in the district heating and cooling sector as well as the phasing out of individual oil and gas furnaces in household heating.

To encourage the phasing out of individual oil and gas furnaces, a number of measures have been implemented. This includes, inter alia:

- **Grant pools:** In the period 2020-2026, approximately DKK 5 billion was allocated to 4 subsidy pools to phase out oil and gas furnaces (decoupling scheme, scrapping scheme, district heating pool and heat pump pool), among other things. The pools provide support for, inter alia, investment by households in a heat pump, the roll-out of new district heating areas, as well as decoupling from the gas grid.
- **Loan schemes:** Establishment of 2 schemes for green loans free of fees and real estate tax for switching oilfurnaces and gas furnaces, as well as a scheme for loans with a State guarantee to replace oil and gas furnaces in areas that do not have the possibility to enter the district heating network. The schemes were implemented by law in spring 2023.
- **Tax changes:** Increase of the space heating tax for households (fossil fuels) to DKK 62,3/GJand decrease the rate of the electricity heating tax to DKK 0,8/kWh for households (corresponding to EU minima). Theadjustments entered into force on 1 January 2021.
- **Regulatory changes: The**adjustment of the socio-economic entry in the Heat Supply Act so that from 1 January 2021 district heating projects could be approved without a comparison with fossil alternatives. This ensures that regulation is not an unnecessary brake on the conversion of natural gas areas into district heating areas. In addition, the previous combustionobligations (switching, connection and continuity obligations) to natural gas were abolished as of 2019.
- **Planning efforts: The**municipalities are the heating plan and approval authority and are therefore responsible forplanning the collective heat supply in the municipality. In order to speed up the roll-out of district heating, an agreement has been concluded with the municipalities' interest organisation, KL. The agreement was to establish in 2022 and 2023 theplanning basis for the district heating to be rolled out, where appropriate, by 2028.

81 a. As a result of the above measures and presumably the high gas prices in 2021-2022, there has been a significant reduction in the number of gas furnaces households since the end of 2020.

The Danish district heating sector is governed by the Heat Supply Act. In order to modernise the district heating sector, anumber of regulatory changes are impacting, among other things, to incentivise the phase-out of fossil fuels and to ensure the framework for new green technologies. These include:

- The removal of fuel ties for natural gas and the CHP requirement for district heating producers, as well asa modernisation of the cooling obligation for district heating to allow for an increased use of surplus heat and own renewable energy production. The amendments were introduced by an amendment to the Order on 1 January 2021.
- The introduction of separate rules for price regulation of surplus heat to promote exploitation. Introduced by legislationas of 1 January 2022 for new agreements for the supply of surplus heat and as of 1 January 2024 for supplyagreements entered before 1 January 2022.
- Introduction of separate rules for the price regulation of district heating from geothermal installations to enable large-scale geothermal installations to be set up for district heating in Denmark. Introduced by legislation as of March 2023.

82 as a result of the above regulatory changes, the production of district heating based on renewable energy, in particular electricity, is expected to continue to increase. In order to cope with the increasing electrification of society, the *Climate Agreement on green electricity and heat 2022* inter alia allocated DKK 32 million in 2022-2026 to measures and analyses concerning the expansion of the electricity grid and demand response which may have an impact on the heating sector. Further actions addressing electrification are presented in Section 2.3.

In cooling areas, the *Energy Agreement 2018* has implemented a number of regulatory adjustments to promote the development of the district cooling sector, such as free technology choice and improved possibilities for the operation of district cooling projects acrossborders. Amendments entered into force on 1 January 2022.

Obligations for renewable energy in the transport sector

The revised Renewable Energy Directive (2023/2413) sets new and higher requirements for the share of renewable energy in the trans importsector. This section follows recommendation 7 (3) and describes how Denmark is expected to comply with its obligations- for renewable energy in the transport sector in 2025 and 2030. Denmark is expected to overmeet the overall obligation for renewable energy in the transport sector of 29 %. Ve or 14.5 % reduction in greenhouse gas intensity (Art. 25 (1) (a)) with renewable electricity supplied to electric vehicles. This is mainly due to the expectation of increasing electric car sales, which is expected to be accelerated, inter alia, by tax reductions and technological developments, as well as a high share ofelectricity in the electricity mix in 2030. This leaves compliance with the fuel specific minimum requirements for advanced biofuels and RFNBOs in 2025 and 2030 (Art. 25 (1) (b)).

Denmark will meet the 1 % requirement for advanced biofuels and RFNBOs in 2025 with the national CO2e displacement requirement and by counting biogas injected into the Danish gas system when reporting to Eurostat. The Danish crakehas not yet taken a political decision on how to meet the fuel specific minimum requirements in 2030. The Reguleringene will be adjusted at the level of the notice once a political decision has been taken. The VEIII Directive has a transposition deadline of 21 May 2025.

In 2022, Denmark introduced a CO_{2} e-displacementrequirement in road transport which should, inter alia, incentivise fuel suppliers to use fuels with a high life-cycle reduction effect. The CO_{2}e-displacement requirement is 6 % for the period 20222029. Most of these reductions are to be made using GHG reducing fuels (fuels that reducelife cycle greenhouse gas emissions per unit of energy measured against 94,1 GCO_{2}eq/MJ (expected to be adjusted to 94,0 by implementing VE III on 1 January 2025)). The CO_{2}e-displacement requirement for these GHG reducing fuels is phased in by 3.4 % in 2022-24, rising to 5.2 % in 2025-27, 6 % in 2028 and 7 % in 2030 onwards.

In Denmark, registration tax applies in principle to all cars. The registration tax is calculated on the basis of the value of the car (including VAT) and the car's CO_{2}e-emissions. For zero-emission (electric) and low-emission (plug-in hybrid) cars, the tax is gradually phased in. Thus, the registration tax is zero for electric cars with a purchase price of up to DKK 400.000 up to and including 2025. In addition, cars and vans pay half-yearly ownership tax, which, for cars registered for the first time on or after 1 July 2021, is differentiated according to theirCO_{2}e-emissions. As a result, electric cars pay the lowest rate of the owner tax.

Actions targeting the production and distribution of green hydrogen and PtX

The *Agreement on the development and promotion of hydrogen and green fuels* aims for Denmark to have 4-6 GW of electrolysis-capacity by 2030. The development of PtX must, as far as possible, be carried out in accordance with market conditions and taking into account the security ofDanish citizens. Electrolysis, the key technology of PtX, allows the production of fuels and chemicals that can replace fossil products in a number of hard-to-transition sectors, such as shipping, aviation and parts of industry.

On 19 April 2023, the Danish Energy Agency opened the invitation to tender for grants for the production of Power-to-X (the PtX tender) with a total bidof DKK 1.4 billion (2024 prices). The aid will be granted per GJ of hydrogen produced for 10 years to the winning projectswithin the scope of the scheme – including a price cap of DKK 120/GJ and a budgetary cap of DKK 70/GJ. Around DKK four billion of operating aidwas applied for over 10 years, i.e. more than three times the tender budget. Aid was requested for projects with a total electrolysis capacity of approximately 675 MW. In total, four projects have won their full amount. In addition, a fifth project has agreed to win a reduced amount and scale down their project so that it can be accommodated within the remaining budget.

Table 18
Supply of grants for the production of PtX

Winners	Price supplement offered,	Totallight capacity, MW	Total amount in DKK	Share of combinedlight budget (%)	Location of installations
Wind test centre Meat K/S/European Energy	40,0000	9	43.994.973	3,3	Esbjerg
European Energy	46,0000	150	910.800.000	67,1	Padborg

BioCat Roslev/elec — trochaea	59,9998	10	71.279.762	5,4	Rybjerg

Kassø PtX Expansion ApS/European Energy 6	67,0000	10	81.879.549	6,2	Røkro
HyproDenmark/Everfuel (Marginal bidder)	67,4998	30	210.99.988	16	Fredericia

With the Agreement on the *Development and Promotion of Hydrogen and Green Fuels* (PtX Agreement), it was decided that the necessary framework should be created to enable Denmark to establish a hydrogen infrastructure for the transport of hydrogen in pipes. The expansion of PtX shall, as far as possible, take place on market terms. The parties to the agreement also agreed to engage in dialogue with Germany and other neighbouring countries of Denmark on the possible deployment of cross-border hydrogen infrastructure.

Denmark and Germany therefore signed a Joint Declaration of Intent in March 2023, in which the parties commit to support the deployment of hydrogen infrastructure between Denmark and Germany with a view to establishinga border-crossing hydrogen infrastructure linking Danish green hydrogen producers with German customers.

The *Agreement on the ownership and operation of infrastructure* concluded in May 2023 decided that hydrogen infrastructure in Denmark should in principle be publicly owned through Evida and Energinet. The two companies have been assigned different roles in the hydrogensystem:

- Energy networks initially link cross-border pipeline hydrogen infrastructure to a Danish receiverpoint, offshore pipe-bound hydrogen infrastructure and cross-border hydrogen pipes across the country to a hydrogen storage, a so-called backbone.
- As a starting point, Evida connects domestic hydrogen producers and consumers and can connect them to a similar meno-connectedhydrogen system.

The aim is to provide a coherent hydrogen system, which is why Energinet has been given the task of undertaking responsible for the system in order to enable a cross-cutting development of the energy system and to ensure that the most coordinated, efficient and functional operation of the Danish energy system across electricity, methane gas and hydrogen is achieved. Energy networks and Evida will each have responsibility for their own hydrogen system, inter alia in terms of market dialogue and development and development of their respective hydrogen system based on market needs.

The *Agreement on economic framework conditions for hydrogen infrastructure* concluded on 5 April 2024 provides clarity on, inter alia, the regulatory framework for the hydrogen market, which takes into account that hydrogen is a start-up market subject to uncertainty. Therefore, agreeparties agree that, based on the European Commission's hydrogen and gas market package, national regulation providing a flexible framework should be provided and help to reduce the risk for first users of the infrastructure in order to strengthen the incentive to enter the market in the start-up phase. Furthermore, the parties to the agreement agree that the risk associated with the establishment of a hydrogen backbone must be appropriately shared between the State, the infrastructure company, the market and relevant actors on the German side of the border, in accordance with *the Agreement on the ownership and operation ofits Danish pipe-bound hydrogen infrastructure*.

Actions to use energy system integration to balance the electricity grid and ensure the integration of renewable electricity (including through increased flexibility and storage);

It is possible for RES resources to be included in the reserve capacity market for manual reserves for the provision of oldgold. At present, VE can enter reserve capacity markets without having a backup capacity by submitting a forecast to Energinet with a maximum probability of not being able to deliver 10 %. This forecast is approved by Energinet on theback of previous forecast data. In this way, both more renewable energy is introduced into the system, while also helping to address the balancing challenges posed by these fluctuating sources.

Energy grids have recently developed new tender specifications for mFRR that address major imbalances in electricity systems, which entered into force in October 2023 and affect independent aggregators providing energy-carrying system services. Theterms of the tender will be aligned with the tender specifications in the Nordic market. In addition, Energinet has developed a newmethodology for compensation mechanisms and correction of imbalances, which are currently for approval by the Utilities Regulator. The-Compensation and Correction Model ensures that the independent aggregator is correctly settled without any economic impact on the imbalance settlement by balance responsible parties.

The minimum bid size has been lowered to 1 MWh, which will ensure that more flexibility providers can offer flexibility resources in favour of the common electricity grid. In addition, 10 % of the transmission capacity between DK1 and DK2 will be reserved for the exchange of mMFF capacity.

In order to ensure sufficient capacity in the electricity grid to integrate large amounts of renewable energy, the *Climate Agreement on Green Power and Heat* 2022d of 25 June 2022 launched, inter alia, a series of analyses and initiatives to ensure a proactive andcost-effective electricity grid expansion.

As part of this, analyses have been launched on how to ensure a pro-active expansion of the transmission network, incentives for fast grid connection to the distribution network, promotion of flexibility market, development of new flexible grid connection conditions and products, as well as faster implementation of tariff models and development of tariffs to promote flexibility. Model development is also being initiated for better monitoring and forecasting of electricity grid capacity in Denmark.

The agreement on *the development and promotion of hydrogen and green fuels* enables geographically differentiated consumption tariffs and direct lines at and above 10 kV. The agreement will also improve the possibilities for grid operators to make local collective TARIfor local associations of network users who produce and consume in a way that reduces the load on the collective electricity grid.

The actions will thus contribute to strengthening the ability to efficiently accommodate an increased amount of renewable energy (RES) in theelectricity grid by promoting an appropriate location of electricity consumption and generation. In this way, the capacity of the electricity grid can be used more efficiently, reducing the need for investment in the electricity grid. Furthermore, the *Agreement on the Development and Promotion of Hydrogen and Green Fuels states that* PtX is expected to contribute to an integrated and flexible energy system, integrating PtX into the energy system in a way that supports and complements existing supply sectors such as electricity, gas and district heating.

Actions to ensure access to data on renewable energy supplied and greenhouse gas emissions to consumers, including electric car users (in line with Article 20a of the revised RED);

Energy networks have set up a data service with data on prices, generation, consumption, ancillary services, capacities, etc. The database is open to all actors and individuals, including data on the CO_2concentration in the electricity produced down to 5 minutes intervals. The data service can also provide an overview of the different electricity generation sources and how much they contribute to meeting hourly consumption. This includes biomass, onshore/offshore wind, solar, water, waste, miscellaneous fossil burnersand foreign compounds. However, it cannot be seen where the flow from abroad was produced from.

Energy networks have recently developed new tender specifications for mFRR, which entered into force in May/June 2023 and which-affect undependent aggregators providing energy ancillary services. The minimum bid size has been lowered to 1 MWh, which will ensure that more flexibility providers can offer flexibility resources in favour of the common electricity grid.

Today, it is possible to purchase smart charging solutions for non-public purposes in Denmark through a number of charging operators. The market is still new and there are still developments that can be done to ensure even easier smart charging from final customers' electric cars. In particular with regard to the data layer: to release customers' charging data in a way that enables customers to give third parties access to manage their charging with relevance to the energy system and the collective electricity grids.

The Environmental Protection Agency monitors compliance with the provisions on capacity marking of portable rechargeable batteries and automotive batteries and accumulators regulated in Commission Regulation (EU) No 1103/2010 laying down rules for the marking of capacity of portable rechargeable batteries and automotive batteries and accumulators.

Article 23 (4) of the RES Directive provides for a number of measures, where Member States must implement at least two of them when achieving the RES target from Article 23 (1). This concerns, for example, the physical integration of renewable energy and excessheat and cold into the energy sources and fuels used for heating and cooling or planned replacement schemes for fossil fuel-based heat sources, heating systems that are not compatible with renewable energy sources, orterms for phasing out fossil fuels with sub-targets.

As the share of RES in the heating and cooling sector in 2025 is expected to be above 60 %, it can be confirmed that Denmark is expected to be exempted from the requirements of Article 23(1) to (4) of RES III as described in Section 3.1.2. Denmark is thus also exempted from describing measures to achieve the RES objective from the same article.

A credit mechanism for electricity has been put in place that allows the fulfilment of the CO_2e-displacement requirement to be partially done by counting electricity delivered through publicly accessible recharging points. The electricity supplied must be adequately measurable, monitored and documented. A publicly accessible recharging point is defined in Directive 2014/94/EU of the European Parliament and of the Council on the deployment of alternative fuels infrastructure of 22 October 2014.

(ii) Where appropriate, specific measures regarding regional cooperation as well as, as an option, the estimated excess production of energy from renewable sources that could be transferred to other Member States inorder to meet the national contribution and trajectories referred to in point 2.1.2;

Joint renewable energy generation projects (Art. 9 and Art. 11)

Denmark and Germany have concluded an agreement to realise the Bornholm Energie as a joint RES project under Article 9of the RES Directors for cross-border projects. This implies that the parties share relevant costs and benefits of the project, including, inter alia, infrastructure costs on the Bornholm Energy Island and RES shares.

Denmark exceeded the separate national target for Member States' renewable energy share in 2020 and is expected to exceed the milestones by 2030 set out in the Governance Regulation (EU) 2018/1999. On this basis, Denmark has previously concluded agreements on statistical transfers of excess RES shares. For 2020, agreements were concluded with the Netherlands, Flanders and Ireland. The agreements were concluded for one year at a time, with the condition that the funds are earmarked for greening in Denmark and specifically for PtX in one case. In addition, Denmark has concluded a second one-year agreement for 2021 with Flanders, as well astwo individual contracts with Belgium and Luxembourg respectively for the years 2021-2025. The multiannual agreements are earmarked for energy islands, green transition and marine wind, as well as green gases. Denmark is expected to continue to have a surplus of RES shares by 2030, which is why new agreements may be possible.

Preparing the EU for renewable hydrogen trade, prioritising energy and water needs for localpopulations

At the North Sea meeting of 18 May 2022, Denmark and Germany signed a Letter of Intent for cooperation on PtX. Subsequently, the Ministry of Climate, Energy and Supply and the Federal Ministry of Economic Affairs and Energy (BMWK)have signed a bilateral declaration on cross-border infrastructure cooperation to support the export of Danish-produced green hydrogen to Germany.

It should be noted that hydrogen market players have called for the possibility of obtaining guarantees of origin for hydrogen inorder to be able to market green hydrogen. The Danish Energy Agency therefore made it possible to issue guarantees of origin for hydrogen as of 1 July 2023. The possibility of guarantees of origin for hydrogen is expected to promote hydrogen production with renewable energy sources, as the guarantees of origin have a value for market players. Guarantees of origin for hydrogen will thus support a hydrogen market where hydrogen is produced from renewable energy sources.

Regional cooperation

Denmark cooperates with other European and non-European countries on renewable energy in a number of fora. The Eurospolitical forums include b.la. BEMIP and North Seas Energy Cooperation

BEMIP

In BEMIP (Baltic Energy Market Interconnection Plan), Denmark, Finland, Sweden, Estonia, Latvia, Lithuania, Poland and Germany (Norway as an observer) work together to create an open and integrated regional electricity and gas market between the Member States, andto develop the marine wind and electricity grid in the Baltic region.

BEMIP cooperation contributes to the implementation of several objectives and policies in the Energy Union. This is the case, inter alia, for decarbonisation where efforts are being made to promote the production of renewable energy through cross-border cooperation projects, including offshore wind projects in the Baltic Sea. Cooperation is also ongoing on plans for the development of the electricity and transmission grid (ENTSO-E on the Offshore Network Development Plans) and for the development of the Europeangas and electricity markes and for the coupling of the Baltic electricity and gas market with the European one.

NSEC

North Seas Energy Cooperation (NSEC) supports and facilitates the development of offshore wind potential as well as grid expansion in the NorthSea. Cooperation takes place between Denmark, Germany, Luxembourg, Belgium, the Netherlands, France, Ireland and Sweden (Norway as observer country).

NSEC cooperation contributes to the implementation of several objectives and policies in the Energy Union. This includes promoting the production of renewable energy through cooperation on cross-border projects and offshore development in the NorthSea. In addition, work is being undertaken to strengthen the internal market through cooperation on plans for the expansion ofthe electricity and transmissi network development plans and the development of the European market in renewable energy, including through hybrid projects.

(iii) Specific measures concerning financial support, where appropriate, including Union support and the useof Union funds, to promote the production and use of renewable electricity, heating and cooling and transport;

Development of onshore wind and solar energy

In the future, it is expected that onshore renewable energy development will take place free of support. The development of renewable energy on land has historically been facilitated by various support schemes. More recently, in the period 2018-2021, technologically neutral tenders have taken place, in which land-based wind turbines, solar cells and open-door offshore wind turbines have been able to compete for the lowest possible aid. With *the Climate Agreement on Green Power and Heat* of June 2022, the parties to the deal decided to stop holding technology-neutral tenders. With the 2022 Climate Agreement, the parties to the agreement agreed to ensure framework conditions could allow for a four-fold increase in total electricity generation from solarand rural wind by 2030. As a follow-up, in December 2023, a broad majority of the Danish Parliament reached *the Climate Agreement on greener energy from sun and wind on land*, in which it was decided to enable the state to play a more active rolein planning for major on-shore energy parks, thereby supporting the ambition of a four-fold increase. In the same agreement, it wasdecided to increase the rates for the two RES schemes RES bonus and green pool, ensuring that the owners of the RES installations share a greater share of the benefits from the operation of the RES installations with neighbours and local communities respectively, with the aim of ensuring a higher degree of local acceptance of the RES installations.

Exploratory wind turbines

In Denmark, a scheme has been in place since 2018 to support the development of experimental wind turbines to support the technological development of wind energy and to ensure continued development activities. With *the Climate Agreement on Green Power and Heat* of June 2022, the parties to the agreement decided to shift the support to experimental wind turbines in 2023-2024 from operating aid to investment aid, as recommended in the 2021 Experimental Wind Analysis. In 2023, a majority of the Danish Parliament adopted a proposal to shift from operating aid to investment aid for experimental wind turbines. The Land 2023 Investment Support Pool opened on 15 August 2023 and closed on 15 November 2023... Denmark is continuously working to support and ensure good framework conditions for testing experimental turbines, which can facilitate the industry's ability to bring new types of wind turbine to the market. An environmental and habitat impact assessment is currently being prepared for the extension and adaptation of the Østerild test centre. If the extension of Østerild is adopted, it would provide wind turbine manufacturers with test sites for larger wind turbines of up to 450 metres. In addition, it has also been decided to adapt the Høvøre test centre in order to dismantle two out of a total of seven stands to allow prototype mills of up to 275 m height to be tested at the remaining five places.

Offshore wind farms

Kriegers Flak:

Kriegers Flak was offered in 2015 with a support model with the possibility of supporting a production of 50.000 full-load hours (up to 30 TWh). This corresponds to approximately 11 to 12 years, depending on the production in each year, including, inter alia, thelevel of wind blown. The tender was won by Vattenfall with a price of DKK 37,2/kWh. As a result, the park receives support when the electricity price is below DKK 37,2/kWh, where the aid is equal to (DKK 37,2/kWh minus the electricity price in the current hour) multiplied by production in that hour. When the price is above DKK 37,2/kWh, negative price supplements are reprocessed equal to (electricity price minus 37,2 øre/kWh) times the production, which is not charged but deducted from the following aid payments. Kriegers Flak has an output of 605 MW, was put into operation before thefirst half of 2021 and has a technical lifetime of 25 years.

Thor:

Thor was offered in 2021 with a modified two-sided CfD, with a maturity of 20 years. In the Thor model, it is used as thereference price through the cross-sectional spot price in the last calendar year. If the electricity price in the last calendar year is above the winning electricity price, thepro ducentage in the current year shall pay the difference as a fixed payment per kWh to the State. If the electricity price in the last calendar year is below the winning electricity price, the producer receives the difference in the current year as a fixed price supplement per kWh from the State. When paying to the State, the producer may have an incentive to stop production

when the payment to the State per kWh is higher than the electricity price. Therefore, a phase-out mechanism has been put in place so that the producer always receives at least 3 øre/kWh as long as the electricity price is DKK 3/kWh or above. A minimum bid price of DKK 0,01 per kWh was set, a ceiling of DKK 6.5 billion in total aid payments overit, and a ceiling of DKK 2.8 billion in the payment from the producer to the State. Bidders had to indicate the size of the park, which should be between 800 and 1 000 MW. The tender was decided in 2021 by drawing lots, when five bidders submitted minimum bids of DKK 0,01/kWh and a park size of 1 000 MW. The draw was won by RWE. The bid price of DKK 0,01/kWh implies that RWE pays DKK 2.8 billion to the State. Thor must be completed by 2027.

West Ocean South and North:

Vesterhavet South and Nord were offered in 2016 as a CfD model, with the possibility of supporting a production of 50.000 full load hours (equivalent to 8,5 and 9 TWh). This corresponds to approximately 11 years depending on the production in each year. The tender was won by Vattenfall with a price of DKK 47,5/kWh. As a result, the park is subsidised when the electricity price is below DKK 47,5/kWh and when the price is above DKK 47,5/kWh, negative price supplements are reworked and not charged but offset against the following aid payments. The Vester- Ocean South and North have capacities of 170 and 180 MW respectively – a total of 350 MW. Vesterhavet South was put into operation at the end of 2023 and Vesterhavet Nord in Q1 2024. They have an electricity generation permit of 25 years.

Biogas

In Denmark, biogas has been supported by various price supplements. In 2012, five policy support schemes were agreed for biogas toproduce electricity, upgrade, heat production, use in processes and transport. The schemes contributed to a significant supplyof biogas in the period 2012-2019.In the Energy *Agreement 2018*, it was decided to close the current biogas support schemes by 2020. This means that no new plant can enter the existing subsidy schemes from 1 January 2020 and that existing plants will continue to receive aid until the end of the 20-year support period.

In June 2020, the *Climate Agreement for Energy and Industry etc. 2020* agreed that future support for biogas and other green gases is based on a tendering process with 5 tenders up to 2030. The scheme is pre-notified to the European Commission and is awaiting final approval under the EEAG State Aid Guidelines.

Denmark is in the process of phasing out maize as an energy crop and is examining how to further lower the energy crop limit. So far, the limit is 4 % until 2026. E-methane is one of the eligible gases in the upcoming tender that will use the $CO_{2\ fraction}$from the upgrade of biogas. In addition, there are initiatives related to the development andpromotion of pyrolysis technology and biochar, including the extent to which biogas digestate can be used in this context.

Electricity and heat from solid biomass

Electricity production using solid biomass will be supported by a fixed subsidy. The flat-rate subsidy scheme, combined with tax-exemptions for biofuels for heat production, has been a driver of fuel switching from coal and gas until 2019.

There are two aid schemes:

1. Until April 2019, existing non-depreciated plants could receive a fixed subsidy of DKK 0,15/kWh for the entire depreciation period, but for a maximum of 20 years. The newest plants will thus be eligible for aid until 2039. DKK 2 021 million was paid out in 880, in DKK 2 022 660 million and in DKK 2 023 480 million in grants under the scheme.
2. Depreciated installations may receive a fixed subsidy calculated on the basis of the difference in operating costs of using biomass compared to an alternative fossil reference. In the period 2021 to 2023, the aid rate was zero and therefore no aid was paid under this scheme.

Heating and cooling

There are a number of support pools that provide grants for the roll-out of district heating and heat pumps in individualheating and in companies. Funds have been allocated to the support pools under *Energy Agreement 2018*, *Climate Agreement for Energy and Industry, etc. 2020*, *the 2021 Finance Act, the Climate Agreement on Green Power and Heat 2022* and the *VinterAid Agreement 2022*, the *Finance Act for 2024* and the *Agreement on the partial implementation of the Green Fund 2024,* as shown in Section 3.3, where the pools are further elaborated.

The basic amount support for decentralised natural gas-based CHP plants came to an end in 2018, leading to lower revenues and

higher prices for some district heating companies. As a helping hand to distressed works and customers, the parties to the *Energy-Agreement 2018* agreed to allocate funds for a number of actions to deal with the end of the base amount, including what became the start-up aid since then. In the period 2021-2023, the start-up aid granted subsidies to collective heat pumps and solar thermalplants that crowd out fossil district heating production. See also Section 2.3.

(iv) Where applicable, the assessment of support for electricity from renewable sources to becarried out by the Member States pursuant to Article 6(4) of Directive (EU) 2018/2001;

In so far as concerns assessments of renewable energy support schemes for electricity in Article 6(4) of the Renewable Energy Directive, this is an assessment to be carried out by the Member State every five years. Denmark has not yet carried out an overall assessment of support schemes as described in Article 6(4) of the Renewable Energy Directive. However, it should be noted that the obligation to carry out assessments is written into the Act on the Promotion of Renewable Energy (the Renewable Energy Act) with entry into force on 1 June 2023, so that it is now clear from Danish law that the Minister for Climate, Energy and Utilities is obliged to carry out assessments at least every 5 years. Once assessments have been made, this assessment shall be included in the relevant updates of the integrated national energy and climate plans and progress reports.

(v) Specific measures to introduce one or more contact points, streamline administrativeprocedures, provide information and training, and promote the uptake of PPAs.

Onshore permit-granting processes

Successful government processes are essential to realise the expansion of onshore renewable energy, which is why, in the context of *the Climate Agreement on Green Power and Heat 2022*, a number of initiatives were launched to increase local anchoring and faster planning processes in municipalities:

- Funding has been allocated to extend the existing preparedness for the review procedure of solar and wind projects to 2026, so that appeals concerning solar and wind projects can continue to be decided within six months.
- Funds have been allocated to a State travel team. As a result, from 2023, the municipalities have been able to seek professional haulage andweighing from a national renewable energy travel team, which will ensure, among other things, the dissemination of good examples in the implementation of renewable energy projects in the municipalities. For example, the RES travel team regularly organises events focusingon compass building and exchange of experience across municipalities.
- An initiative has been launched to improve map data for municipal planning and developers' design of renewable energy installations.

In December 2023, *the Climate Agreement on Green Power and Heat 2022* was followed by the *Climate Agreement for more green energy from sun and wind on land 2023*, paving the way for the state to play an active role in planning major onshore energy parks in addition to municipal action. A new law on major energy parks will be presented in spring 2024, under which specific conditions are granted to energy parks within designated areas in order to make it easier and quicker to get permit-granting processes andspreads for the installation of renewable energy on land.

The *Climate Agreement on Green Power and Heat 2022* has launched a series of analyses looking, among other things, at the possibility of faster grid connection of renewable energy plants and a more proactive expansion of the transmission grid, which is expected to be completed in the course of 2024. Overall, itis expected that the results of the analyses will help to support faster onshore RES deployment.

Sea-based permit-granting processes

With *the Climate Agreement on Green Power and Heat 2022*, an agreement was reached to launch "a service check and analysis work" to remove regulatory barriers, as well as to provide more flexible case handling and shortening authorisation and authorisation processes for the development of marine wind. This was confirmed in the Government Basis for 2022, Responsibility for Denmark, where it was stated that the government will shorten the processing time for the deployment of renewable energy, including consideration of whether SMI could beestablished for the development of marine wind.

The Service Check has been implemented and a number of concrete actions have been identified which are expected to shorten the administrative procedure and reduce the risk of complaints, and which have been or are being implemented in law and practice. Furthermore, aclear framework for repowering is expected to make it easier and more useful to renew and increase the capacity of

existing offshore wind farms. To this end, the Government will also put forward a legislative proposal that provides a clearer framework and relaxing for, inter alia, co- compensation bars for marine tests. This is expected to facilitate the establishment of testing facilities at sea.

Actions to ensure a simple regulatory framework for renewable energy communities

Denmark has ensured that renewable energy communities are subject to simple regulatory frameworks by requiring the Danish Utility Regulator to identify and monitor the removal of unjustified barriers and restrictions to the development of renewable energy communities13. With the implementation of rules for renewable energy communities, Denmark has given a wide margin of manoeuvre in relation to the type of companies that can be used14. Finally, Denmark has chosen not to impose specific requirements on renewable energy communities to register or to have a licence granted in order to have the right to act as a renewable energy community.

Actions to streamline the regulatory procedure and design a contact point

The authority process for land-based RES is rooted in municipalities and the process for each project depends to a large extent on the nature and location of the project. The authority process follows the procedural rules set out, inter alia, in the Planning Act, the Building Act and the Environmental Assessment Act. Procedural rules are described on veprojecter.dk, which aims to facilitate the administrative processfor developers of renewable energy installations by designating a single contact point to provide guidance on the administrative process15. In addition, a single time limit has been introduced for processing applications for permits covered by the permit-granting process.

For offshore wind farms, the Danish Energy Agency is the one-stop shop for administrative procedures, where the Agency plays a key role in planning and issuing project permits, as well as coordination with all relevant authorities. Information and guidance on procedures and the authorisation process is also compiled on a single website. The Danish Energy Agency issues the main permits to carry out both feasibility studies (geophysical, geotechnical and environmental studies) and to establish the offshore wind farms, where the development permit also serves as an EIA permit for the projects. When implementing theEIA process at sea, the Danish Energy Agency ensures a combined process with possible impact assessments under the Habitats Directive and guides and guides the applicant throughout the EIA process. In addition, the Danish Energy Agency shall also issue the electricity generation permit when the plant is put into operation and permits for any repowering and lifetime extension.

Actions to roll out digitalised procedures

VEprojecter.dk provides authors with a comprehensive overview of permits to establish and operate renewable energy installations through one single entrance. The website thus constitutes the formal online manual of procedures required by the RES Directive and indicates how to apply for the permits covered by the permit-granting process. It is possible for opponents to contact thepoint through www.veprojekter.dk for general guidance.

Actions to streamline the environmental assessment process

Work is ongoing in Denmark to streamline the environmental permit process so that environmental impacts can be identified and addressed as early as possible in the environmental assessment process of the plan and in the context of the environmental impact report of the specific project. In order to allow for the large-scale expansion of onshore renewable energy by 2030, the parties to the climate agreement have setaside miles to ease land constraints. At the same time, it is crucial to safeguard nature, environment and biodiversity considerations. Therefore, thereare also means to strengthen guidance on environmental assessments and the Nature Directives. Among other things, it will help to minimore referrals from the Boards of Appeal with longer processes, and increase the possibility of shorter processes and balance between the Nature Directives and the need for renewable energy development.

In September 2023, the Ministry of the Environment published new guidelines for the Environmental Assessment Act with regard to the environmental assessment of specific projects and the environmental assessment of plans and programmes. The guidelines are legal guidelines and are based on the travaux préparatoires of the Act, the Danish Board and Judgments, the EU Directives that the Act implements, the case-law of the Court of Justice of the European Union and the European Commission's Guide to the Directives.

Section 1069 of13 Order No 18 of 30 May 2021
Section 1069 of14 Order No 6 of 30 May 2021
15Order No 1215 of 5 June 2021 on contact points and time limits for renewable energy permit processes

EA Hub and EA Tools

In order to assist authorities and supporters in the environmental assessment process, two systems EA Hub and EA Tools have been developed. EA Hub contains a collection of Danish environmental impact reports, where various combinations of search and GIStools can be used on the material. EA-Tools have compiled and systematised environmental data in environmental parameters relevant to the environmental assessment. Environmental data from more than 300 different databases are compiled and conflict analysis targeting renewable energy installations quickly and easily implemented both via text and geography.

Measures to simplify the repowering of existing renewable energy

Repowering at sea

In connection with the implementation of the RES II Directive, an authorisation was introduced to lay down rules on time limits for repowering projects, which was implemented by Order No 1215 of 5 June 2021 on contact points and deadlines for the renewable energy permit process.

As a result, Denmark has laid down in the Renewable Energy Act an enabling provision under which the climate, energy and supply minecan lay down rules on a simplified and rapid permit-granting process for repowering. Denmark is in the process of implementing the authorisation at the level of the Order, which will enter into force on 1 July 2024.

Land repowering

The complexity of the permit-granting process will most often reflect the impact of the change sought by the repo-wering project. In practice, for changes falling within the scope of repowering, there is a simplified permit-granting process. However, the content and scope of the permit-granting process will depend on the specific project.

Actions to encourage innovative projects

In order to promote innovative projects in the field of energy, Denmark mainly has three funding programmes – the *EUDP, ELFORSK and the Innovation Fund*, all of which support the development of new solutions and technologies in the field of energy.

EUDP

The Energy Technology Development and Demonstration Programme (EUDP) is a technology-neutral grant programme aimed at-supporting Denmark's energy and climate policy objectives of high security of supply, phasing out fossil fuels and reducing greenhouse gas emissions in line with climate objectives. Efforts must go hand in hand with promoting business potential for growth and jobs in Denmark. Each year, the EUDP supports thework of companies and universe testers in developing, testing and demonstrating climate-friendly energy technologies and system solutions. In 2023, the EUDP committed 67 projects for State aid. In total, DKK 543 million was allocated to the development of new energy technology in the EUDP in 2023.

ELFORSK

ELFORSK has an annual allocation of DKK 25 million for innovative projects to support electrification and the greeningof the Danish energy system. Grants are mainly awarded to research and development projects aimed at *promoting efficient energy use and flexibility solutions* in electricity and energy via *data, digitalisation and sector coupling*. In 2023, DKK 7.6 million was allocated to one project under ELFORSK. This is the "Super-Integration" project, which, through new algorithms and digital operating systems, will improve the efficiency of energy consumption in supermarkets.

Measures to facilitate the uptake of long-term renewable energy purchase agreements (PPAs)

Pursuant to Article 15 (8) of the Renewable Energy Directive and Article 19a of the Electricity Market Regulation, Denmark is obliged toassess regulatory and administrative barriers to long-term renewable energy purchase agreements (PPAs) and remove unjustified barriers and facilitate the uptake of such agreements.

There are no unjustified obstacles to the conclusion of PPAs in Denmark. In addition, it is noted that PPAs should not take precedence over other mechanisms that provide long-term price signals, such as the established forward markets, in order to ensure that price fixing mechanisms are passed on to multiple parties via the established markets rather than fewer parties, as in the case of bilateral PPAs.

The revised RES II Directive (the RES III Directive) extends the scope of Article 15 (8) from renewableelectricity purchase agreements only to renewable energy purchase agreements for other forms of energy. Against this background, Denmark has carried out an analysis of the regulatory and administrative barriers to long-term renewable energy purchase agreements on the RESdistrict heating brand and green gases. There are no unjustified barriers to energy purchase agreementsin these forms of energy. However, players in the Danish biogas industry have indicated that the lack of stability in the regulation of biomethane constitutes an obstacle to long-term agreements for biomethane. The industry highlights, among other things, the notions in the Ci value (Carbon Intensity) in the sustainability certificates.

A summary of policies and measures under the enabling framework shall be put in place pursuant to Article 21(6) and Article 22(5) of Directive (EU) 2018/2001 to promote and facilitate the development of self-consumption and renewable energy co-creators;

In order to create an enabling framework for renewable energy communities, Denmark has inter alia ensured that renewable energy communities are subject to simple and transparent rules. This has been implemented, inter alia, by making renewable energy communities highly subject to comparable rules as citizen energy communities16. With the implementation of rules for renewable energy communities, Denmark has given a wide margin of manoeuvre in relation to the type of companies that can be used17. In Denmark, the Danish Utility Regulator is required to identify and monitor the removal of unjustified barriers and restrictions to the development of renewable energy communities18 and to network companies to cooperate with renewable energy communities to facilitate electricity sharing within the renewable energy community.19 A guarantee fund existed in advance20, which renewable energycommunities may also, under certain conditions, use to seek funding for feasibility studies in connection with the installation of wind turbines, photovoltaic installations, wave power plants and hydroelectric installations. As an additional measure, the Ministry of Climate, Energy and Utilities hasintroduced a pool that can both facilitate access to finance and information for renewable energy communities21.

Renewable self-consumers currently do not pay transmission tariffs for the part of the electricity consumed directly by theself-product. The same applies to electricity consumed by tenants in a rental property rented out by the renewable self-consumer. It should also be noted that a renewable self-consumer is exempt from electricity tax in respect of electricity produced from renewable energy which is consumed directly by the renewable self-consumer himself or by the tenant of the renewable self-consumer in a rented building, where the installation isplotted in connection with the rental property.

Renewable self-consumers located in the same building, including residential buildings, shall have the right to jointly participate in-activities covered by Article 21(2) and to organise, through the collective electricity grid, the sharing of renewable energy projected in relationto their respective consumption sites.

Rules allowing for geographical differentiation of network users' associations were introduced in April 2023. This allows, for example, energy communities to get a local collective tariff that rewards a more cost-efficient use of the collective network.

Actions to ensure access to solar energy for energy poor households and vulnerable consumers

The Danish energy system is generally characterised by low electricity prices and high security of supply. The transport and distribution ofcitet is carried out via the collective electricity grid operated by the Danish grid companies and Energinet. In 2030, it is expected that the Danish electricity system will be largely based on renewable energy. In this way, it is estimated that alsoenergy-intensive and vulnerable households will have access to renewable energy. Denmark takes the view that there are no significant numbers of energy poor and are already being addressed through existing and new measures, including through targeted social benefits as well as various heat pools that financially support homeowners for energy renovations.

Actions to assess and remove unjustified barriers to the development of renewable energy communities and citizen energy communities;

Denmark has required the Danish Utility Regulator to identify and monitor the removal of unjustified barriers and restrictions to the

16 The Order no 1069 of 30. may 2021
17 The Order no 1069 of 30. may 2021 § 6
18 The Order no 1069 of 30. may 2021 § 18
19 The Order no 1069 of 30. may 2021 § 15
Section 1791 of20 Consolidated Act No 21 of 2 September 2021
21Order No 1162 of 9 August 2022

development of renewable energy communities and citizen energy communities22.

Investment framework and actions to accelerate solar investments in combination with renovations, storage and wereme-pumps

In connection with the recently concluded *Climate Agreement on greener energy from solar and onshore wind* from December 2023, it wasconcluded that a pool of a total of approximately DKK 179 million should be set up in the period 2024-2 046 in order to support solar cells inurban settlements. The switchboard shall be presented with a proposal on how the pool for renewable energy in less accessible areas can be translated into urban electricity generation on, for example, larger roofs and traffic installations such as noise screens on peri-urban motorways. On thisbasis, the lecturer will discuss, inter alia, before the end of 2024, a comprehensive discussion paper for implementation.

With *the Climate Agreement on Green Power and Heat 2022*, it was decided that from 2023 the Building Pool would be split into two separate pools, targeted conversion to a heat pump or energy renovation projects, such as window replacement or post-installation insulation. By doing so, private citizens can apply for subsidies for either energy renovations or conversion to heatpump from oil, gas or wood pellet furnaces, as well as electric heat. The two new pools, the Heat Pump Pool and the Energy Renovation Pool admini, are steered on afirst-come, first-served basis, where correctly completed applications start in the order in which they were received. It is assumed that the pools may have an incentive and at least accelerated effect, with the expectation that a proportion of the conversion or renovation projects would not have been carried out in the absence of grants.

Measures to remove administrative barriers to cost-effective extensions of already installed systems

As far as the Danish Energy Agency is informed, there are no significant administrative obstacles related tocost-effective releases of systems already in place in Denmark. Therefore, there are currently no objectives or specific measures to remove barriers to extensions of already installed systems.

Actions to support building-integrated photovoltaic installations for new buildings and renovations

The share of buildings with photovoltaic cells has been increasing in Denmark over the last 20 years. In the period 2020-2022, the numberof new non-residential buildings with photovoltaic cells was around 60 %. For dwellings, solar cells are around 20 %. In order to promote energy efficiency, Denmark imposes strict requirements on the energy framework for new buildings in the Building Regulations. The energyframework indicates an upper limit on the total energy needs of a newly built building for heating, ventilation, cooling and domestic hot water. Part of the energy framework can be met through electricity generation from renewable energy plantssuch as photovoltaic cells. The strict requirements thus help to provide incentives to install photovoltaic cells when new ones are built, because the lack of energy performance in the energy framework can be covered, for example, by additional insulation, solar heating systems, heat pushedpesystems or solar cells.

Actions to remove barriers to innovative forms of solar energy deployment

In Denmark, the focus is on supporting efforts to research and develop new solutions for the energy sector. To achieve thisobjective, in Denmark there are primarily three funding programmes – the *EUDP, ELFORSK and the Innovation Fund*, which all support the development of new solutions and technologies in the field of energy. Support for innovative solar projects will be supported, inter alia, through the EUDP, a technology-neutral grant programme. The main objective of the EUDP is to support initiatives to develop new-technologists and systems solutions that can displace fossil fuels, increase energy efficiency and at the same time boost green growth and job creation. In 2023, the EUDP committed around 70 projects for State aid. In total, DKK 543 million was allocated in 2022 to the development of new energy technology in the EUDP, of which 4 % was given to solar energy projects.

Actions to ensure that all new buildings are 'solar ready' and that solar energy is made mandatory for building categories described in the EPBD revision;

Negotiations on the EPBD have been concluded by the end of 2023 and are expected to enter into force in spring 2024. There willbe a 24-month transposition deadline. The implementation of the Directive will be settled and organised after theentry into force of the Directive.

Section 1069 of22 Order No 18 of 30 May 2021

Timeline for the implementation of the revised Renewable Energy Directive (VEIII) – addressing recommendation 9

In Recommendation No 9 of the European Commission *(C (2023) 9601 final of 18 December 2023)*, the Commission calls for a timetable outlining steps for the adoption of legislative and non-legislative policies and measures aimed at implementing the provisions of the VEIII Directive. In particular, the Commission would like to see theprovisions referred to in other recommendations not being made easier.

Denmark has divided the timetable into two sections. The first section concerns legislative implementation, while the secondsection concerns the fulfilment of the new NECP reporting obligations in the Directive, etc.

Legislative implementation
Denmark intends to implement all articles of the VEIII Directive in a timely manner, in line with the deadlines set out in the Directive. Below are briefly commented on significant steps in relation to the handling of the Directive.

- 1 July 2024 (deadline for certain provisions on renewable energy permits);

On 24 April 2024, the Minister for Climate, Energy and Utilities presented a bill on the Act amending the Act on the Promotion of Renewable Energy, the Sustainable Biofuels Act and on the Reduction of Greenhouse Gas, the Act on the Promotion of Energy Savingsin Buildings and the Heat Supply Act, which is expected to enter into force on 1 July 2024. The draft Act is implementedby Order, which is also put into effect on 1 July 2024 and which ensures that Denmark can transpose all mandatory provisions with a deadline of 1 July 2024 on time. The legislative proposal also allows Denmark to make use of the voluntary provision (Art. 15e) and to lay down more detailed rules on the renewable energy permitting processes and acceleration areas that have a regulatory implementation deadline of 21 May 2025.

- 21 May 2025 (deadline for implementation for other provisions),

For the provisions which otherwise require amendments to Danish laws, Denmark expects that the Minister for Climate, Energy and Supply willbe able to submit legislative proposals in the 24/25 parliamentary year and that Denmark will implement the Directive in due time until the deadline of 21 May 2025. In addition, the Directive will have an impact on a number of Orders implementing the current VEII Directive, which will need to be adapted to the new requirements. In addition, Denmark will have a mapping exercise by 21 May 2025 of the areas necessary for national contributions towards the Union's overall renewable energy target in 2030, cf. Article 15b of RES III.

- 21 February 2026 (deadline for designation of acceleration areas for RES).

The legal basis for acceleration areas will be in place by the deadline of 21 May 2025 and Denmark intends to designate acceleration areas by 21 February 2026. In Recommendation (7), COM states that Denmark should: *'Describe further the renewable technologies for which it plans to designate 'renewable acceleration areas' with faster and simpler procedures'*. Denmark cannot answer the question at this stage, as it will depend on the forthcoming mappingexercise, cf. Article 15b.

Fulfilment of new VEIII-NECP reporting obligations and timetable for other comments from EU COM, etc.

The VEIII Directive entails a large number of new NECP reporting obligations. These have been addressed in this update and an overview of management can be found in the table below.

Table 19
New VEIII-NECP reporting obligations and timetable for other comments from EU COM, etc. [To be updated]

Article of VEIII with NECP obligation	Handling	Possibly contained in EU COM recommendations
Article 3(1)	Handled in 2.1.2 (i) and Figure 4.	Recommendations 5, 6 and 7

Article 3(4) a	Article 3 (4a) implies that the Member State shall establish a framework allowing the use of renewable electricity at a level consistent with the national contribution to the overall overall RES target. This framework may include, inter alia, support schemes and measures to promote renewable power purchase agreements (PPAs). In the framework, the Member State shall pay particular attention to possible obstacles, including: a. Barriers to the permit-granting process, b. The development of thenecessary transmission, distribution and storage infrastructure, including co-located energy storage, and c. Demand for renewable electricity from other sectors (transport, heat, etc.). Denmark expects, cf. section 2.1.2, to meet thenatio nal contribution with existing measures, and these measures togethermake the framework in Article 3 (4) a. He will highlight the measures described in section 3.1.2 (on renewable energy). This section includes, inter alia, actions targeting the production and distribution of green hydrogen and PtX, actions to use energy system integration to balance the electricity grid and ensure the integration ofelectricity related to electricity (including through increased flexibility and storage), actions to ensure access to data on livingrenewable energy and greenhouse gas emissions forusers, including electric car users, land and sea permitting processes, actions to streamline authority proceand design a contact point, as well as actions to facilitate the uptake of long-term renewable energy purchase agreements (PPAs). In addition, 3.1.3 (on other elements of the dimension) describing the elecification oftransport are highlighted, as well as 3.4.1 and 3.4.2 on electricity infrastructure.	

Article 15(8)	Handled in 3.1.2 (v)	
Article 15a	Handled in 2.1.2 (ii) under the heading 'Indicative target for the share of renewable energy in the national building sector by 2030"	Recommendation 6
Article 15b(1) and (4)	Dealt with in this document.	
Article 20(3)	Handled in 3.1.2 (vi)	
Article 22a(1) and (3)	Addressed in 2.1.2 (ii) under the heading 'Objectives for RES in industry "as regards paragraph 1	Recommendations 6 and 7
Article 22b	DK does not apply this provision	
Article 23(1)	Handled in 2.1.2 (i) under the heading "Heat and Cooling" ling'	Recommendation 6
Article 24	Handled in 3.1.2 (vi) under 'Heat and Cooling'	
Article 25(1)	Handled in 3.1.2 (i) under the heading "Obligations" for renewable energy in the transport sector".	Recommendations 6 and 7
Article 29(7) (b)	Dealt with in this document.	Recommendation 8

However, Denmark has the following specific comments on the following reporting obligations, for which the final update will be later than 30 June 2024:

According to the reporting obligation in Article 22 (3) concerning the amount of renewable fuels ofnon-biological recovery that Denmark expects to import and export, it is considered that the reporting is associated with significant uncertainties. This is because developments in this area are market-driven and are at a very early stage (see Power-to-Xof section 38). Analysis *assumptions for Energinet 2023 – PtX and DAC*, which are a target achievement scenario23, estimate that in 2030 there will be net exports of 20 PJ, while in 2050 net exports are expected to be 160 PJ. In the calculation ofthe express, it is assumed from a technical point of view that all Danish consumption of hydrogen and PtX fuels iscovered by Danish production and that there is therefore no import. Denmark will monitor developments and report further as soon as more valid data and/or analytical assumptions are in place.

In relation to the new reporting obligation in Article 29 (7b) (a) concerning the domestic supply of forest biomass which is raw for-energy purposes in 2021-2 030 in accordance with the criteria set out in Article 29 of the VE III Directive, it should be noted that the sustainability criteria of the RES III Directive have not yet been implemented, as the transposition deadline is only 21 May 2025. Article 29 (7b) (a) cannot therefore be fully answered at this stage, but it will be reflected in future reports once the reinforced sustainability criteria are implemented.

For transport, Denmark reports on the share of renewable energy in final energyconsumption in transport, cf. the reporting obligation in Article 25 VEIII. This follows from the updated NECP in Section 3.1.2 (i) under the heading 'Obligations*for renewable energy in the transport sector*'. The Commission Recommendation No 7 further states that Danmark should describe Denmark's design of 'fuel supplements in the transport sector' from VEIII. Denmark has decided to comply with the requirements of the VE- III Directive for advanced biofuels and RFNBOs of 1 % in 2025 with the national CO_2e-displacement requirement and by counting biogas injected into the Danish gas system when reporting to Eurostat. Denmark also notes that the Danish Government has not yet taken a political decision on how to implement the fuel-specific minimum requirements for2030. Such a decision is expected in the course of 2024, after which the regulation is amended at the level of the Order. This will ensure timely implementation by 21 May 2025.

Finally, Denmark notes that it intends to comply with Article 9 in accordance with the deadlines laid down in the Directive. Thisis due to the fact that Denmark agrees by 31 December 2025 to establish a framework for cooperation on joint renewable energy projects and, by 31 December 2030, endeavours to agree on two projects with one or more other Member States for the production of RES. These two projects must be notified to the Commission and may take place in a different context from the NECP. The NECP states that Bornholm Energy Island will be a joint renewable energy project between Denmark and Germany.

(vi) Assessment of the need to deploy new infrastructure for district heating and cooling from renewable energysources

Article 24 of VE III provides for a number of requirements for RES in the district heating and cooling sector, including, inter alia, that MemberStates aim to increase the share of energy from renewable sources and from waste heat and cold in district heating and-cooling by an indicative 2,2 percentage points as an annual average calculated for the period 2021-2030.

However, it follows from Article 24(10)(c) that a Member State is not obliged to apply Article 24(2) to (9) if 90 % of gross final energy consumption in district heating and cooling systems takes place in efficient district heating and queue systems as defined in Article 26(1) ofthe Energy Efficiency Directive. As Denmark has more than 90 % efficient remoteheating and cooling systems, it can be confirmed that Denmark is exempted from describing measures to develop efficient district heating and cooling systems in order to comply with the requirements and achieve objectives from Article 24(2) to (9) of the VED III. Denmarkis also exempted from describing measures to increase the share of RES in the district heating and cooling sector in order to achieve the target of the percentage increases in the share of RES in the period 2021-2025 and 2026-2030.

In preparing the relevant sectoral legislation in the field of supply, Denmark has already paid particular attention to the promotion of infrastructure from renewable energy and cogeneration, as well as a specific requirement to promote efficient districtqueuing. In addition, Denmark is actively working to phase out fossil sources in heating and cooling. This also means that, taking into account the high share of renewable energy in the grid and the high share of efficient district heating and cooling systems, there is no greater

23assuming that figures are based on the Danish Energy Agency's electricity scenario for KP22 and weighed against production based on the projects specifically reported in the PtX pipeline. In the long term in 2050, production is not known at the end product level.

need to establish new infrastructure for district heating and cooling from renewable energy sources in Denmark.

(vii) Where applicable, specific measures on the promotion of the use of energy from biomass, especially for new biomass mobilisation taking into account:
- biomass availability, including sustainable biomass: both domestic potential and imports from tredjelands
- other biomass uses by other sectors (agriculture and forest-based sectors); as well as measures for the sustainability of biomass production and use

Denmark has support schemes for the use of biomass for electricity production and has also implemented sustainable purity requirements forwoody biomass which are more ambitious than the minimum requirements of the VEII Directive. Biomass fuels for-heating are not taxed, with the exception of biogas, as energy from renewable sources is not taxed or covered by the CO_2 quotasystem. The 2020 Biomass analysis describes the Danish consumption of solid biofuels for energy, excitingframework conditions and related resource base and sustainability issues. There have been no subsequent analyses of the same magnitude, but in September 2022 the National Bioeconomics Region launched a number of recommendations on bioresources in general, including the use of biomass for energy production. The National Bioeconomy Panel also points to and opportunities to increase the production of domestic biomass biomass depletion in Denmark.

Denmark has implemented the VE II Directive24 (Articles 29, 30 and 31) and a broad political agreement on woody biomass25 from october 2020. The Danish legal requirements on the sustainability of biomass for the production of electricity, heating and cooling entered into force on 30 June 2021. The sustainability requirements are intended to reduce as much as possible the risk of using "*unsustainable prorata biomass*" in Denmark, i.e. biofuels with a high climate or biodiversity impact. At the same time, the requirements are formulated flexibly for reasons of security of supply and consumers' heating prices.

The overall Danish requirements are more ambitious than the minimum level of the RES II Directive on a number of points. The tighter Danish implementation includes lowered installation limits for heat and CHP plants, which means that moreplants are covered. There are also requirements for several categories of biomass, namely wood from the wood industry, hedgerows, etc. (non-forest) and additional requirements for forest biomass. Finally, it requires older installations to be subject to (higher) fossil greenhouse gas saving requirements in the supply chain.

The additional Danish sustainability criteria were notified to the EU on 16 February 202126.

The Danish sustainability requirements build on the Danish energy sector's voluntary agreement of 2014, which established aset of sustainability criteria for the use of wood-based biofuels in energy production. Electricity production from the use of solid biofuels in existing undepreciated installations in the current setup is supported by a fixed subsidy of DKK 0,15/kWh. This support scheme has been complementary to the tax exemption for biofuels for heat production.

3.1.3 other elements of the dimension

(i) Where applicable, national policies and measures affecting the sector covered by the EU ETS and the assessment of the complementarity and impact of the EU ETS;

Not applicable. Although most of Denmark's policies and instruments related to energy consumption mentioned in Table 17 will have an impact on both CO_2emissions under the EU ETS and GHG emissions under the ESR, as mentioned in Chapter 3.1.1, there are no easyseparate assessments of the effects on emissions from companies covered by the EU ETS.

(ii) Policies and measures to achieve other national targets, where applicable

Among Denmark's policies and instruments with an impact on greenhouse gas emissions reported in 2 023 in Denmark's Eighth natio naleCommunication and Fifth Biennial Report under the United Nations Climate Change Convention (UNFCCC36) and under the EU Governance Regulation, thereare several policies and actions that will also contribute to achieving the domestic 70 % reduction target for total greenhousegas emissions by 2030 compared to 1990.

24Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 – on the promotion of the use of energy from renewable sources
25Agreement on sustainability requirements for woody biomass for energy (kefm.dk)
26Search the database – European Commission (europa.eu)

(iii) Policies and measures to achieve low-emission mobility (including electrification of transport)

The government has mainly implemented initiatives targeting those sub-sectors of the transport sector where emissions are highest and where green technologies are most mature, i.e. mainly in road transport. Electrification of passenger cars is the most common in recent years, as electric cars are now technically mature and market ready, as well as facilitated through the *Agreement on the green transition of road transport (2020)* and support for charging infrastructure.

For heavy road transport, electrification is expected to be the main technology to reduce CO_2e-emissions in the long term, while indirect electrification in the form of hydrogen trucks and other renewable fuels could also play a role in the transformation of heavy road transport. Under *the Agreement on kilometer-based tolls (2023)*, lorries are required to pay tolls from 2025 according to their distance in Denmark. The tax will be differentiated on the basis of CO2 emission classes resulting from the Eurovignette Directive.

Rail transport, domestic and domestic aviation and other transport together account for less than 10 % of the national emissionsof the transport sector. Parts of rail transport have already been switched to electricity and emissions are expected to decrease significantly after 2025 as long-distance and regional trains are electrified. The majority of diesel trains are expected to be phased out by 2035 and emissions from passenger trains are expected to be marginal thereafter. Looking ahead, particular attention is given to initiatives in those sub-sectors that are more challenging to transform: air, maritime and heavy road transport.

In domestic navigation, smaller ships and ferries are expected to be electrified, while the use of renewable fuels, including PtX, could contribute to CO_2e-reductions for the larger ships. For aviation, renewable fuels are expected to be theprimary loose, while electrification could eventually be a solution for some air routes. Under *the Agreement on Green Aviation in Denmark (2023)*, a green domestic flight is offered in 2025 and aid for whole green domestic aviation will be offered in 2030. Under the agreement, domestic air transport's CO_2e-emissions are expected to be reduced by 0.1 million tonnes by 2030, which is equivalent to the fact that domestic aviation is entirely green.

(iv) Where applicable, national policies, deadlines and measures planned to phase out energy-subsidies, in particular for fossil fuels;

Denmark provides support for renewable energy technologies such as land and sea wind, solar energy, biogas, etc. The aid is typically granted as aid per unit produced for a limited number of years. Renewable energy costs are generally decreasing and increasingly competitive when compared to fossil fuels.

Rural wind and solar cells are the cheapest green technologies available on the market today. The technology-neutral tenders in 2018 and 2019 resulted in historically low support prices and showed that the deployment of renewable energy can increasingly be built without support. The deployment is therefore soon considered to be possible under market conditions. The costs of deploying renewable energy have decreased markedly in recent years and are expected to continue to decrease further. With a *Climate Agreement on Green Power and Heat 2022*, it has been decided that the funds from the technology-neutral tenders from 2022-2024 will then be reprioritised to other initiatives, because onshore renewable energy can be built to a large extent without subsidies. In this context, it was agreed to reprioritise DKK 355 million from TNU to a pool for renewable energy on less accessible areas. The scheme is a grant pool to support renewable energy production on less accessible areas, such as larger roofs, along motorways etc. in order to respond to a desire to support RES on existing infrastructure and to support innovative solutions. In addition, several political agreements have been concluded since 2018 on the development of Danish marine wind. In these agreements, there has been a clear ambition to move towards a more market-based expansion of marine wind. In 2021, the tender for Thor wind farm was the first tender for offshore wind to be carried out in Denmark without aid and with payment to the State. Subsequently, the *Climate Agreement on Green Power and Heat 2022* decided to allow for the provision of an additional 4 GW of offshore wind for deployment by the end of 2030, without any possibility of support. Most recently,

the *Supplementary Procurement Framework Agreement for 6 GW of offshore wind and energy island of Bornholm* of 30 May 2023 decided to offer 6 GW of offshorewind free of support. Furthermore, the parties to the agreement agreed that the development of offshore wind around the energy island of Bornholm should be established free of support, but with an expected need for support for the electricity trading link between Zealand and Bornholm, as well as half of the Bornholm land site.

No direct subsidies are granted to fossil fuels in Denmark. The Ministry of Taxation is currently preparing an overview of Denmark's possible indirect fossil subsidies and subsidies and will return to it as soon as possible. In the context of COP28, the Netherlands published a statement on the phasing out of fossil subsidies, to which Denmark has acceded. The statement contains the following elements: Transparency, identification of international barriers and dialogue on national phase-out. (1) transparency: It has been decided at previous COP conferences to phase out "inefficient" fossil fuels, but few countries have done something. Signature commits to providing an overview of both direct and indirect fossil subsidies, including differentiated tax rates, etc., and to work together to develop an international methodology in this regard. (2) identification of international barriers: Cooperate to address indirect fossil subsidies in the form of under-taxation of emissions from international shipping and aviation. (3) dialogue on national phase-out: Signatories will engage in a dialogue on phasing out and commit to developing national strategies looking at both direct and indirect subsidies and diverging tax rates.
Denmark also participates in the plurilateral Friends of Fossil Fuel Subsidy Reform (F-FFSR) coalition. The coalition promotes the phasing out of inefficient fossil fuel subsidies, with a particular focus on holding the G20 countries accountable for this commitment, which was also included in the Glasgow Climate Pact at COP26. Denmark also supports the International Institute for Sustainable Development (IISD) Global Subsidies Initiatives (GSI) through a grant. The IISD-GSI supports internationalprocess, national governments and civil society organisations to adapt subsidies to sustainable development and has beenoverwhelming efforts to support the grant reform since 2005.

3.2 energy efficiency

The existing Danish energy efficiency efforts can be divided into three main types of initiatives:

- Economic instruments: Taxes and subsidies for energy improvement measures can provide increased incentives for energy efficiency.
- Regulatory instruments: Regulatory requirements and regulation can have a direct effect on energy consumption through aban or an injunction such as minimum standards.
- Informative instruments: Information to end-users on energy consumption in order to influence user behaviour and to provide information on energy savings potentials.

(I) Energy efficiency obligation schemes and alternative policy measures pursuant to Article 7a and 7b and Article 20(6) of Directive 2012/27/EU, to be drawn up in accordance with Annex III to this Regulation;

In the period 2021-2030, Denmark makes use of alternative policy measures to comply with the energy savings obligation resulting from Article 8(1) of the recast EED from 2023. The alternative policy measures contributing to the construction of the increasedenergy savings obligation for Denmark are described below:

Table 20
Overview of initiatives contributing to the increased energy savings obligation

No	Activity
	Grants
1	Energy Renovation Pool
2	Scrapping scheme
3	The Business Pool
4	Renovation of social housing (Green Housing Agreement 2020)
5	Conversions resulting from subsidies, tax changes, etc.
6	Conversion aid

	Taxation measures
7	Climate Agreement 2020 and Green Tax Reform 2020
8	Co_2e-tax on industry, etc.
9	Actions from the agreement on the green transition of road transport
10	Kilometre based toll for lorries
11	Energy taxes above the EU minimum rate
12	Increase in diesel tax
	Regulation, information and advice
13	Energy efficiency in the State
14	Existing buildings, building regulations requirements, etc.

Grants

Heat pump pool and energy renovation pool (formerly Building Pool, Energy Agreement 2018):

The Building Pool was established by the *Energy Agreement 2018*. Approximately DKK 2.6 billion has been allocated in the period 2020-2026 to the building pool under *the Energy Agreement 2018, the following agreement. Climate agreement for energy and industry, etc. 2020* and *Finance Act for 2021.* The building pool provided grants for heat pump and energy renovation for private homeowners. The aim of the building pool was to speed upswitches away from oil and gas furnaces, among other things, to help achieve Denmark's climate targets, and to contribute to energy efficiency improvements to meet Denmark's energy savings obligation. The Building Pool was decided to split with *the Climate Agreement on Green Power and Heat 2022* into two pools from 2023. The funds allocated to the building pool in 2023 were distributed, so 70 % went to the heat pump pool and 30 % to the energy renovation pool. The allocation of funds for the period 2024-2026 will be agreed in 2024.

Heat pump pool
The heat pump pool contains the conversion part of the former building pool and contributes to conversions away from oil and gas furnaces. In 2023, the Finance Act allocated DKK 236.1 million to the pool. The effect of the heat pump pool has been counted under measure 5 "*Conversions, subsidies, tax changes, etc.*".

Energy Renovation Pool
The Energy Renovation Pool contains the energy efficiency part of the former building pool and contributes to energysavings through energy renovation projects, such as windows, retrofitting insulation, etc. in residential buildings. In 2023, DKK 101,2million was allocated to the pool.

The Scrapping Scheme (Energy Agreement 2018)

Under the *Energy Agreement 2018*, it was decided to grant subsidies to energy service providers renting a heat pump on subscription toa heat customer for the scrapping of their oil, gas or wood pellet furnaces (the Scrapping Scheme). A total of DKK 210 million has been allocated to the Scrapping Scheme in the period 2020-2026.

Business grants to companies (Business Pool, Energy Agreement 2018)

The Business Pool was created by the *Energy Agreement 2018*. A total of approximately DKK 3.2 billion has been allocated for the period 2020-2029 under the *Energy Agreement 2018, the Climate Agreement for Energy and Industry, etc. 2020, Agreement on a Green Tax Reform 2020 and Agreement on Green Power and Heat 2022*. The Industry Pool is a grant pool for companies' energy-saving or CO_2reduction measures. Grants are granted on the basis of the energy saving or CO2 reduction of each$_{action}$and the size of the company. The scheme is open to privateenterprises in Denmark in the vast majority of industries and to most types of projects saving energy or CO_2 from energy out ofpower.

Renovation of social housing (Green Housing Agreement 2020)

The *Green Housing Agreement 2020* decided to encourage renovation efforts in the social housing sector for the benefit of tenants. A total of DKK 30 billion has been allocated to the entire agreement in 2021-2026, of which approximately DKK 600 million was earmarked for energy saving measures. As an incentive for energy renovation in the social housing sector, the agreement established a green guarantee whereby part of the rent paid by tenants in social housing is allocated to a fund to finance the renovation of the buildings. The agreement also provides for achange in the Land Building Fund's support system, with a new green support criterion, a new green guarantee and a fund for experimentation to improve the energy efficiency of buildings in the public housing sector. The conditions for the use of the Fund are regularly negotiated between the Government and the interest and trade association BL – Danmarks Almene Boliger.

Actions to phase out oil and gas boilers by district heating or heat pumps

With the *Energy Agreement 2018*, funds were allocated for the first time to phase out oil and gas furnaces. With the *Climate Agreement on Energy and Industry, etc. 2 020 in addition, a number of other initiatives* were agreed to support conversions from oil and gas furnaces, includingchanges to the tax, etc.:

1. Changes to the district heating regulation
2. Grants for projects for the deployment of district heating distribution networks (Remote Heating Pool)
3. Amendments to the Scrapping Scheme after2018
4. Heat pump pool
5. Decoupling system
6. Changes in taxation of heating energy (oil and gas)

Subsequently, there is the *Climate Agreement on Energy and Industry, etc. 2020*, an*agreement on Finance Act 2021*, Winter *Aid Agreement 2022, Inflation* Assistance *Agreement 2023*, and in the *Agreement on Finance Act 2024* and *Agreement on the partial implementation of the Green Fund 2024*, additional funds were allocated to promote the phasing out of oil and gas furnaces, etc.

Almost DKK 5.8 billion has been allocated from 2020-2026 to subsidies and administration of subsidy schemes that support the transition away from oil and gas boilers in private dwellings, among other things, as well as energy efficiency.

Conversion aid

With *Green tax reform for industry, etc. 2022* the parties to the agreement agreed on a higher and more uniform CO_2taxon industrial emissions etc. At the same time, the parties agreed to allocate approximately DKK 2 billion for conversion aid for a transitional period to those undertakings which are most difficult to convert and are most affected by the tax. The purpose of the transition aid is, inter alia, to support the possibility for target companies to convert their production into more $CO_{2\,saving}$energysources, which will often also lead to energy savings.

With the *Agreement on the implementation of the greening aid for industrial tax reform, etc. In 2024, approximately DKK 1 billion* has been allocatedin 2025 and approximately DKK 0.9 billion in 2025-2029 to an operating aid scheme and an investment aid scheme for CO_2intensive activitiesin most of the sectors affected by the new CO_2tax. The aid is granted on the basis of specific technical transformation leading to CO_2reductions.

Green transition and efficiency framework (Agreement on sub-implementation of the Green Fund 2024)

Under the Agreement on Participatory implementation of the Green Fund 2024, it was decided to allocate a framework of DKK 750 million in 2024-2030 and DKK 50 million on a permanent basis for greening and improving the efficiency of road freight transport.

Taxation measures

Increase of the energy tax for businesses (2020 Green Tax Reform Agreement)

Under *the Agreement on Green Tax Reform 2020*, it was decided to increase the energy tax on fossil fuels for industries by DKK 6 per GJ. The increase was phased in by DKK 4/GJ in 2023, rising to DKK 6/GJ in 2025. For mineralogical processes, etc. (e.g. cement and tiles, etc.) and agriculture, etc., the energy tax will be increased by DKK 6/GJ from 2025. The aim is to reduce CO_2emissions by reducing the use of fossil fuels for process purposes, e.g. through energy savings and convertingcalls.

Higher and more uniform CO_2tax (Agreement on green tax reform for industry, etc.) 2022:

With the *Agreement on Green Tax Reform for Industry, etc. 2022 it* was decided to introduce a higher and more uniform CO_2tax, to be phased in from 2025. Once the CO_2tax has been fully phased in in 2030, the tax rate will be DKK 750 per tonne derived from CO_2 for those entitiesthat are not covered by the EU ETS and DKK 375 for the companies covered by the EU ETSsub-system. For mineralogical processes, etc., the tax will be DKK 125 per tonne of CO_2 emitted in 2030.

As part of a higher and more uniform CO_2tax, it has been agreed to shift the current energy taxes on fossilfuel burners to a total CO_2tax from 2025. This applies to energy taxes on industrial process fuels (process taxes), energy of taxes oncollective and individual heat (the space heating tax), and petrol and diesel taxes (fuel taxes).

Green transition of road transport (Green Road Transport Agreement 2020)

With *the Green Road Transport Agreement 2020*, it was decided to launch a number of initiatives to promote the sale of green-vehicles. The agreement allocates approximately DKK 22.6 billion to concrete measures, which are estimated to increase the number of zero- and low-emission cars to 775.000 in 2030. The agreement includes a redesign of the car tax system to give users a greater incentive to opt for electric vehicles rather than fossil cars.

Truck toll (Agreement on kilometer-based truck tolls 2023)

Under *the Cilometer-based Road Charge Agreement for lorries 2023*, it was decided that lorries will pay a tax according to the amount of CO_2 emitted from the 2025 trip. It also introduced a more precise taxation of other effects on theenvironment, including wear and tear on the road network, accidents, noise, air pollution and the contribution to congestion, and a change in the national rules on the weight and sizing of lorries in road haulage, leading to a moreefficient road haulage.

Energy taxes above the EU minimum rate

Denmark has a number of existing energy taxes that are historically among the highest in the EU. Taxes remain a key incentive for energy efficiency improvements in Denmark, also in the period 2021-2030. It is considered that energy consumption would be higher in the absence of these taxes. The taxes were introduced before 2021 and spread over fossil space heating, process, electricity and diesel and gasoline. They provide an incentive for energy savings across households, industry and transport. The energy savings counted under the energy savings obligation are based on the difference between the level of the EU minimum rates and the level of Danish taxes. Thus, only that part of the charges that exceeds the EU's mini capacityrates contributes to the fulfilment of the energy savings obligation.

Increase in diesel tax by approximately DKK 50 per litre excluding VAT and adjustment of the emission tax

Under the Agreement on Co-operative Provision of the Green Fund 2024, it was decided to increase diesel tax by DKK 50 per litre excluding VAT from 1 January 2025. The tax increase covers diesel for road transport and diesel for construction machinery, etc., which pay the same diesel tax as road transport. In addition, the countervailing charge is reduced proportionately. The agreement takes new steps towards greening Denmark, including by reducing CO2 emissions

Regulation, information and advice

Energy efficiency in state institutions (Climate Agreement for Energy and Industry, etc.) 2020)

With the *Climate Agreement for Energy and Industry, etc. 2020 it* was decided to promote energy saving efforts in all ministries with hay institutions, including, inter alia, by setting energy saving targets. The measure is an implementation of Article 5 and of the 2018 revision of the Directive, which amends the 2012 Directive on energy savings in the building stock of the state administration.

Actions related to existing buildings (energy labelling of buildings, information campaigns, etc. in combination with requirements in the building regulations). A number of measures have been launched to promote the energy renovation of existing buildings, including, interalia, information measures, energy labelling of buildings, etc. The actions are set out in Annex 11 and in section 3.2 (iv).

(ii) Long-term renovation strategies to support the renovation of the national stock of both public and prized residentialand non-residential buildings (Art. 2a of the EPBD), including policies and measures;

and measures to promote cost-effective deep renovation and targeted policies and actions-targeting the least performing parts of the national building stock, in accordance with Article 2a of Directive 2010/31/EU.

Reference is made to section 2.2 (ii) for the long-term renovation strategy of the national building stock.

(iii) Description of policies and measures to promote energy services in the public sector and ahead-of measures to remove regulatory and non-regulatory barriers to the uptake of energy performance contracting and other energy efficiency service models.

In order to promote the use of energy services in the public sector, a one-stop shop website has been set27 up, among otherthings, with guidance on how ESCO projects work and what they can be used for. Similarly, the Kommunernes Landsfor ening (KL) is working on campaigns to guide municipal bodies in the use of the ESCO structure.

The public sector can make use of the PPP structure, which is a public-private partnership that can address, among other things,-energy cleanings, but which is particularly used in relation to new barley. This structure works according to the same principle as energyperformance contracts, but is mostly used for larger works contracts, where the private contracting party can subsequently maintain and operate a building, for example, and acquires an ownership share in the final product as a financial incentiveroute.

(iv) Other planned policies, measures and programmes to achieve the indicative national energy efficiency contributions in 2030 as well as other objectives referred to in point 2.2. (e.g. measures to promote exemplary and energy-efficient public procurement of public bodies, measures to-promote energy audits and energy management systems, consumer information and training-measures and other measures to promote energy efficiency.

Phasing out fossil heating and energy efficiency in public buildings

In addition, the *Climate Agreement on Green Power and Heat 2022* decided that public authorities should take the lead in phasing out fossil heating in the public building stock. In June 2023, the state, municipalities and regions presented their respective plans to phase out all oil and gas furnaces in the public sector.

In relation to the public building stock, the municipalities have, through the *Agreement for the Economy of Municipalities 2023* (ØA23),agreed that they will try to meet the same requirements as the state administration in relation to the renovation and/or energy pairrequirement, *cf. Article 5 of the 2018 revision of the Directive, which amends the 2012* Directive. The regions in ØA22 have28 indicated that they will work towards achieving a reduction of 75 % of CO_2 emissionsfrom building operations and transport. This is supported, inter alia, by measures in the field of energy efficiency.

As part of the effort to reduce overall energy consumption, events and support arrangements for public institutions areorganised on an ongoing basis. In addition, an ongoing development project is ongoing with the central database Public Energy Consumption, which is used by ministries to report energy consumption in order to ensure that the state is at the forefront.

Phasing out fossil heating and certification scheme

The government subsidy schemes, such as the heat pump pool and the scrapping scheme, lay down requirements for obtaining subsidies for the installation of heat pumps. A subsidy can only be obtained if the installer or installer company isapproved as a renewable undertaking by the Danish Energy Agency in accordance with Order No 1047 of 26/08/2013 (Order on an approval scheme for companies installing small renewable energy plants), where an employee of the undertaking must be specially trained in the installation of heat pumps. The RES authorisation rules were adopted in 2013 to comply with the EU requirement to provide a

27https://sparenergi.dk/offentlig/bygninger/esco
28https://www.regioner.dk/media/22914/aftale-om-regionernes-oekonomi-for-2022.pdf

qualificationscheme, cf. Article 18 (3) and Annex 4 of the Renewable Energy Directive.

Promoting energy reductions in public buildings

In the context of the critical energy and supply situation in Europe as a result of the war in Ukraine, an in Struks settingout four requirements for state institutions was issued, with entry into force by 1 October 2022;

1. reduce the temperature of the state buildings to 19 degrees;
2. switch off unnecessary lighting
3. shortening the heating season and reducing operating time for heating and ventilation;
4. launch workplace information campaigns based on the Danish Energy Agency's campaign material.

Following the efforts of state institutions, the government, KL and Danske Regioner issued asingle press release calling on municipalities and regions to adopt the same measures as state institutions. The instructions were lifted in September 2023, but public organisations were recommended to continue the actions.

Consumer information and education

The Danish Energy Agency operates a number of information campaigns to promote energy efficiency. The information actions focus on both private households, businesses and the public sector. This includes the development of materials on energy-efficient-innovative solutions, information on building regulations and easy access to information and knowledge on energy renovation. The DanishEnergy Agency's website,[29] SparEnergi.dk and related social media are used in the Agency's communication on energy-efficient solutions. In addition to SparEnergi.dk and associated channels, the information campaign also consists of a series of-targeted campaigns and free independent advice (telephone and written), as well as local inspirational and advisory meetings.

The Energy Labelling and BedreBoligs schemes also set up training courses for craftsmen, barleyengineers, engineers, architects, etc.

Energy labelling scheme

The aim of the energy labelling scheme is to promote energy savings by giving visibility to energy needs and opportunities for energy renovation of buildings. This, among other things, reduces energy costs and can at the same time improve the indoor climate of buildings. The energy label is currently based on a physical review of the building, where an energy labelling company collects information about the building. As part of the *2020 Climate Agreement for Energy and Industry*, emphasis is placed on the use of data to improve thequality of the energy label. The energy labelling scheme thus uses automatic digital validations in the calculation programmesfor the energy labelling company's records to be assessed before the energy label is issued to the building owner. The validation has been developed, inter alia, on the basis of experience from previous energy labelling reports found using Denmark's energy labelling database.

In 2023, about 75.000 energy labelling reports have been produced and cover about 106.000 buildings. In total, there are around 182.000 profitable energy savings proposals in the energy labels reported. In support of the energy labels and savings proposals, a new report layout for the energy labelling reports was drawn up in 2021. The new energylabelling reports have been developed in cooperation with behavioural scientists, with a focus on increasing incentives for building owners to carry out energy renovation of their buildings.

Denmark is one of the EU Member States that have tested the Smart Readiness Indicator (SRI) in a Danish context. One of the-conclusions is that the SRI will not currently be implemented as a labelling scheme in Denmark. Theneed for further development of the methodology is assessed, which could be based on the experience of Denmark's and other countries' testing of SRI, as well as EU-funded projects on the topic.

Denmark notes with satisfaction that the European Parliament and the Council of the European Union approved the recast EPBD on 12 March and 12 April 2024 respectively, and is now starting work on the implementation of the Directive from the date of its entry into force on 28 May 2024 until the transposition deadline of 29 May 2026. Because of this, it is currently not possible to provide

29 Consumer | Energy Agency (sparenergi.dk)

information on Denmark's impendingassessment of future requirements on energy labelling of buildings.

Energy and climate audits

Building on the implementation of Article 11 of the 2023 recast EED, from the 2st half of 2024, companies with an annual energy consumption of more than 10 TJ will be required to carry out an energy audit every four years. Enterprises with an annual consumption of more than 85 TJ shall establish a certified energy management system aimed at promoting energy efficiency improvements in the companies covered. The energy audit or the energy management system shall provide companies with an overview of their energy foruse in processes, buildings and transport, as well as the potential potential of the company to improve efficiency and reduce energy consumption.

Pursuant to the *Agreement on Green Tax Reform for Industry, etc. In addition, 2022* will be subject to rules on climate vision. Climate-vision is an extension of the existing energy audit and the requirement for climate vision will therefore, in line with the updated provisions on energy audits in the EU Energy Efficiency Directive, also apply to enterprises with energy consumption above 10 TJ/year. The extension of the energy audit to a climate vision will concretely mean that there will be a similar focus on mapping CO_2emissions andidentifying CO_2reduction measures in the companies covered. Rules on climate vision are expected to enter into force on 1 July 2024.

It is expected that around 700 companies will be covered by the new rules on energy and climate vision and that around 77 companies will have to implement an energy management system.

Public procurement

The Circular on Energy Efficiency in State Institutions sets30 out specific energy efficiency requirements for the purchase of products, services and buildings by state institutions, as well as the conclusion of lease agreements for buildings.

The requirements apply to procurement above EU procurement thresholds and where compliance with the energy efficiency requirement would be cost-effective, economically feasible, generally sustainable, technically suitable and there is sufficient competition. Armed forces' contracts are exempt to the extent that the requirement would conflict with the nature and primary purpose of the activities of the armed forces or in the case of contracts for the supply of military equipment (2009/81/EC). The Purchase Requirement implements parts of the Energy Efficiency Directive (2012/27/EU) of the European Parliament and of the Council.

In addition, a circular amendment requires all government institutions31, when procuring lighting sources, interms of amount level, to purchase LED light sources from one of the two most energy efficient classes in the energy label, as set out in 1369/2017/EU, or lighting sources with equivalent energy efficiency. However, this requirement shall not apply if it is not technically appropriate. More information on current efforts can be found on the Danish Energy Agency's website, etc.32

The recast EED extends energy efficiency requirements in public procurement to regions, commonsand bodies governed by public law, such as social housing organisations and universities. In addition, requirements for individual purchases are also extended to a number of parameters.

Energy efficiency scheme for waste heat

With *the following agreement: The Climate Agreement for Energy and Industry, etc.* of 7 September 2021, it was decided to introduce an energy-friendlyscreening scheme in which, in return for a tax exemption for taxed surplus heat, companies are obliged to:

1. To carry out energy reviews of waste heat processes and installations, which shall be verified by independent external experts.
2. On the basis of the energy review, implement energy efficiency measures for companies' processes and installations related to waste heat with a payback period of up to 5 years.

30Circular No 9909 of 9 December 2020 on energy efficiency in state institutions
31Circular No 9987 of 1 December 2021 amending the circular on energy efficiency in state institutions
32https://sparenergi.dk/offentlig/vaerktoejer/indkoebsanbefalinger
https://ens.dk/ansvarsomraader/energibesparelser/det-offentlige
http://www.gronneindkob.dk/

Energy efficiency first principle

Article 3 of the 2023 recast EED addresses the energy efficiency first principle. The principle needs to be implemented across all sectors of planning, policy and major investment decisions that have an impact on energy consumption and energy efficiency.

The Danish Energy Agency is analysing how the principle can be implemented in relation to:

- which sectors the principle adds value
- how planning, policies and major investment decisions are defined;
- when in decision-making processes the principle has the greatest value and impact;
- when a decision has an impact on energy consumption or energy efficiency;

Denmark is in the process of clarifying possible implementation models and awaits the Commission's guidance in this respect.

(v) Description of policies and measures to promote the role of local energy communitiesin implementing the policies and measures referred to in points i, ii, iii and iv, where appropriate.

Building on the negotiations on the 2022 Finance Act, Social Democracy, the Socialist People's Party, the Radikale Venstre,the List of Entities, the Alternative and the Kristendemokraterne reached an agreement on 6 December 2021 to allocate a pool to support local energy communities and local anchoring the climate transition.

Energy communities are an umbrella term for citizen energy communities and renewable energy communities, which is an association of actors that can deal, inter alia, with consumption, production, storage and supply of energy. This could include, for example, the flexible consumption of energy from solar cells, a local wind turbine or a heat pump, or the storage of self-generated electricity in a battery, which can bring environmental and economic benefits to a local community.

The agreement was first implemented in Order No 1162 of 09/08/2022 (Order on subsidies for local energy communities and local anchoring of the climate transition) and, on the basis of the agreement, DKK 4 million was allocated annually from 2022 to 2025 for subsidies for local energy communities and local anchoring of the climate transition.

A grant may be requested from the pool for information projects and for major projects respectively. Information projects are understood as projects aimed at disseminating information that contributes to the development of renewable energy solutions in the community. Aid for major projects may finance the planning, establishment and organisation of examples of inspiration for projects carried out for one or more of the following: Development and deployment of solutions that include generation,supply, consumption, electricity sharing, aggregation, energy storage, flexibility and energy efficiency services.

For more information on the grant pool, please refer to the Danish Energy Agency's website on[33].

(vi) Description of measures to exploit the energy efficiency potential of gas and electricity infrastructure.

Electricity infrastructure

In order to optimise the capacity of the electricity transmission system, the Danish TSO Energinet has implemented a *Dynamic Line Rating DLL* system that adapts the capacity to current operational situations. In addition, an integrated protection system is used which allows a higher load without compromising operational safety. Energy networks shall also cooperate closely with other European TSOs to develop a common grid model containing load forecasts across Europe. While some electricityincreases grid losses, improved simulation models and other initiatives allow a high use of thetransmissi onsystem, allowing more renewable energy to be integrated more efficiently.

Energy grids are now also developing procedures to support the use of waste heat for district heating from theenergy network installations where it is socially viable.

Gas infrastructure

Energy losses in the Danish gas system are very low and account for around 0.06 % of the volume of gas transported. The energy loss of gas from the storages is assumed in the same order of magnitude. Efficiency potentials are primarily related to individual components; compressors and boilers, pressure and temperature selection. By way of example, all compressors in the Danish gas system aresilent.

For biogas plants, an average loss of methane in biogas production is assumed to be 2.9 % in *the climate status and projection 2024*. As of 1 January 2023, new regulations have entered into force, requiring, inter alia, leak detection, continuous self-monitoring and repairs to leaks detected. The regulation is expected to reduce methane losses to 1 %, and it covers bothinstallations producing

33 https://ens.dk/service/tilskuds-stoetteordninger/tilskud-fra-puljen-til-lokale-energifaellesskaber-og-lokal

biomethane for the gas system and other types of biogas plants.

The gas system is continuously optimised and components are renewed with more energy efficient components when the old components are replaced. Due to the very low net loss, it is not possible to identify significant efficiency potentials that are not addressed in the ongoing maintenance of the network.

(vii) Regional cooperation in this area, where appropriate.

Energy efficiency in the international context

Energy efficiency is one of the cornerstones of the green transition globally. The Danish government therefore has a focus on raising the energy efficiency agenda also at international and European level. This can be seen, inter alia, at COP28, where Denmark has been working to double the energy efficiency rate by 2030, as well as the negotiations in the EU onenergy efficiency tiveand the EPBD, where Denmark has worked to raise the level of ambition in the negotiations.

Denmark has bilateral cooperation on energy efficiency with authorities around the world (nine countries across four continents, Mexico, the UK, Indonesia, the USA, Germany, the Netherlands, Vietnam, South Korea and Egypt. Here Denmark advises the authorities ofthe Member States and other relevant actors based on Danish experience with, for example, energy labelling, informationchambers, waste heat and the roll-out of heat pumps. Denmark also actively contributes to the work of the International Energy Agency (IEA) on energy efficiency, for example by financing the training of civil servants in developing countries.

Danish industry has a strong position in energy efficiency. Danish companies are market leaders in, inter alia, pump technology, district heating solutions, insulation materials and energy-efficient windows. In 2022, exports of energy efficient technologiesamounted to DKK 39.7 billion[34].

Nordic cooperation on ecodesign and energy labelling of energy-related products

Nordic cooperation in the field of market surveillance and policy work on eco-design and energy labelling is carried out in the Adult-Working Group Nordsyn. It is a cooperation between the Nordic market surveillance authorities and politicalbodies.

Eco-design and energy labelling have historically delivered about half of the energy savings targets set by the EU. Effective regulation and market surveillance are essential if this is to be achieved, and Northern syn aims to improvethe effectiveness of Nordic market surveillance and policy responses. Nordic authorities, producers and consumers benefit from Nordsyn, while supporting green growth and energy efficiency. The results and structure of Nordsyn can also be used to improve market surveillance in other EU countries.

(viii) Financing measures, including Union support and the use of Union funds, in the field at national level.

In Denmark, there is a well-functioning financial market for dedicated green loans. The green loans can be granted for different types of measures, such as purchasing electric cars, energy efficient renovations, etc. Thus, most financial institutions, including all the largest ones, offer green loans at a particularly attractive interest rate. There are also examples of financial institutions offering, throughpartners of cooperation, energy professional advice for the origination of new loans. Green loans, possibly supplemented by banking advice, are considered to be a competitive parameter for financial institutions.

34 https://ens.dk/presse/dansk-eksport-af-energiteknologi-stiger-en-smule

Danish pension funds and others also participate on an ongoing basis in projects involving energy efficiency by pooling projects-together with other actors through ESCO and PPP schemes.

Municipalities, regions and utilities can borrow on attractive loan terms via Kommunekredit. In addition, the KommuneKredit tilby has special green loans for energy saving measures, for example. The possibility for municipalities and regions totake up loans for, inter alia, energy efficiency measures is regulated by the Loan Order35. In addition, the National BuildingFund supports, among other things, energy renovation projects in public housing associations.

Furthermore, as can be seen in Section 3.2 (i), there are a number of aid schemes where it is possible to obtain aid or ga rantifor energy efficiency measures, such as the Business Pool, the scrapping scheme, the heat pump pool, the energy renovation pool, the removal of the heatpool and the State guarantee scheme for certain loans for the replacement of heat sources in peripheral areas.

Part of the resources in the Remote Heating Pool, the decoupling scheme, the scrapping scheme is made up of European Union Recovery Funds. The MIDswere implemented through the *Finance Act for 2021* and the *Finance Act for 2022* and amount to a total of DKK 485 million from 2021 to 2024. DKK 465 million of EU recovery funds were also allocated to the Building Pool in the period 2021-2024 with *the Finance Act for 2021 and theFi nansloven for 2022*. The Industry Pool, see also 3.2 (i), is partly funded by funds repatriated from the EU Recovery Facility. DKK 100.0 million was allocated annually in 2022-2024 to the Danish Business Pool as part of the Danish recovery plan. The pool for energy efficiency in public buildings (Kommunepuljen) is entirely financed by funds financed by funds repatriated from the EU Recovery Facility, amounting to DKK 150 million in 2021 and DKK 145 million in 2022. In addition, RePowerEU (the successorto the recovery plan) financed a total of DKK 387 million in the period 2023-2026 for the decoupling scheme and DKK 188 million for the district heating pool in 2023 for the repatriation of EU funds.

3.3. Dimension energy security

(1) Policies and measures relating to the elements set out in paragraph 2.3;

In 2019, the Danish government, together with a majority in the Danish Parliament, adopted a Climate Law. The Climate Law sets a target of a 70 % reduction in greenhouse gas emissions relative to 1990, as part of achieving the 2050 climate neutrality target from the Climate Law. In order to achieve the targets, the government would make climate action plans that would include, among other things; a strategy for the electrification of transport, inland andsociety, an examination of the potential for a comprehensive strategy for the expansion and exploitation of marine wind with the nations of the North Sea, and an examination of the potential for establishing Denmark's first energy island with at least 10 GW in 2030. Thelast mentioned was launched by the Finance Act in 2019, which also provided DKK 65 million in support of large scale PtX technologies.

Subsequently, the Danish Parliament has adopted various agreements that contribute to achieving the objectives set out in the Climate Act, inter alia*, kliagreement for energy and industry, etc. 2020, agreement on a green tax reform for industry, etc. 2022* and *Climate Agreement on Green Power and Heat 2022*. The agreements aim to speed up the green transition and strengthen security of supply.

The 2020 Climate Agreement will promote the use of green technologies in the energy sector and industry,including initiatives; creation of energy islands with 5 GW connected, market-driven deployment of solar photovoltaic and rural wind, promotion of green technologies, green transition of industry, support for biogas and other green gases, energy efficiency measures, green transition of the heating sector and sustainability requirements for biomass for energy. The 2022 climate agreement aims to strengthen the green transition and contribute to Europe's energy independence by phasing out fossil energy, and includes actions to be taken; enablea four-fold increase in total electricity generation from solar and rural wind by 2030, enable the supply of at least 4 GW of offshore wind to be realised by 2030, and an ambition that gas should not be used for space heating in Danish households from 2035 and that Danish biogas production will correspond to 100 % of total Danish gas consumption by 2030.

With an increased share of renewable energy in the energy mix, there is a general movement towards further diversity in the Danish supply sector and is therefore invested in a wide range of technologies focusing on the variability of generation, transmission, distribution and consumption options.

Cybersecurity

The Danish energy sector is one of our most socially critical sectors. Energy sectors, like the rest of Danish society, are facing

35https://www.retsinformation.dk/eli/lta/2013/1580

increasing threats from cyberspace. The Centre for Cybersecurity (CFCS) has published a new threat scourgefor the Danish energy sector in early 2023, which considers, among other things, that the threat posed by cybercrime and espionage is 'very high'. In a changed security policy landscape where supply-critical systems are exposed to heightened threats, it is essential to continuously strengthen andenhance the resilience of energy sectors in the cyber domain. The fast paceof digitalisation offers new opportunities for a green transition in which technologies play a key role, but at the same time introduces vulnerabilities and challenges in a critical energy infrastructure that is increasingly connected to the internet. In an energy system under digital development, addressing cyber and information security is a high priority to ensure security of supply. In September 2022,the Danish Energy Agency, as part of the Ministry of Climate, Energy and Utilities, launched a strategy for cyber and information security in the electricity, gas and district heating sectors. The strategy aims to strengthen the cybersecurity of energysectors. This is why it has been developed in close cooperation with the industry, as there is a need for cross-government and cross-company cooperation in the meeting with various cyber threats. The strategy presents 10 initiatives to ensurethe resilience of the energy sectors and their resilience when they face the challenges posed by advanced digital technology now and in the future. The strategy runs until 2025 and is being implemented gradually to improve cyber and information security in the Danish energy sectors, thereby maintaining security of supply at a time characterised by extensivedigitalisation.

In addition, as part of the Ministry of Climate, Energy and Utilities, the Danish Energy Agency has launched an update of the legislationin the area of emergency response, which will make the legislation ambitious and up-to-date. The update of the legislation-also transposes two EU directives. These Directives are the NIS and CER Directives, which deal respectively with measures for a high common level of cybersecurity across the Union and the resilience of critical entities".

Policies and measures to address high energy prices

A number of decisions have been taken to counteract the impact of the significant energy price increases on burners,including as a result of Russia's invasion of Ukraine. The parties to *the Winter Aid Agreement* of 23 September 2022 agreed, inter alia, to reduce the general electricity tax to the EU minimum rate of DKK 0,8 per kWh in the first six months of 2023. A reduction in the electricity tax benefits all Danes in the form of lower electricity consumption costs.

In addition, with the agreement *on targeted heat check of* 11 February 2022 and the supplementary agreement of 30 March 2022, it was decided that a one-off heat check of DKK 6.000 would be granted to households with a total annual income of less than DKK 650.000 and which heat gas boilers, live in district heating areas with a gas share of more than 65 % or areas based on combinations of electricity and gas with similar average price increases or have electricity heat as the primary heat source and experience a similar price increase. Varmechecken was automatically paid on 10 August 2022 and the last additional round of applications was closed in 2024.

Finally, it was agreed to establish a temporary and voluntary so-called "freezing" scheme whereby households andbusinesses can (under different conditions) apply to their energy company to have part of their energy bill frozen for later beta ifthe price exceeds any of the limits set in the agreement. The purpose of the freezing scheme was to provide households and businesses with a breathing space and certainty against significant energy price increases. The scheme entered into force on 1 november 2022 for electricity and gas and on 1 January 2023 for district heating, with the possibility of freezing for one year.

Security of electricity supply

Denmark has one of the highest levels of security of electricity supply in Europe. In 2022, an electricity consumer had an averageof 24 minutes of breakdowns in a year, which equates to 99.995 % of the time.

The planning target for the security of electricity supply in 2033 is, as mentioned in section 2.3, of 36 interruptions minutes on average peruser. This has been recommended by Energinet as part of their annual statement on security of electricity supply. In explaining ELFOR security ofacidification, Energinet also indicates measures that are necessary to maintain the defined level of security of electricity supply. It also includes proposals concerning, for example, market coupling of reserves to ensure power adequacy, focus on reinvestments/lifetime extensions of foreign connections, reinvestments in the electricity grid andsupport for consumption flexibility.

Every year, energy networks publish a needs assessment for ancillary services. This needs assessment for ancillary services describes wherethis is defined by Energinet and which ancillary services are used to meet this need, so that it is possible to maintain-the set level of security of electricity supply.

In addition to the needs assessment for ancillary services, a new measure has entered into force in 2022, when Energinet publishes annually a sce- narier report for the next ten years, presenting an estimate of the evolution of the future system services market. The-report is based on current assumptions, legislation and climate goals.

Energy networks are also required to publish annually a long-term development plan, which was first launched in 2022. The Long Term Development Plan of the Energy Network is Energinet's overall plan for the development of the electricity and gas transmission network in Denmark. This report compiles and summarises the needs analyses, solution catalogues and other reports prepared by Energinet for the short- and long-term development of the electricity and gas transmission network.

Network undertakings in Denmark are required to publish every two years a network development plan pursuant to Article 32 of the Electricity Market Directive, which Denmark has transposed into Danish law. Network development plans shall clarify the need for flexibilityservices in the medium and long term and shall set out the investments planned for the next five to ten years, with particular emphasis on the main distribution infrastructure needed to connect new generation capacity and new pressures.

Plans are thus drawn up to ensure both network and power adequacy in Denmark. In addition to the initiatives set out in the plans, Denmark is working on the following policies and actions that are expected to contribute to the security of electricity supply in Denmark, as described in the rest of the section.

The *Climate Agreement on Green Power and Heat 2022* launched a series of analyses of actions to ensure a proactive and cost-effective expansionof the electricity grid. It launched analyses of how to ensure proactive deployment of the Transs mission Network, incentives for fast grid connection to the distribution network, promotion of flexibility market, development of new flexible grid-connection conditions and products, as well as faster implementation of tariff models and development of tariffs to promote flexibility. Model development was also launched for better monitoring and forecasting of electricity grid capacity in Denmark.

The objective of establishing energy islands means that concrete initiatives are taken to create more interconnectors that can make a positive contribution to the security of electricity supply in Denmark.

In order to develop a flexible electricity market, including with a view to maintaining a high level of security of electricity supply, the Danish Energy Agency hasdrawn up a series of analyses and recommendations for the electricity market under the name market model 3.0. This work involved the transpositionof the Electricity Market Directive (EU) 2019/944 into Danish legislation, as well as analyses and recommendations on how to ensure a corporatemodel where flexibility can help address challenges in the electricity system. Some of these recommendations are in place, while analytical work is still ongoing with others. Market Option 3.0 recommends, inter alia:

- the rules for aggregators need to be further developed and safeguarded against market distortions;
- the rules for electricity meters and billing shall support the smart and flexible roll-out of heat pumps and allow for the-structure of heat pumps;
- it is necessary to examine how to increase transparency in relation to the prices of aggregating products;
- there must be an acceleration of pilot projects;
- an analysis of scarcity prices is carried out to strengthen the price signal in the balancing market;
- network operators need to release anonymised consumer and generation data to increase transparency on the need for flexibility and to organise an annual forum for flexibility among electricity market players, in particular the new flexible players.

In addition, a number of initiatives have been taken to ensure the adequacy of the Danish electricity grid and acost-efficient expansion.

On 4 June 2021, the then government and a number of parties in the Danish Parliament reached a vote agreement on an efficient and future-proofright electricity infrastructure to support the green transition and electrification. In this context, it was agreed that an automatic indicator of the expected incremental costs of grid companies as a result of electrification should be established and added to their revenue envelopes. It also establishes a new application-based supplement to the network companies' revenueframework, which can be sought for major, concrete electrification projects such as new PtX plants or large heatpumps.

By virtue of the *Agreement on the Development and Promotion of Hydrogen and Green Fuels (PtX Strategy) of 15 March 2022*, Denmark is introducing the possibility for consumption tariffs to be geographically differentiated for customers connected to the electricity grid from 10 kV voltage levels onwards and improving the framework for local collective tariff classification. Local collective tariff classification is a tariff solution that can take account of the collective features of the associations on the collective electricity network when classifying them. By promulgating and consuming electricity at the sametime, an association can reduce the load on the collective electricity grid. This could form the basis for a reduced tariff payment for, for example, energy communities.

In addition, the possibility of applying for the construction of direct lines, i.e. electricity connections to live directrings of electricity from

electricity generation activities to own facilities outside the collective grid. The introduction of these opportunities creates incentives for co-location of consumption and production and for the localisation of new consumption or production where there is space in the grid. This should help to reduce the need for grid development.

In order to provide price signals for increased flexibility in the electricity grid, Green Power Denmark has notified, on behalf of the Danish grid companies, a methodology for setting tariffs called tariff model 3.0, which several network companies implemented in 2023. Tariff option 3.0 involves essential elements of time differentiation of tariffs, so that electricity consumption at night is cheap, while electricity consumption during afternoon hours is relatively expensive. It also implies that customers at the high voltage levels have to pay a fixed power payment that reflects the fixed cost of the power at the customer's disposal, thus incentivising the customer to reduce the peak load.

Similarly, a number of initiatives have been put in place to ensure efficient system operation. This includes the introduction of a one-m-to-balance sheet component to pool consumption and production bids in the system performance market, introducing lower mini mumquots in the balancing market, a methodology that is expected to allow fluctuating energy sources to bid in with reserves and the creation of a Nordic reserve market.

In the short term, Denmark also faces a number of possible challenges in terms of security of electricity supply as a result of the gio crisis in Europe. To this end, Denmark has been working on some temporary measures.

The initiative most directly addressing this challenge is that it has been agreed politically to postpone the closure of three Danish power plants until August 2024. This is to ensure that there is capacity in both East and West Denmark to deal with low wind production and high consumption situations should it occur.

The Winter *Aid Agreement* of 23 September 2022 introduced a *freezing scheme for companies a* freezing scheme under which electricity, gas and heat customers can freeze the part of their bills above a fixed limit. The scheme lasts for 6 years, the first year being the freezing period, the second year is free of repayment, while only the last four have to pay off the debt. The scheme is a solution to address citizens and businesses who have propensity to pay the high energy bills, without changing their incentives to relocate and reduce their consumption.

Denmark also implemented the EU revenue ceiling with a number of caveats to support the maintenance of electricity security. The sunset clause should ensure continued incentives for the expansion of electricity generation from solar and wind, and the assumptions for a number of types of electricity generation if their marginal costs were above the cap should ensure that electricity producers do not disappear from the market.

Security of heat supply

The security of heat supply is not vulnerable in the short term, but a green transition of the heating sector contributes to greater calm-resilience in the long term. A number of agreements have been adopted in the Danish Folketing aimed at ensuring a green transition of the heating sector and phasing out the use of fossil fuels, including natural gas, for heat production.

With the *Climate Agreement for Energy and Industry, etc. 2020 a number of actions have* been implemented which have encouraged the phase-out of fos Silefuels in the heating sector. The agreement decided as follows:

Increase of space heating tax (fossil fuels) and reduction of the electricity heat tax to EU minima.

- With a number of agreements, almost DKK 5.8 billion has been allocated to grant pools for phasing out oil and gas boilers from 2020 onwards, including a pool for decoupling from the natural gas grid, for the roll-out of district heating, for heat pumps and energy efficiency improvements, and for heat pumps on subscription. Companies can receive subsidies for a heat pump through the Business Pool, which was implemented as a result of Energy Agreement 2018 and received more funding from the Climate Agreement for Energy and Industry, etc. 2020. Private companies in most sectors may receive subsidies for conversion to, inter alia, heat pump or district heating, provided that the conversion results in a reduction in CO_2 or energy savings, through the Business Pool. The Industry Pool was impoverished as a result of *Energy Agreement 2018* and received more funding from the *Climate Agreement for Energy and Industry, etc. 2020* and *Green Tax Reform Agreement 2020.* As of 2025, the most CO_2 intensive companies can receive support for conversion projects leading to CO_2 reductions through the investment and operating aid pools decided with the *Agreement on translating the green tax reform for industry, etc. 2024*.
- Changes to regulation for district heating companies, including:
- The removal of fuel ties so that district heating companies are not tied to natural gas firing, the abolition of the power requirement so that central and decentralised areas can be equated so that clean heat producing plants can also be established in central

areas, and modernisation of the bottling obligation to enable the use of surplus heat and renewable energy production.

- The socio-economic effect was adjusted to allow district heating projects to be approved without a comparison withfossil alter natives, which has ensured, among other things, that regulation is not an unnecessary brake on converting gas areas into remotemeadows.
- Consumer bonds to natural gas were abolished.
- Separate rules in the Heat Supply Act for the price regulation of district heating from geothermal plants, which should makeit necessary to establish large-scale geothermal installations for district heating in Denmark.
- On the basis of the *Energy Agreement 2018, the Agreement on Increased Use of Waste Heat 2019* and the *Climate Agreement for Energy and inIndustries, etc. As* from 2022, DKK 178 million per year was allocated to the conversion of the rules on the use of surplus heat. In 2021, the Folketin has, among other things, adopted separate rules on the price regulation of surplus heat, which are also intended to promote exploitation.

In summer 2022, a majority of the parties in the Danish Parliament reached *the Climate Agreement on green power and heat*. The agreement aims, among other things, to phase out the use of natural gas for heating and promote the roll-out of green heat, as well as to increase the speed of the green transition. With the agreement, it has been decided, inter alia, that:

- The ambition that from 2035 there should be no dwellings heated by gas boilers and that Danish biogas production will correspond to 100 % of total Danish gas consumption by 2030.
- A model for stopping the new installation of oil and gas furnaces shall be considered.
- The gas distribution company Evida shall map where appropriate to gas distributors; nautical network.
- A plan to phase out fossil heating in public buildings needs to be developed.
- A ban on the authorisation of new projects for district heating plants using fossil fuels as the main fuel for district heating is underway.
- District heating companies will have to present by the end of 2023 a plan to phase out pipeline gas in their own pure heat generators.

In Denmark, the municipalities are the heat planning authority and are therefore responsible for planning and approving new district heating projects. On the basis of *the Climate Agreement on Green Power and Heat*, an agreement was reached in summer *2022 on-the planning for phasing out gas for heating and clear communication to citizens* with the Danish municipalities' organisationof interest (KL). Against this background, in 2022 the Danish municipalities were required to draw up heating plans and send letters with information on future green heating options to oil and gas pine owners in areas currently equipped with gas. In 2023, commons and-district heating companies have been working on concrete projects following up on the heating plans. The ambition is for district heating to be rolled out by 2 028 in those areas where it makes sense. The agreement allocates DKK 201 million in the period 2022-2025 to the municipalities' efforts, including the coordination of heating plans, the approval of project proposals for district heating, cooperation with the district heating companies and the support and development of common local heat supply solutions on a smaller scale.

Other agreements and NEKST

Under *the Agreement on VinterAid 2022* and the *2023 Inflation Assistance Agreement*, additional funds were allocated to the district heating pool andto the coupling scheme in 2023 (a total of DKK 188 million for district heating and DKK 157 million for the decoupling scheme), which were later financed by repatriated funds. REPowerEU. Under *the Finance Act for 2024* and *the agreement on the partial implementation of the Green Fund 2024*, a total of DKK 615 million was allocated to the district heating pool in the period 2024-2025 and a total of DKK 240 million in the period 2024-2026 to decobthe settlement scheme (through RePowerEU). The increases are included in the total DKK 6 billion allocated to support pools for phasing out oil and gas furnaces. In addition, *under the 2022 VinterAid Agreement*, DKK 25 million was further allocated to the start-up aid in 2023, which provided subsidies for collective heat pumps and solar thermal installations that crowd out fossil district heating production. The start-up aid stems *from the Energy Agreement 2018* and was open during the period 2021-2023.

On 14 March 2024, *the NECSC working group Farvel for gas in* Denmark delivered 10 recommendations and 30 sub-recommendations to remove barriers so that green heating solutions can be rolled out quickly and efficiently in Denmark. The working group has, among other things, made somerecommendations to support the quicker conversion to green heat in Danish homes, with the ultimate aim of phasing out natural gas for domestic heating in Denmark. The recommendations touch upon many different topics and actions, including *optimised regulatory process for district heating roll-out, follow-up of municipalities' heating plans, consistent and clear communication on whether they were me-pumps, recommendation on good corporate governance in all district heating companies, better use of waste heat across, call for thepromotion of new technologies for the roll-out of district heating*, as well as

improving data on the expansion of district heating andconsumers, etc.

Security of gas supply

Security of gas supply is a pan-European issue where gas is considered a shared resource in the EU. Following Russia's invasion of Ukraine, a number of legal acts and initiatives have been put forward and adopted in the EU that strengthen the security of gas supply and promote the independence of Russian gas. *Save gas for a safe winter*from summer 2022 meant that Member States had to voluntarily reduce their natural gas consumption by at least 15 % in the period from 1 August 2022 to 31 March 2023, compared with national natural gas consumption in the same period for the last five previous years. The reduction target was extended until 2024 and has been replaced in March 2024 by a Council recommendation to continue working towards gas demand reductions.

EU countries must be prepared against an emergency by updating their gas emergency plans in the event of a gas supply crisis. The-aim is to avoid an emergency in the EU and to support security of supply. The Danish emergency supply plan was last updated in September 2023. The update has taken into account that gas supply crises can be caused both by infrastructure events (pipework, etc.) and by volume incidents where there is a shortage of gas. The responsibility to alert crisis levels is set out in the emergency supply plan, and the plan also includes market-based crisis measuresthat can be put in place in order to avoid having to declare an emergency in a critical situation if there is no longer gas on the market corresponding to the consumption of Danish customers.

A key element of the emergency plan is that non-protected customers (companies with the highest gas consumption in Denmark) may be partially or totally interrupted in a gas supply crisis where an emergency is declared to secure gas for the protected customers (houseattitudes, blue blink and low gas consumption companies).

Non-protected gas customers account for approximately 33 % of Danish consumption. Non-protected gas customers, even if they are non-protected, are selected on an objective basis based on their annual consumption, as well as the rules set out in the EU Gas Security Regulation on the proportion of total gas consumption that can benefit from protection. The emergency plan hasbeen adjusted more time to take account of the fact that the disruption of the gas supply of certain companies may be socially critical, although they are on the list of non-protected customers. Societal critical non-protected customers are therefore given priority over a minimum gas foruse over other non-protected customers, while the remaining non-protected customers are allocated gas according to a pro rata model if there is gas remaining. Socially critical gas customers are assessed by the Danish Energy Agency in cooperation withrelevant sectoral authorities. The categorisation of socially critical and non-socially critical gas customers is classified. If an emergency is triggered in Denmark and there is a need to reduce the consumption of non-protected customers, the distribution of gas among the non-protected customers will be as appropriate as possible on the basis of data from dialogue with the gas customers concerned. The gas consumption of non-protected gas customers had to be reduced in a controlled and nuanced manner. The aim is to supply as many gas customers as possible for as long as possible.

Denmark has not taken any exceptional measures to ensure that filling targets are met in the following years. The table shows the current process of filling storage and emergency storage in Denmark.

Table 21
Current process of filling storage and emergency storage in Denmark

Member's-country	Targets of national law on filling lager	Auctions planned – date	Period of filling	Comments
Denmark	There is no statutory-target forfilling up in the nationale legislation.	No specific auctions are planned for storage gas. It came tothe mercial storage company (Gas Storage Denmark)	Mandatory filling shall be carried out in the first half of the gas year. Each TSO has priority access to the storage; and	Filling requirements follow a profile (increment/Pla-teau/reduction sperm) in winter.

The 'compulsory'filling shallbe determined by the quantities necessary to meet the supplystandards of EU pre-scheme 2017/1938.

The ESA requests the TSO to purchase the needyemergency storagecaptain cite (and emergency gas) to ensure the supply of protected customers in

(A/S) may auction storage capacity at its own discretion. However, ESA (as the competent authorityfor thesecurity of supply) has the right to request the TSO to offer (purchase) mercile-individual 'filling requirements' in addition to emergency storage to ensure gas to meet the missing standardsof EU Regulation 2017/1938.

submit its requirements for the emergency storage capacity before the start of the storage year (1 May).

The offer of 'filling requirements' takes placein the spring and as themother. The market delta would thenlike to take their filling needs into

Security of oil supply

If a specific oil crisis occurs as a result of a major supply disruption, there are generally three emergency response operations that can be deployed. First, oil can be released from emergency stocks. Stock drawings in the form of release fromoil-held creation stocks to the market are the key tool for almost all countries, including Denmark. Danish legislation does not allowfor the release of stocks, except in the case of a 'major supply disruption'. Secondly, consumption reduction measuresmay be taken. A gross list has been drawn up with initiatives to reduce oil consumption in the transportsecto clean, such as campaigns, tax increases, speed limits, etc. If the need to implement consumption reduction measures materialises, the concrete situation will have to be taken into account in deciding which measures are taken. In the event of a very serious oil crisis, oil consumption may be sought by prioritising oil to selected user groups, in order to ensure societal critical functions. In 2019, exploration and drilling for oil, gas and shale gas on land and in coastal areas was officially completed when a draft law on the Danish subsoil was adopted, which provided for the cessation of oil and gas extraction on land and in coastal waters. The National Geological Studies for Denmark and Greenland (GEUS) and theDanish Energy Agency carried out an updated assessment of oil and gas potential on land and inland waters. They considered that there is no potential of importance for society on land in Denmark. The decision meant that all future exploration and extraction of oil and gas in Denmark will not be possible on land and in coastal areas.

Biomass

Denmark has implemented the VE II Directive36 (Articles 29, 30 and 31) and a broad political agreement on woody biomass37 from October 2020. The Danish legal requirements on the sustainability of biomass for the production of electricity, heating and cooling entered into force on 30 June 2021. Thesuitability requirements must reduce as far as possible the risk of using "unsustainable produced biomass" in Denmark, i.e. biomass with a high climate or biodiversity impact. At the same time, the requirements are formulated flexibly for reasons of security of supply and consumers' heating prices.

The total Danish requirements are more ambitious than the minimum level of the RES II Directive at 10 points below. The tighter Danishimplementation includes lowered installation limits for heating and combined heat and power plants, as well as requirements for wood fromwoodland, hedgerows, etc. (non-forest).

Several establishments and establishments are covered

1. Biomass sustainability and greenhouse gas emissions savings are required for smaller installations (woody biomass is covered in installations from 5 MW instead of 20 MW).
2. Industrial installations are subject to requirements (i.e. enterprises producing energy for own consumption)

36Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 – on the promotion of the use of energy from renewable sources
37Agreement on sustainability requirements for woody biomass for energy (kefm.dk)

3. Importers and producers of biomass for households are subject to requirements (from 20.000 tonnes of wood pellets, which will be lowered to 5.000 tonnes from mid-2023).

Several categories of biomass are covered

1. Wood industry residues are subject to sustainability requirements (i.e. not just greenhouse gas saving requirements. However, the current rules provide an option not to demonstrate compliance for 10 % of the consumption of this biomass category)
2. Woody biomass from non-forest is subject to requirements (i.e. wood from hedgerows, small plantations, etc.).

Additional requirements for forest biomass

1. There is an additional Danish requirement for climate sustainability (e.g. carbon stock in the country's forests must not fall)
2. There is an additional biodiversity requirement (field review and high biodiversity protection requirements).

Older installations are subject to (higher) fossil greenhouse gas saving requirements in the supply chain;

1. Greenhouse gas savings are required for existing installations (i.e. not just installations commissioned from 2021);
2. There are higher requirements for greenhouse gas savings in the production chain (for woody biomass, increased from 70 % to 75 %).

Higher requirements for verification of compliance by the 3st Party

1. Verification by 3st party is required throughout the chain (for woody biomass, i.e. also from the forest to the firstpoint).

Denmark's security of supply of biomass

Given the situation in Ukraine and in order to ensure the security of supply of biomass, the Danish government has chosen to adopt a number of initiatives. The Danish government decided in November 2022 to temporarily remove the sustainability requirements for wood pellets in private households in order to address a possible shortage of wood pellets for heating in private households. This amendment expired in April 2024. In addition, the Danish government has adopted a number of measures to reduce rising prices and ensure the supply of wood pellets, including, inter alia, establishing closer contact with the industry, focusing on information to residentsand analysing the possibility of using alternative fuels in wood pellet furnaces, which did not show useablealternati. In addition, the scrapping scheme, which supports heat pumps on subscription, has been extended so that households with wood pellet furnaces can also benefit from these funds.

In addition to initiatives for wood pellets, Energinet, which is Denmark's TSO, monitors that all biomass plants are equipped with sufficient biomass for the next three months.

(ii) Regional cooperation in this area

Gas

On the basis of Regulation No 2017/1938, Denmark prepared in 2022 a common risk assessment of the gas supply and infrastructurein the risk group Denmark. It outlined all relevant risk factors, such as natural disasters, technological, commercial, social, political and other risks. Member States at risk Denmark are Germany, Luxembourg, the Netherlands, Poland and Sweden. Although there is some gas production in the risk group, mainly the Netherlands and Denmark, the group, like most of the EU, is dependent on gas imports. Regulation 2017/1938 also details a solidarity mechanism, which will only enter into force in the event of a severe gas crisis. Protected customers, such as households and hospitals, must be guaranteed access to gas even in the worst crisis situation. Denmark has signed bilateral solidarity agreements with Germany and Sweden. A similarspeech is being negotiated with Poland. As there are relatively few countries with bilateral solidarity agreements in place, the Regulation also includes fall-back rules in case of lack of bilateral solidarity agreements.

Two of the four main gas pipelines from Russia to the EU pass through the risk group Denmark. The Nord Stream pipeline connecting Russia directly to Germany and the Yamal pipeline connecting Russia to Poland through Belarus. Due to the ongoing conflict in Ukraine, Russia stopped gas deliveries to Poland in spring 2022. The Nord Stream pipeline was damaged and has not been useable

since autumn 2022. This resulted in an interruption of Russian gas imports at riskgroup Denmark.

The risk group consists of six Member States' associations (DK, SE, DE, NL, PL, LUX). Sweden is only forbiddenwith Denmark and thus entirely dependent on gas imports from Denmark. Denmark is a historical net exporter to Germany and Sweden, but has been a net importer since November 2019 due to renovation works on the Tyra field in the North Sea. Stretchof Danish offshore gas from Danish gas fields in the North Sea has therefore been sent to the Netherlands, corresponding to approximately one third of the annual Danish gas consumption.

At the end of 2022, the new Baltic Pipe pipeline became operational. It serves as a transit line connected to the exiEuropipe II in the North Sea. Baltic Pipe connects Norway to Poland through Denmark and will primarily serve flows from Norway to Poland. However, Baltic Pipe also increases the resilience of the region's gas system with new transfer opportunities.

Germany has interconnection points with all their neighbouring countries and is heavily dependent in this risk group area on imports from Norway through Europipe II and the Netherlands, as the Nord Stream pipeline is out of operation.

Poland is linked to the risk group members Germany and Denmark. Gas is imported into Poland from both Member States and from LNG plants in Poland. All these import routes ensure supply, as there is currently no flow in the Yamal pipeline that has historically supplied large quantities of gas to Poland and the rest of the EU from Russia.

The Netherlands produces and imports gas from the North Sea and the UK, as well as LNG from abroad. It exports large quantities of gas to Europe and hosts the TTF gas exchange. Within the risk group Denmark, the Netherlands exports mainly to Germany.

Luxembourg is directly connected to Germany but is mainly supplied with gas from Belgium.

As gas flows from Russia have been drastically reduced since 2022, Member States have had to switch to new sources of gas. Due to the disrupted imports of Russian gas, the flow of gas across Europe has shifted from east to west to westwards. The supply of North and Eastern European countries is therefore at greater risk than in the past if there is a loss of gas supply from Norway or insufficient quantities of LNG are imported. In the event of a gas supply crisis, the potential risk of mitigation in the Member States of the risk group may be reduced by, inter alia, reductions in demand.

In the common risk assessment for risk group Denmark, a full stop to Russian gas to the EU is a particular point of attention. The common risk assessment provides varied approaches to gas storage strategies, temperature conditions, cooperative market strategy, gas interconnections capacities, gas consumption patterns, etc. The risk assessment highlights the importance of a cooperative approach to the interconnected European gas market in order to avoid significant gas shortages in the Member States of the risk group (over 40 % in Sweden, around 20 % in Denmark, around 5 % in remaining Member States) and a significant gas shortage in peak demandpeaks. The cooperative approach keeps the gas shortage below 20 % for all Member States in the risk group. In absolute terms, all gas shortages are kept below 1 bcm throughout the winter of 2022-23, although there is a higher risk (around 15 %) of gas shortages of more than 4 bcm in Germany in the right circumstances. The report highlights here the importance of a 15 % reduction in gas for thefarm as a tool to avoid gas restrictions to gas customers in 2022-23 and 2023-24.

In April 2022, the European Commission set up the EU Energy Platform, which aims to help Member States switch away from Russian gas and secure gas supplies to Europe. On 19 December 2022, energy ministers adopted the regulation to strengthen solidarity through better coordination of gas purchases, reliable price benchmarks and exchanges of gas across borders. The Regulation provides a legal basis for the further process of demand aggregation and joint purchasing of gas across the EU. A contract has been concluded with PRISMA, which has set up a platform for gas dealersand gas users to enter volumes of gas that they wish to enter into joint purchases for continuoususe or storage filling.

(iii) Financing measures in this area at national level, including Union support and the use of Union funds, where appropriate;

Gas

The EU TEN-E Regulation 2022/869 on guidelines for trans-European energy infrastructure aims to promote and increase, throughthe development of electricity and smart gas, a priority for Energinet in order to increase interconnection across Member States, in particular with a higher percentage of green biogas in the Danish gas system. This may mean an opportunity to obtain PCI (Projects of Common Interest) status. This can allow EU funding through the CEF (Connecting Europe Facility) fund. As in all PCI projects, this

requires two project promoters (TSOs on each side of the border), as well as a cross-acceptance of the projects at national level.

3.4 internal energy market dimension

3.4.1 Electricity infrastructure

(i) Policies and measures to achieve the level of interconnection envisaged in accordance with Article 4(d);

Denmark already meets the EU's interconnectivity targets in 2030 and therefore has no specific targets in terms of interconnectivity. However, analysis of new possible interconnectors remains a high priority. In Denmark, interconnectors are authorisedbehind their socio-economic value. The approval responsibility lies with the Minister in the Minister for Climate, Energy andUtilities. It is the responsibility of the Danish TSO (Energinet) to propose and apply for new interconnectors such as the Minister for Climate, Energy and Disappearance, finally, to approve.

(ii) Regional cooperation in this area

Denmark cooperates with other countries, inter alia, under the TEN-E Regulation in the priority corridors, such as the North Seas Energy Coope- ration, in terms of possibilities for concrete cooperation projects. In addition to joint offshore wind projects that will be tootied and supported by several Member States, it also includes work on possible 'hybrid' solutions that will use cross- border solutions to connect offshore wind parks to the electricity grid, and seek synergies with interconnectivity capacities between countries and the respective market tips.

Cooperation on electricity infrastructure exists in particular in the Nordic context, including in TSO cooperation, through the Nordic Minister'sCouncil and in the form of a vision for the Nordic electricity market. The Nordic TSOs cooperate closely and have developed a Nordic network development plan in 2017. The report should be updated every two years and has been updated in both 2019 and 2021. The Nordic Council of Ministers and the underlying Senior Officials Committee for Energy as well as the Electricity Market Group(EMG) coordine address energy issues and, for example, monitors TSO cooperation (including in relation to network development). In June 2019, the Nordic Energy Ministers adopted a new vision for the Nordic electricity market, focusing inter alia on the smart operation of the electricity grid, cost-efficient, robust, without undue constraints, and optimised from a regional perspective. In the following roadmap to reach the 2030 vision, Nordic TSOs need to strengthen Nordic network planning by taking into account Nordic welfare.

3.4.2 Energy transmission infrastructure

(i) Policies and measures relating to the elements set out in point 2.4.2, including, where appropriate, specific measures for the implementation of projects of common interest and other key infrastructural projects;

Major infrastructure projects are developed by the Danish transmission operator for electricity and gas, Energinet, and approved by the Minister for Climate, Energy and Supply. Energy networks are the sole developer of electricity and gas transmission projects and these projects are assessed in relation to the needs of the project. No specific measures related to elements in Section 2.4.2 have been introduced.

In order to speed up the permit-granting process for PCI (Projects of Common Interest) projects, Denmark has, according to the TEN-E Regulation, developed a manual of procedures which provides an overview of the permit granting process in a number of disciplines in Denmark. In addition, the application process for offshore wind farms has been organised as a one-stop shop in which the Danish Energy Agency is contactpoint and plays a key role in planning, processing applications and coordinating with all relevant-authorities.

(ii) Regional cooperation in this area

Denmark participates, inter alia, in relevant fora established under TEN-E regulation both onshore and offshore, such as the North Seas Energy Cooperation, the Baltic Energy Market Interconnection Plan and the NCA Platform, which address cooperation in

electricity, hydrogen, gas and CO_2areas. PCI projects and other relevant projects of a cross-border nature are referred to in Chapter For the purpose of Energinet'stask of developing the infrastructure of the energy system, the Danish Energy Agency prepares annually a set of analytical requirements for Energinet. The analysis assumptions indicate a likely evolution of the Danish electricity and gas system by 2050. Analysis assumptions still show a high degree of interconnectivity, with an expected import capacity in 2030 of 12.25 GW compared to an expected installed generation capacity of 37.6 GW. As a result, interconnectivity is expected to be 31.7 % in 2030, which is high but somewhat lower than today (48.3 %). This is mainly due to a massive expected deployment of solar cells, which is expected to increase from 3 070 MW in 2022 to 17.744 MW in 2030.

2.4.2 energy transmission infrastructure.

(iii) Financing measures in this area at national level, including Union support and the use of Union funds, where appropriate;

In general, infrastructure projects are financed through tariffs. Energy networks have used CEF funds in the past for feasibility studies and feasibility studies for PCI (Projects of Common Interest) projects.

3.4.3 Market integration

(i) Policies and measures relating to the elements set out in paragraph 2.4.3;

Forum for Flexibility

One of the action points from Market Option 3.0 was that the market model needs to be continuously adapted through proactive experiencepooling and stakeholder engagement to promote flexibility. The Danish Energy Agency has therefore taken the initiative to develop a new forum focused on promoting flexibility in the energy system. The first Flexibility Forum was held in February 2023, partly consisting of debates and reflection papers on visions for Danish and European flexibility markets, as well as workshops on active customers, flexibilityin the electricity grid and flexibility for the electricity system. The next Forum on Flexibility is expected to take place in 2024.

Real-time price signals

It is specified from 2018 that the Danish TSO must procure, as far as possible, all energy and non-energy services that are necessaryto ensure security of supply through market-based mechanisms. The demand for all services shall be published annually. In the case of limited competition, TSO shall analyse whether changes to the product definition and the procurement process could increase competition. The law aims to increase transparency, to create price signals for all viewers, including ancillary services, and therefore allows more market players, including consumption flexibility, to provide theseservices.

Balancing of the electricity system

It follows from the legislation that the Danish TSO is responsible for system adequacy and that the climate, energy and supply mine mustset a planned target for the level of security of electricity supply by 15 February each year. More details areprovided in Section 3.3 (Dimension Energy Security).

The Nordic TSOs are currently developing a new Nordic balancing model. The scope of the model is themarket for ancillary services of a common Nordic capacity and the implementation of a 15-minute imbalance settlement period.

Cooperation on the Nordic balancing model includes a roadmap with a number of projects concluding a common European platform for the exchange of balancing energy. Nordic TSOs will join the common European platforms.

The exchange of balancing energy across TSO control areas in Europe will bring major economic benefits as resources and needs are unevenly distributed across Europe.

In December 2022, Energinet submitted an amendment to the methodology for local flexibility, in addition to the already approved methodology from 2021, in order to allow Energinet to better address local bottlenecks in the operating situation.

New counter-trading model via the intraday market

On 1 July 2023, Energinet implemented a new model for countertrading. Today, the modal trade is mainly used to support the German TSO TenneT, which needs downward regulation from Denmark in order to secure the trading capacity on theforeign connection between Jutland and Germany (DK1-DE) despite bottlenecks in the German internal electricity grid. In the past, Energinet has used so-called redispatching for countertrading, where bids from the regulating power market have been used. Only Danish operators, and here mainly electricity producers, have been able to participate in redispatching. The volume of trade with Germany has grown at itsedge and limited market access has led to a significant increase in prices, while competition in the market hasbeen challenged.

Energy networks therefore implemented a model where the counter trade is bought in the European intraday market, in whichboth the bankruptcy of covable bids from a larger international market and the whole Danish consumption side can participate, thus creating-better regulation for cost-effective purchases.

Market coupling – interconnectors and flows

Implicit Intraday market coupling has been implemented for several years on the Nordic market as well as on the border between East Denmark and Germany via the Contekt link.

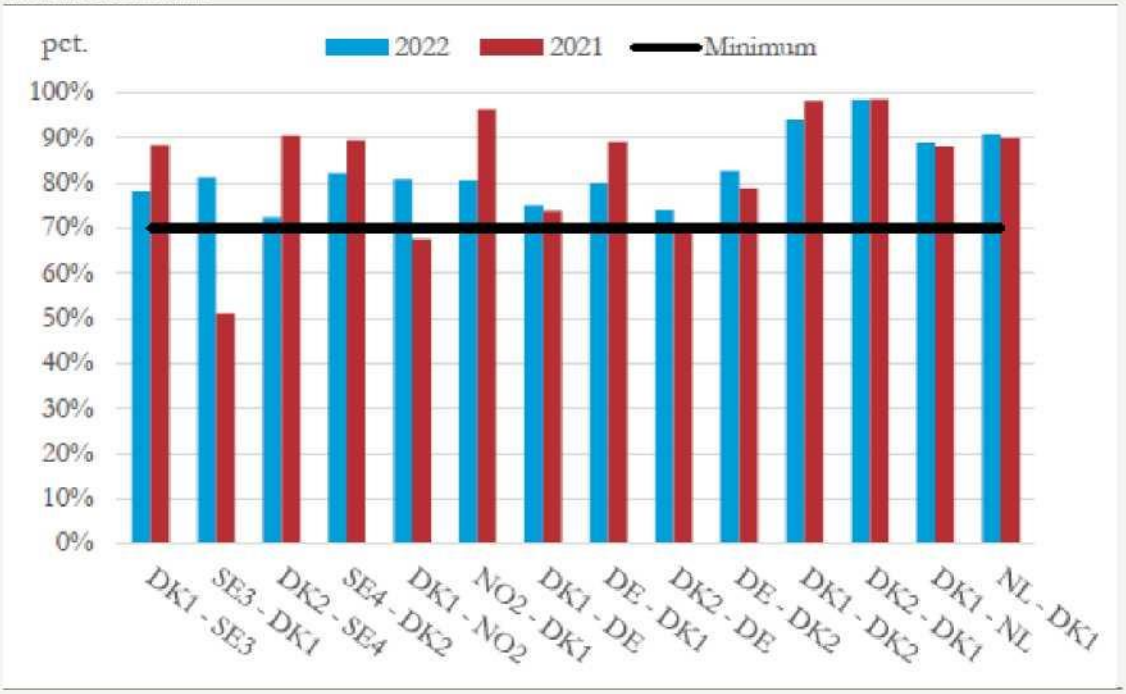
As an indicator of market integration, the following figures can be highlighted. Figure 24 below shows the average trading capacity across all foreign connections connected to Denmark. Trading capacities are calculated as the average available capacity in relation to the rated capacity.

It can be seen from the chart that all foreign connections maintain trading capacity that on average exceeds 70 % year-on-year38.

38Article 16 of EU regulation (2019/943) provides for a minimum of 70 % of transmission capacity on a foreign connection for trade with other EU countries. However, each TSO may apply for an exemption from the national regulatory authority.

Figur 24

Gennemsnitlige handelskapacitet på tværs af samtlige udlandsforbindelser forbundet til Danmark



Anm.: Gennemsnitlig tilgængelig handelskapacitet som procentandel af den nominelt tilgængelige kapacitet for de angivne forbindelser. Minimumskravet er på 70 pct.
Kilde: Forsyningstilsynets Markedsrapport for el, 2022

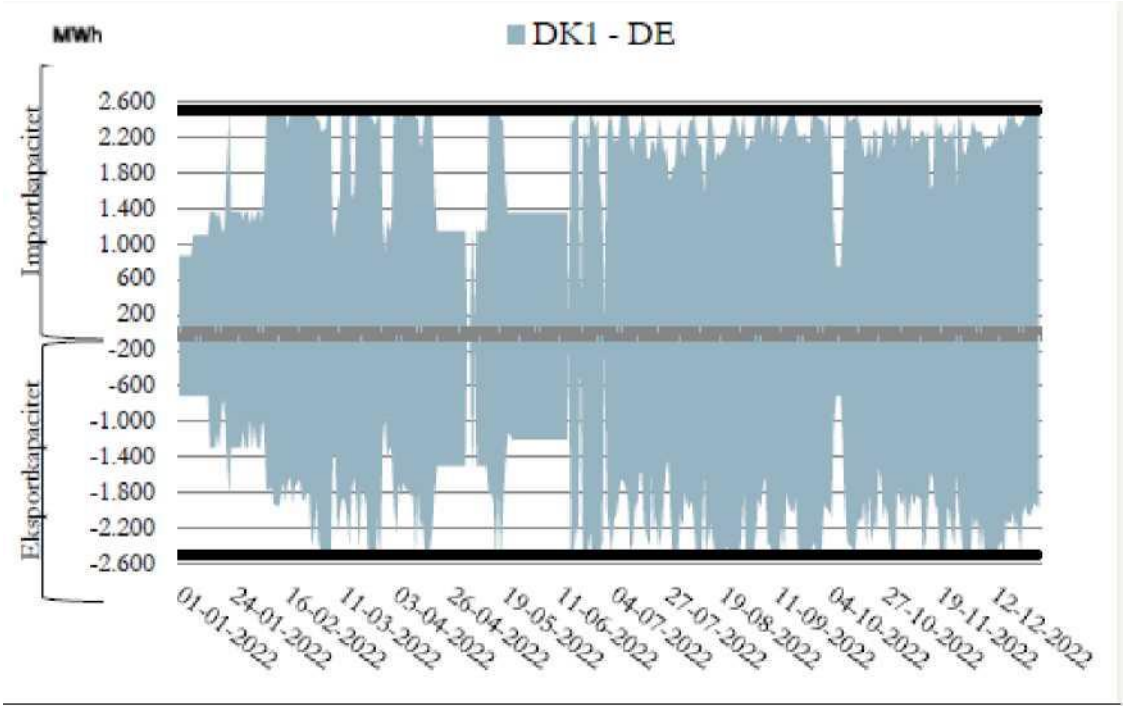
The following graphs show the daily evolution of available trading capacity for the year 2021.

Denmark – Germany connection

Figures 25 and 26 show the daily trading capacity on the foreign connection between Jutland and Germany (DK1-DE and DK2-DE). The average available import capacity (average of both limits) changed from 2021 to 2022, from 70 % in 2021 to 82 % in 2022. Export capacity has increased from 65 % to 75 %. This link has often been limited in the export direction due to an internal bottleneck in Northern Germany. This has been handled in the past via redispatching, with the German TSO TenneT paying Danish wind turbine owners to switch off their wind turbines, thus limiting exports toGerman.

Figure 25

Daily trading capacity on the foreign connection between Jutland and Germany (DK1-DE)

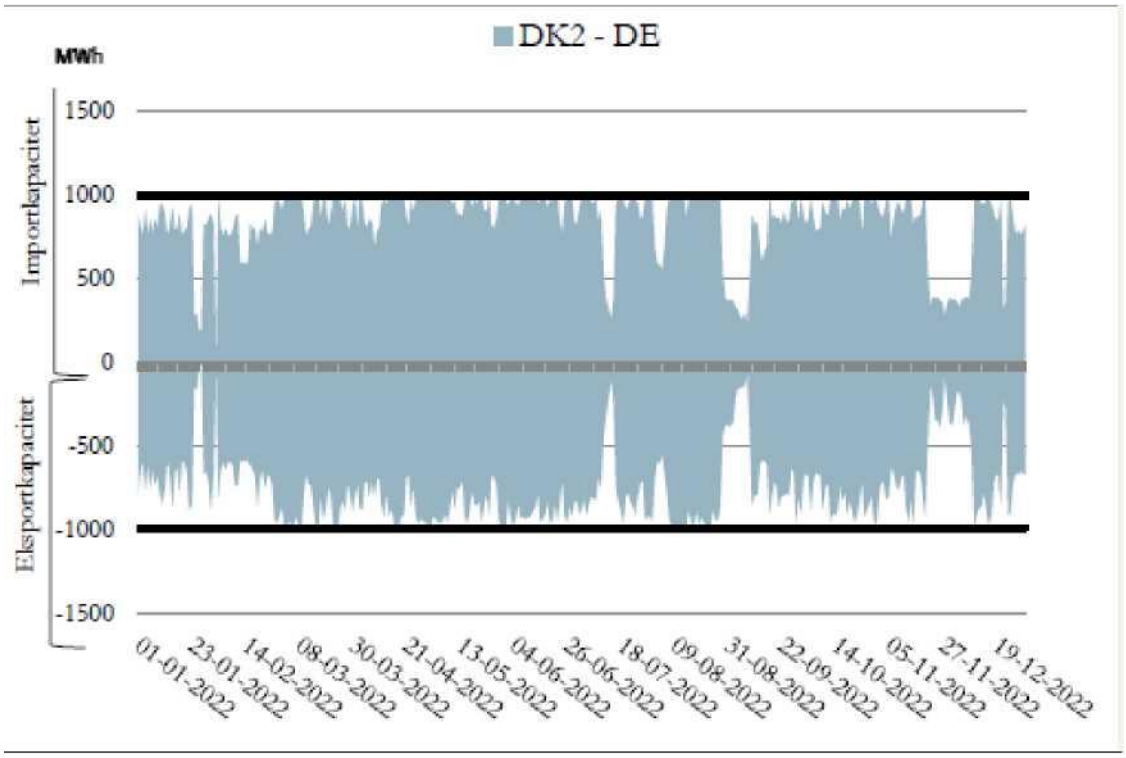


Note: Average daily evolution of available trading capacity between DK1 and DE. The black horizontal lines; indicates the re-spective maximum and minimum nominal transmission capacity.
Source: Supply Authority's Electricity Market Report, 2022

Figure 26

Connection between East Denmark and Germany

Denmark – Sweden connection



Note: Average daily evolution of available trading capacity between DK2 and DE. The black horizontal lines; indicates the re-spective maximum and minimum nominal transmission capacity.
Source: Supply Authority's Electricity Market Report, 2022

Between the years 2021 and 27, the available trading capacity from Denmark to Sweden (Figures 28 and 2022) can be calculated as follows:

Table 22

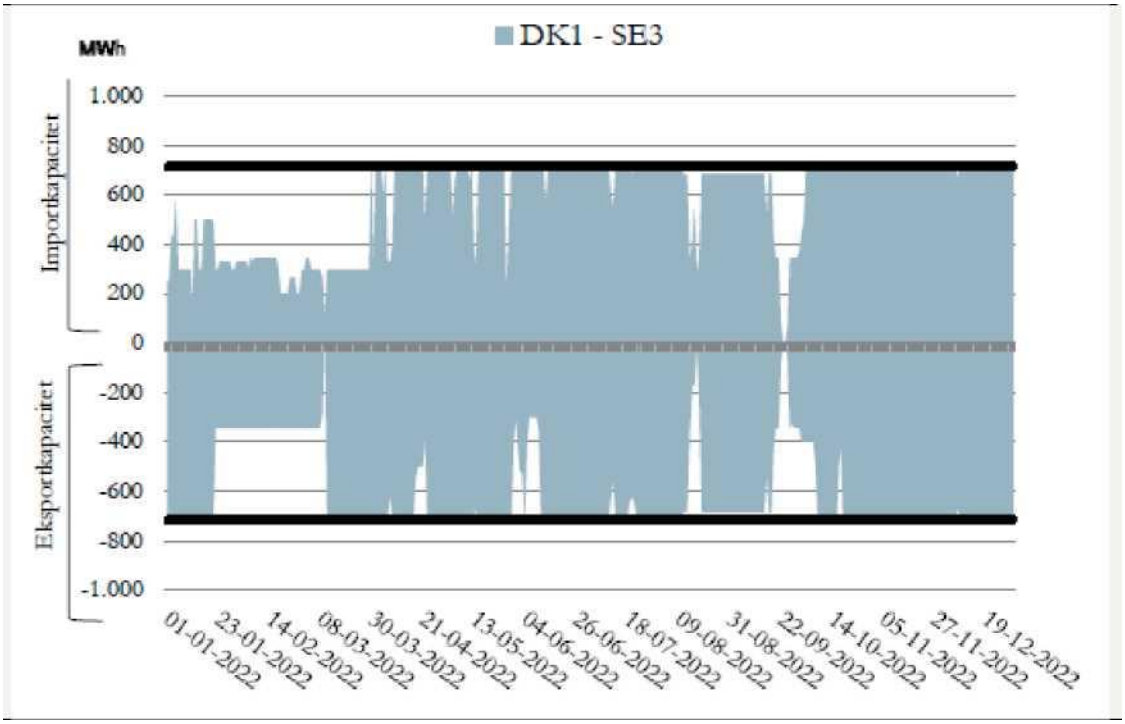
Trading capacity from Denmark to Sweden

	DK1-SE3		DK2-SE4	
	Exports (%)	Imports (%)	Exports (%)	Imports (%)
2021	88,4	51,1	90,6	89,6
2022	78,2	81,3	72,4	82,2

Figure 27

Available trading capacity from West Denmark to Sweden

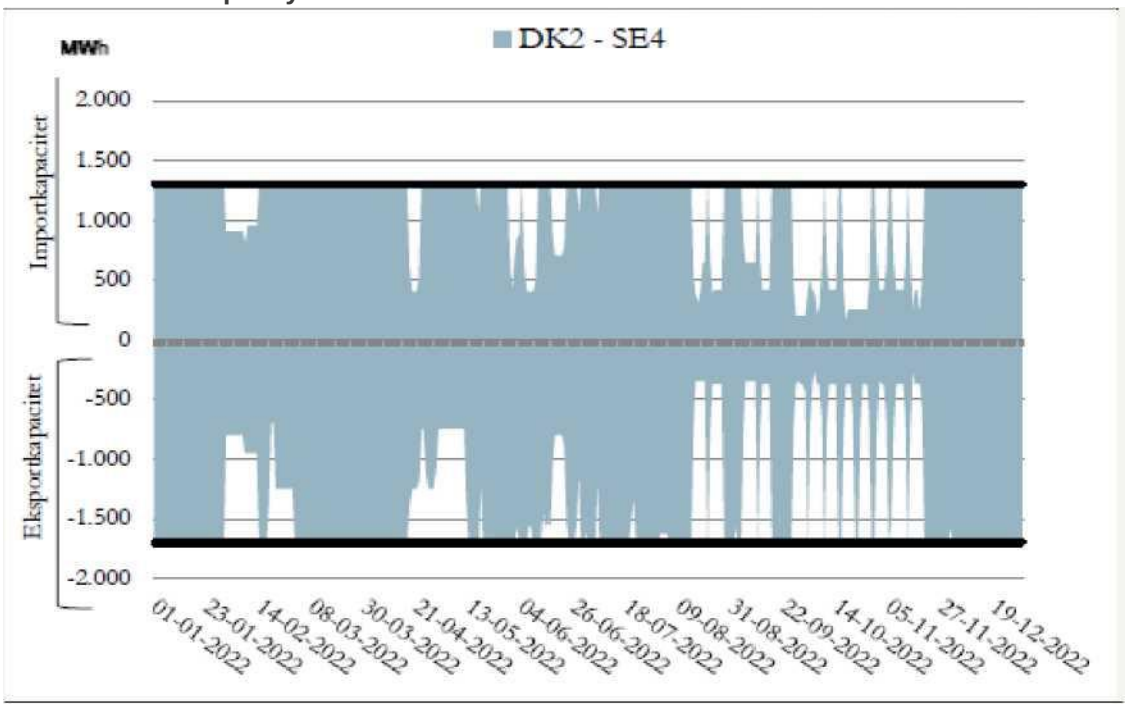
Note: Average daily evolution of available trading capacity between DK1 and SE3. The black horizontal lines; indicates the respective maximum and minimum nominal transmission capacity.



Source: Supply Authority's Electricity Market Report, 2022

Figure 28

Available trade capacity from East Denmark to Sweden



Note: Average daily evolution of available trading capacity between DK2 and SE4. The black horizontal lines; indicates the respective maximum and minimum nominal transmission capacity.

Source: Supply Authority's Electricity Market Report, 2022

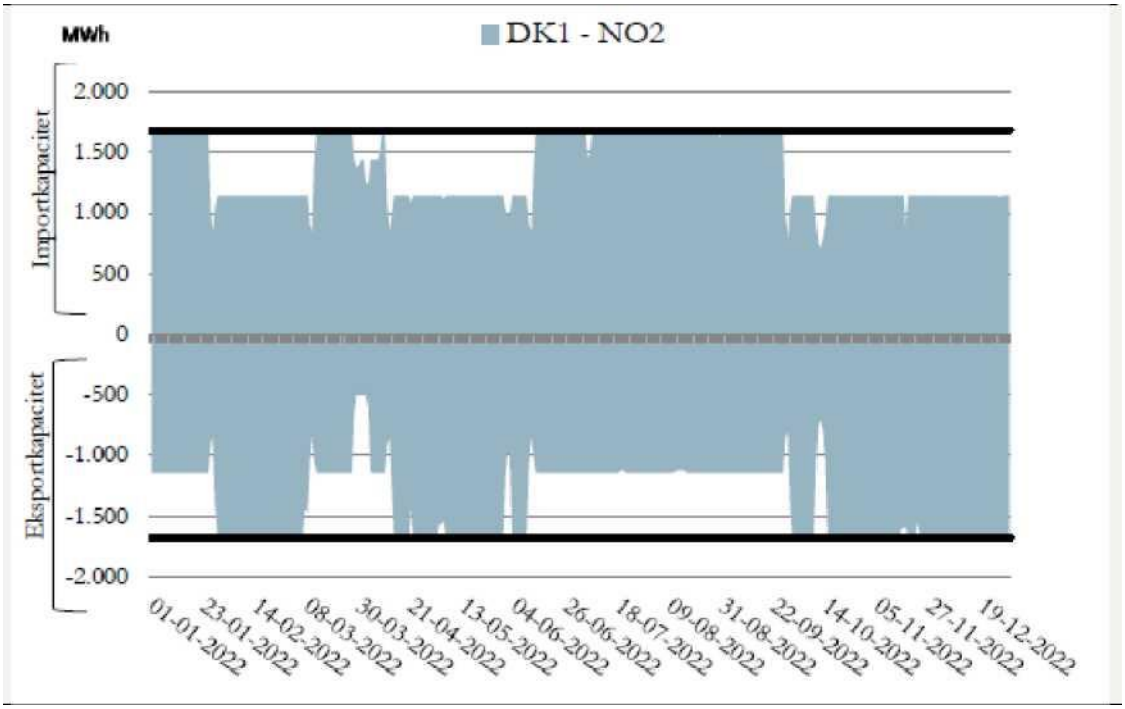
Denmark – Norway connection

On the DK1-NO2 link (Figure 29), the average available trading capacity in 2 022 in the import direction was 96.6 %, almost unchanged from 2021. In the export direction, capacity has increased to 98.8 % in 2022, from 96.5 % in 2021. In 2019, several errors occurred in the land cables on the Danish part of the Skagerrak link. In order to prevent new failures, the total cross-zonal capacity has since been reduced so that there is now a primary direction of most capacity and a secondary one with less. Since 16 October 2020, the primary direction has been from Norway to Denmark, but Statnett and Energinet changed to the primary direction from 28 January 2022. This is done from a socio-economic point of view.

Figure 29

Available trading capacity from West Denmark to Norway

Connecting gas balancing markets between Sweden and Denmark



Note: Average daily evolution of available trading capacity between DK1 and NO2. The black horizontal lines; indicates the respective maximum and minimum nominal transmission capacity.

Source: Supply Authority's Electricity Market Report, 2022

As regards the gas market, Denmark and Sweden have merged in 2019 the two national gas balancing markets tolead to a single balancing zone for Denmark and Sweden – the Joint Balancing Zone (JBZ).

JBZ means that a shipper transporting gas to Sweden no longer needs to balance two systems, but must only be in balance in one system and no longer need to book capacity to move gas between Denmark and Sweden. The details of the project (in terms of tariff structure, market functioning, contracts, etc.) were approved by the two national regulatory authorities in Denmark (DUR) and Sweden (Ei) in March 2019.

The joint balance between Denmark and Sweden contributes to increased security of supply and more gas dealers on thebalancing boiler and the Danish gas exchange (balancing traffic platform), which could lead to increased competition for end consumers. In addition, there will be more efficient system synergies and administration. JBZ is in line with the thinking of the European *Gas Target Model (GTM)* and overall harmonisation objectives.

(ii) Measures to increase the flexibility of the energy system with regard to renewable energy generation, such as smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching,redispatching and curtailment, real-time price signals, including the roll-out of intra-day market coupling and cross-border balancing markets;

Remote electricity meters

Consumption flexibility is generally promoted through the roll-out of remotely read electricity meters and the establishment of an hourly billingmodel in the retail market. As described under (v), these measures allow the use of dynamic prices and price signals in real time for a wide range of customers. The legal requirements for the functionality of remote electricity meters include the recording of metering data every 15 minutes, data storage and sharing and transmission of data via the DSO to Energinets DataHub. The DSO reports metering data to the Danish DataHub to make it easier for electricity traders to settle the customer.

Autoproducers

The roll-out of remotely read electricity meters to all consumers, including autoproducers, aims to increase the transparency of then-forming activities and to clarify the importance of the electricity system. For example, remote electricity meters will make it possible to identify whether autoproducers bring benefits to the system and appropriate incentives can be introduced.

The current practice allowing internal electricity connections was codified in the Electricity Supply Act and the Order on internal electricity connections (Order No 438 of 27/04/2023) in 2023. The Act39 specifies, inter alia, that the electricity customer's production facilities mayeither be located (1) in the area covered by the electricity customer's place of consumption or (2) in an area immediately adjacent to the electricity customer's site, provided that (a) the electricity customer has a right of disposal over the entire area, and (b) the distance between the electricity customer's consumption installation and production facilities does not exceed 500 metres as measured by the bird flight from the electricity customer's consumption installation to the production facility.

No tax shall be paid for electricity produced. On the other hand, DSOs currently charge anenergy-based available hedge tariff or a fixed fee, which varies between DSOs and depends on the voltage level of each renewable self-producer connected under the current tariff model. Energy networks and DSOs develop and adapt their tariffmodels on an ongoing basis, which means that other tariffs and levies may apply to renewable autoproducers in the future.

In addition, the Electricity Tax Act does not require electricity tax to be paid for the consumption of electricity produced from wind power, hydropower, biogas, biomass, solar energy, wave and tidal energy and geothermal heat, which is directly consumed by the producer itself or by a tenant in a rental dwelling, when the installation is located in connection with the rental dwelling and the leased property is leased by the electricity producer.

Energy Communities

On 30 May 2021, a notice called "Order on renewable energy communities and citizen energy communities and for theteam between renewable energy communities and citizen energy communities and electricity trading companies and collective electricity supply companiesthere" entered into force. The Order implemented Article 22 of Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources (REDII) and Article 16 of Directive (EU) 2019/944 (Electricity Market Directive) and developed a legal framework for energy communities in Denmark.

In addition, one of the recommendations of Market Option 3.0 is to develop a framework for energy communities to balance the costs and savings provided by the Energy Community. In this context, a revised Electricity Supply Act will enter into force in April 2023, allowing DSOs to make a method of settling energy communities in proportion to the benefits they provide to DSOs according to their activities.

In addition, from 2022-2025, Denmark has established the possibility to seek funding for local energy initiatives that include energy communities. This possibility is regulated, inter alia, by Order No 642 of 30/05/2023.

Aggregators and consumption flexibility

To this end, Denmark is currently developing a methodology for independent aggregators allowing decentralised resources to participate in energy and ancillary services markets together with large market participants. The aggregation method is developed by Energinet. The Danish Energy Agency established the framework for it through 'Order on the tasks and obligations of electricity trading companies, aggregators and collective electricity supply undertakings in connection with the aggregation of activeelectricity consumption and production only', Order No 2250 of 29 December 2020.

In relation to this, the Danish TSO, Energinet, has developed new tender specifications for one of the major ancillary services, mFRR, which entered into force in October 2023, affecting independent aggregators providing energy ancillary services. In addition, Energinet is currently developing a new methodology for compensation mechanisms and imbalance correction in relation to independent aggregators, which will be described in their regulation H1 – switching of electricity supplier, Regulation D1 – settlement measurement, Regulation I – master data and Regulation C2 – Balance market and balance sheet settlement. The compensation and correction model ensures that the undependentaggregator is correctly settled without affecting financially the imbalance appreciation of balance responsible parties.

39L 37 Proposal for an Act amending the Electricity Supply Act and the Electricity Tax Act.

Promoting flexibility through grants

In Denmark, three grant programmes contribute mainly to research, development and demonstration of energy solutions. The three funding programmes are the EUDP, ELFORSK and the Innovation Fund, all of which support the development of new energy solutions and technologies.

EUDP

The Energy Technology Development and Demonstration Programme (EUDP) is a technology-neutral grant programme in itspriority. The EUDP aims to support Denmark's energy and climate policy objectives of high security of supply,fossil fuel depletion and reduction of greenhouse gas emissions in line with climate objectives. Efforts must go hand in hand with promoting business potential for growth and jobs in Denmark. The EUDP supports every year unitsand universities in the development, testing and demonstration of climate-friendly energy technologies and system solutions.

The EUDP strategy (2020-2030) has eight focus areas. These areas reflect the main challenges still hampering the achievement of the climate objective. The eight focus areas are:

1. More green electricity – and for multiple purposes
2. Energy efficiency
3. Passenger and light goods transport
4. Heavy transport and PtX in large scale
5. Heat storage
6. Green process energy
7. Flexible electricity use, grid deployment and digitalisation
8. CO_2Catch and Storage.

In 2022, the EUDP committed around 60 projects for State aid. In total, DKK 2 022 million was allocated to the development of new energytechnology in the EUDP in 498. See the breakdown in% in the graphs below, broken down into technology areas and the focus areas of the strategy.

ELFORSK

ELFORSK has an annual allocation of DKK 25 million for innovative projects to support electrification and the greeningof the Danish energy system. Grants are mainly awarded to research and development projects aimed at promoting efficient energy use and flexibility solutions in electricity and energy via data, digitalisation and sector coupling.

In 2022, DKK 20 million was allocated to 3 projects. More specifically, they are about optimising industries through learning, smart use of data in a port and digitalised interaction between transport and electricity networks.

Innovation Fund

The Grand Solutions programme under the Innovation Fund invests in cross-cutting research and innovation projects thatoffer new solutions to key societal policy challenges. In 2022, the area of green research, technological development and innovation resulted in DKK 455 million, of which projects in the field of energy were launched for approximately DKK 150 million.

In 2021-2023, a broad majority in the Danish Parliament allocated a total of DKK 1.3 billion to four green research and innovation partnerships. The Innovation Fund is generally responsible for these. The partnerships will bring together the country's researchers, businesses andorganisations to put Denmark at the forefront of the *storage and use of CO_2*, *PtX*, *climate and environmentally-friendly agriculture and foodreproduction* and *circular economy.*

Future projects

With a political agreement of June 2022, the *Climate Agreement for Green Power and Heat 2022,* a number of actions and analyses have been launched concerning,inter alia, demand response. Analytical work has been launched on the promotion of flexibility market, flexiblegrid connection conditions and network products, as well as for faster implementation of tariff models and analysis of tariffs to facilitate flexiblestability. The analyses are expected to be reported in 2024 and 2025.

(iii) Measures to ensure non-discriminatory participation of renewable energy, demand-sideaction and storage, including via aggregation, in all energy markets, where applicable;

Data hub

In 2013, DataHub was implemented on the Danish electricity retail market. DataHub is a central and independent IT system owned and operated by Energinet. In addition to handling all data communication between electricity market players, DataHub gathers standardsof data on customers, consumption, and prices from approximately 3.3 million Danish metering points (consumption and production metering points).

The data hub shall ensure a level playing field for all electricity suppliers through:

- Standardised processes for recording and distributing market data;
- A level playing field for access to the market;
- Automation and simplification of switching;
- Clear definition and delimitation of the roles of grid operators and electricity suppliers.

The players in the Danish electricity market are the main users of DataHub, who thus communicate with each otherabout their electricity consumption and ensure that they have the necessary information to settle customers. Stakeholders can communicate with DataHub through their own IT systems or via DataHub Market Portal, a web-based access to DataHub. Your electricitycustomers have the opportunity to see their own data in DataHub via their electricity supplier's website or electricity overblik.dk.

Wholesale model

In 2016, the 'wholesale model' was implemented in Denmark with the aim of ensuring that the electricity supplier has themain customer on with electricity consumers and that all costs related to electricity are merged into a single electricity bill and sent to the consumer. At the same time, the wholesale model should ensure increased competition and support the development of new products andservices for consumers. All information on consumption, grid tariffs, electricity charges and fees are communicated through the Data- Hub. The development of the electricity market and DataHub continues to ensure an efficient retail market in supporting the green transition in Denmark.

Overall, Denmark is well advanced in terms of sharing consumption data. Today, consumers are able to extract and share data from their smart meter system and make this data available to electricity system service operators through the DataHub. Therefore, many of the rules described in the Implementing Regulation on interoperability requirements and non-discriminatory and transparent metering and consumption data procedures are already in place on the Danish retail market. At present, Regulation No 75 of 25 January 2019, "Order on remotely read electricity meters and measurement of electricity in final consumption", is being revised and updated to be in line with the latest developments in the retail electricity market.

Aggregators

There are no specific barriers in Danish legislation that prevent independent service providers from entering into a contract with customers or aggregators to provide consumption flexibility. There is no difference between bids in the market that come from a single or an aggregated source. At the end of 2020, the rights of independent aggregators were determined in a notice, 'Order on the tasks and obligations of electricity trading undertakings, aggregators and collective electricity supply undertakings in relation to the aggregation of the electricity consumption and generation of active customers', notice No 2250 from 29 December 2020. It shall ensure that TSOs and DSOs shall allow aggregators to participate in all electricity markets and that participation shall not require the consent of other market players. The Order also allowed aggregators to operate independently from a PPA.

VES on the reserve capacity market

RES producers (other than domestic production) are obliged to sell their production to the market through a balancing responsibility-equal. The market for ancillary services is also open to the participation of RES. For example, several wind producers have delivered downward regulation to themar boiler.

It is now also possible for RES resources to be included in the reserve capacity market for manual reserves for the provision of upward adjustments. In the past, VE has also been able to enter these markets, but only by having a backup capacity available. At present, VE can be included in reserve capacity markets by submitting a forecast to Energinet with a maximum of 10 %likely not to be able to deliver. This forecast is approved by Energinet on the basis of previous forecast data.

(iv) Policies and measures to protect consumers, in particular vulnerable and, where appropriate, single poor consumers,and to improve the competitiveness and competitive conditions of retail energy saved;

Denmark has a number of consumer protection policies that ensure and aim to improve competition in the retail energy market. The actions are discussed below.

Social policy measures

Denmark considers energy poverty to be a social policy issue addressed inter alia by existing targeted social services. The measures are examined in Chapter 3.4.4 on energy poverty.

Electricity price comparison tool

The Danish NRA (Danish Utility Regulator) manages a price comparison portal called www.elpris.dk in order to provide more transparency in the retail electricity market and thus support consumers' active choice of electricity products. The pricecomparison tool provides an overview of all products offered on the retail market and allows for a combinationof prices and characteristics of the products, including 'climate-impact' characteristics. The Danish Utility Regulator also publishesquarterly electricity price statistics that provide insight into the average consumer price of electricity as well as an annual price survey.

Analysis of competition in the retail market

In order to ensure strong competition for the benefit of Danish citizens and businesses, the Danish Energy Agency published on 28 April 2021 an analysis of whether competition in the retail market is functioning well. Particular attention is paid to the division between monopolisticand competitive activities within vertically integrated companies.

The analysis concluded that there may be a risk that the current rules do not ensure sufficient "watertight bulkheads" flour forging the gridcompany and other group-related companies carrying out commercial activities, including electricityactivities exposed to competition, such as electricity trading and electricity generation.

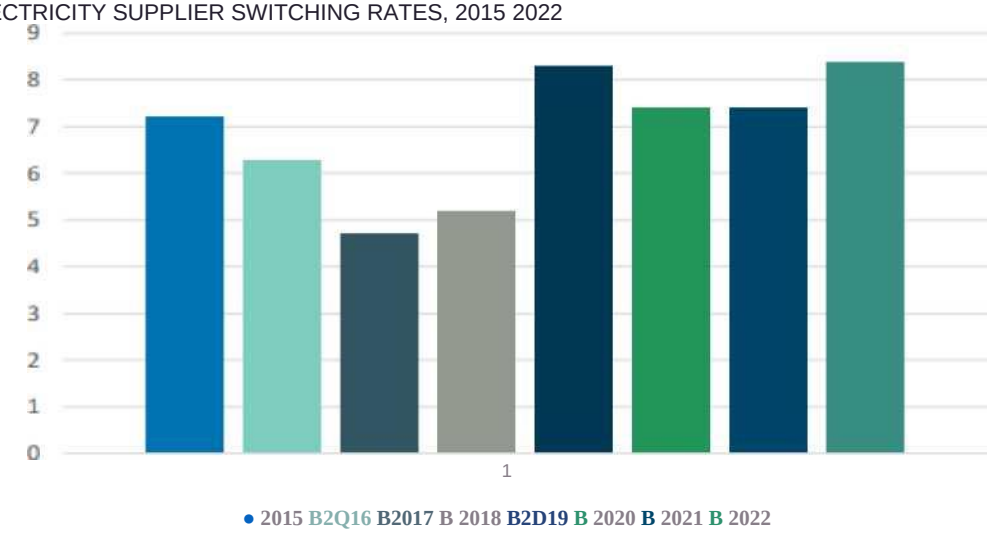
In June 2021 and based on the analysis, the Voting Agreement *An efficient and future-proof electricity infrastructure to support the green transition and electrification* adopted a number of adjustments to existing legislation to ensure a clear separation between the monopoly and other commercial activities of network operators, as well as a market price for the purchase of services from grid companies. The changes aim to ensure robust regulation of network operators through requirements for clear roles and transparency in their business conduct. The amendments aim to ensure that electricity customers and other players in the electricity market can be confident that there is fair and effective competition and that the performance of monopoly activities is notmore expensive than necessary.

In December 2023, there were 74 electricity suppliers from which consumers could choose. Despite potential savings, the external switching rate (for household and non-household customers with an annual consumption of up to 100.000 kWh), with onlythose switching to another supplier, has increased only slightly since 2015, see Figure 30. In 2022, the switching rate was 8.39 % on anet basis, with 7.36 % in 2021. The percentage of ships for 2023 is expected to show a slight increase compared to the previous year.

Figure 30

Electricity Supplier Movching Rate, 2014-2021

FIGURE 7 | ELECTRICITY SUPPLIER SWITCHING RATES, 2015 2022



Source: Energy networks

Source: Energy networks

Universal service

Denmark has phased out "supplier of last resort" and replaced it with a general obligation to deliver. Electricity suppliers are therefore required to supply all available products, to all household customers, at the request of the customer, in the areas where thelive-edge operator offers its products. It is not permissible to conclude fixed-term supply contracts with households. If there is a specific reason to expect inability to pay or willingness to pay, for example if the customer is known to have problems of settlement,the electricity supplier may ask for a guarantee from the customer. Only if the guarantee is not honoured can the electricity supplier cancel the contract. At the same time, price formation on the wholesale market is highly competitive. Market developments are closely monitored to ensure a proper price level for all consumers.

With the national hydrogen regulatory framework, hydrogen consumer rights have been assimilated to consumer rights for electricity and methane gas.

Freezing regime

In the context of tackling the energy crisis and rising consumer prices, *the Winter Aid Agreement* of 23 September 2022 established a temporary freezing scheme under which consumers and businesses can freeze part oftheir instructions for reimbursement at a later stage. The scheme covers electricity, gas and heat. The scheme covers all electricity and gas bills issued between 1 November 2022 and 31 October 2023. For heating bills, this is from 1 January 2023 to 31 December 2023. Everyone has the right to apply the scheme upon request to the energy supplier.

The effect of the freezing is to freeze when the price exceeds a statutory limit depending on the individual energy source (the limits are based on 2021 prices). The one-year freezing scheme has been followed by a year without anypayments. After that, the consumer must repay over a period of four years. In this respect, each energy company issimilar to approaching the State in order to borrow the total amount that the customers of the company have been frozen. The State guarantees customers' frozen amounts from energy companies if customers are unable to repay the loan. Loans and garanti ensure that energy companies do not face liquidity problems or losses as a result of having to freeze a proportion of customers'energy bills.

Since the 'Winter aid' agreement, energy prices have fallen significantly. As a result, relatively few households and companies have availed themselves of the freezing scheme. With few subscribers, there is a risk that the registered customers will be confronted with

energy companies having to increase their administrative fees significantly. As a result, an agreement has been reached on 29 March 2023 on the "servicing and reorganisation of the freezing scheme.

The change implies that the Danish Business Authority will take over the frozen amounts from the energy companies for price 100- when the freezing period expires on 31 October 2023 for electricity and gas and on 31 December 2023 for district heating. The Danish BusinessAuthority will then be responsible for collecting the frozen amounts from households and companies registered under the scheme. Households and businesses pay the frozen amount directly to DBA under conditions similar to those of the original freezing scheme – with the only difference that they are not subject to fees during the repayment period.

Electricity Tax

The electricity tax was lowered to the EU minimum threshold in the first six months of 2023.

Hot check

A fixed compensation 'hot check' of DKK 6000 was automatically paid in August 2022 to households with a total annual income of a maximum of DKK 650.000, and who are heated with gas boilers, district heating from certain district heating networks with a high share of gas and/or electricity (e.g. heat pump as a primary heating mode) with an electricity consumption of more than 1.500 kWh in December 2021. The target group was identified, inter alia, by using data from the Register of Buildings and Dwellings, the Central Register of Buildings and Dwellings (BBR), the Central Personnel Register, the CPR (Civil Registration System) and the Danish Income Register. Money was paid to 411.206 households between 2022 and now, and the last payments to households that have not yet received help but have applied for hot check in the additional application round are being wound up. The number ofeasily affected households can be said to represent a significant proportion of the total number of Danish households.

(v) Description of measures to enable and develop the demand response, including measures relating to dynamic pricing support tariffs

Smartmeter and flexing

From the end of 2022, all Danish electricity consumers have had a remotely read/smart electricity meter installed. At the same time, the TSO and the grid undertakings have implemented a new hourly charging model, called "flex billing" for small consumers (-100.000 kWh/year). In their regulatory work, energy networks ensure that end-users are always able to be settled at the same timeas for the imbalance market. This is the basic prerequisite for access to dynamic price products, enabling the exploitation of consumption flexibility activities.

Time-differentiated tariffs

In addition to dynamic electricity prices, DSOs may choose that their primary tariff method should be time-differentiated. This has been chosen by the DSO for the majority of customers. At present, the tariff is based on a static time-ofuse model, which consists of three different tariff levels for all customers and a summer/winter variation.

Inaddition to this, DSOs and TSO are developing their tariff models by further coordination at transmission and Distri butionlevel. The June 2022 climate agreement also includes two initiatives on tariff issues. One initiative provides an analysis of the societal benefits and distributional benefits of developing a TSO-DSO tariff model, as well as how this model could affect the flexibility of the energy system and what regulatory changeswill be required by such a model. The second initiative, the product working group, which has examined how to speed up the implementation of tariff models in Denmark. The Working Party has reported in the form of a report which can be accessed on the Danish EnergyAgency's website:
https://ens.dk/sites/ens.dk/files/El/hurtigere_implementering_af_tarifmodeller.pdf

Direct lines and geographically differentiated consumption tariffs

In 2023, the Danish Parliament adopted legislation allowing the construction of direct lines, as well as the introduction of geographically differentiated consumer tariffs and local collective tariff classification. These tools are intended to provide a stronger incentive to co-locate consumption and generation, thus avoiding or delaying additional investments and grid reinforcements. The-etable management of a direct line must be approved by the Danish Energy Agency on the basis of objective and non-discriminatory-application criteria laid down at the level of the Order (Order 437 of 27 April 2023 on permit criteria, conditions and application processfor the establishment of direct lines in the territory of land and sea). The criteria which refer to a distance criterion and that at least one of the installations must be new is intended to ensure that there are no parallel electricity grids in Denmark, wherethe conditions are intended, inter alia, to ensure that direct lines are not used, for example, for the distribution of electricity. To this end,

applications must comply with a number of mandatory conditions. If the applicant meets the criteria and conditions, the Danish Energy Agency approves thesearch for geographically differentiated consumption tariffs only for installations connected at 10 kV or higher. The Danish TSO and DSOs are responsible for developing the specific tariff methodologies for both direct lines and geographically differentiated for usertariffs.

Taxes

A large but decreasing share of electricity prices for Danish households consists of levies and taxes. The PSO fee has been phased out from the electricity bill. In addition to this, the 2018 Energy Agreement provides for a gradual reduction of the electricity tax. Therefore, wholesaleelectricity prices are expected to be more directly reflected in the overall electricity bill of consumers. In addition,- because of the high electricity prices in 2022, the electricity tax was reduced from DKK 69,7 per kWh to DKK 0,8 per kWh for six months from 1 January 2023.

3.4.4 energy poverty

(1) Policies and measures to achieve the objectives set out in paragraph 2.4.4, where appropriate;

Targeted social benefits

Denmark generally has a well-developed social safety net which guarantees the right to welfare benefits in case ofunemployment, illness and other needs. Denmark considers energy poverty to be an issue which, among other things, is addressed witheasy existing targeted social services. Pensioners and early pensioners may, for example, receive a heat supplement to pay heat and hot water. If the conditions are met, persons who have suffered a social event such as illness or unemployment may also receive financial assistance for individual expenses on the basis of a specific assessmentby the municipality. Some of the specific social benefits are listed and detailed below.

Heat surcharge

Old State pensioners and early pensioners (granted under the rules applicable before 1 January 2003) may, on application, receive heating supplements if their personal additional percentage is above 0. The additional rate is calculated on the basis of the total income of the pensioner and, where applicable, the spouse/cohabiting partner, in addition to the old-age or early retirement pension. The heatsupplement was thus targeted at the economically weakest part of pensioners. Only one in the household can receive the heating supplement and the pensioner himself must pay part of the heating cost of DKK 5.800 (2024) per year for single persons and DKK 8.700 (2024) per year as a cohabitee.

The heat surcharge is calculated on the basis of an average of three years' documented heating costs. If these do not exist, the heating costs are calculated on the basis of the years of available heat accounts or the expected heat consumption. If the tax- increases by 10 % or more for one year, the pensioner may have his or her heat supplement converted. The costs of heating Boli andheating water are included in the calculation of the heat surcharge. Once the heat supplement has been calculated, it is paid in proportion to the personal additional percentage. If the percentage is 100 %, the supplement shall be paid in full. If the percentage is 50 %, half of the calculated allowance shall be paid.

Personal allowance

National pensioners and early pensioners on old schemes (granted under the rules in force before 1 January 2003) may apply for a personal supplement from the municipality. Personal allowance covers reasonable and necessary costs, such as the payment of additional costs for heat or electricity. It is a prerequisite that the pensioner's financial situation is particularly difficult and that the pensioner does not have the money to pay the cost himself.

The municipality decides on personal allowances on the basis of a specific and individual assessment of the pensioner's overall financial situation. This assessment includes the pensioner's assets, the social pension and all otherconnections. A personal supplement may be granted as a lump sum or as an ongoing benefit if the conditions for each payment continue to be met.

Individual benefits

The municipality may, on a case by case basis, provide assistance for reasonably justified individual expenses under the Active socialpoli tik Act(Active Law) to a person who has experienced changes in his or her circumstances (such as unemployment or

illness), if theirown payment of the costs would make it significantly more difficult for the person concerned and the family to manage himself in the future. A number of situations cannot be qualified as amendments. For example, an increase in overheads cannot justify assistance.

Assistance may normally be granted only if the relevant costs have been incurred as a result of unforeseeable needs. However, on a case-by-case basis, the municipality may exceptionally provide assistance for foreseeable expenditure if the expenditure is essential to life.

Specific support

Persons who qualify for the self-sufficiency, repatriation, bridging allowance, education allowance or cash assistance (but do not necessarily receive the assistance) and who have high housing costs or a heavy dependantmay receive special support if the conditions for receiving the assistance are met.

The conditions for obtaining self-sufficiency and repatriation benefits, bridging allowances, educational assistance or cash assistance include the fact that the applicant has experienced a social event, such as illness, unemployment or termination of cohabitation. In addition, the event must result in the citizen being unable to obtain the necessary support for his or her or his family and that the need for assistance cannot be met by other benefits. Before the municipality grants special aid, it must be examined whether reasonable, cheaper housing can be provided.

In principle, the specific support is calculated as the difference between what it is assumed that the applicant will be able to pay for housing costs (known as the borderline amount) and the beneficiary's net housing costs. Net housing costs consist, in principle, of rent less housing benefits. In addition, costs relating to water, heating, gas, electricity, housing loans and similar current housing costs are included.

There are a number of detailed rules on the calculation of special support, including a daily subsistence allowance, deduction of income and payback obligation for persons with owner-occupied or cooperative dwellings.

It should be noted that in October 2023 the Government concluded the *Agreement on New Cash Assistance System*. The agreement will reform the current cash assistance system. In this context, special support for cash assistance recipients will be abolished. However, special support is maintained, so that beneficiaries other than cash assistance will continue to receive special support if theyset up the conditions. The amendments are expected to enter into force on 1 July 2025.

Heat pools

Denmark has a number of measures and pools targeting energy efficiency improvements. Among other things, they can support the transition of households to green energy sources. The concrete actions are listed and elaborated below.

Scrapping scheme

The cutting scheme takes the form of a subscription heat pumps where the energy service provider assumesthe ownership of the heat pump and responsibility for installation, operation and maintenance of the heat pump. The customer typically pays a shut-off-payment, a subscription fee and a price for the heat delivered to the building. With heat pumps on subscription, the consumeris relieved of a high level of investment and at the same time brings a number of service benefits. The scheme is specifically intendedfor low-value comst groups or homeowners in low-value dwellings without loan options, as these may typically have difficulties in bearing high investment costs in a heat pump.

Heat pump pool

The heat pump pool is one part of the former building pool. The pool was first opened in 2023 and allows homeowners to get subsidies for switching from either gas boilers, oil boilers, electric heat or bioboiler to an investment in a heat pump by replacing electric heating, oil, gas and pellet furnaces.

Energy Renovation Pool

The Energy Renovation Pool is the second part of the former building pool. The pool was opened for the first time in 2023 and provides theopportunity to receive a grant for energy renovation grants. This may be, for example, a subsidy for newpigeons or a

grant for post-installation insulation of insulation, or a subsidy for new roofs. The scheme targets buildings with the worstenergy labels (E, F and G).

District heating fund

The district heating pool provides grants for the roll-out of district heating through conversion projects at district heating companies that distribute heat to final customers. The subsidy is granted for the roll-out of the district heating network itself and aid is given per estimated number of conversion of oil and gas furnaces to the minimum connection in order for the project to be viable. The pool lowersconsumer prices for consumers joining the district heating project and will contribute to reducing CO_2 emissionsfrom oil and gas furnaces in the individual heat supply. District heating companies can receive grants from the pool forconversions projects where energy efficient district heating networks are deployed in new district heating areas and individual oil and gasboilers are converted into district heating.

In addition, in the field of energy, a number of temporary measures have also been implemented due to high energy prices in recent years. A selection of these actions is listed below. With *the agreement on the Finance Act for 2024*, the district heating pool was transferredto DKK 2 024 million in 150,*with A contract for the implementation of the Green Fund 2024*, a further DKK 265 million was added to the district heating pool in 2024 and DKK 200 million in 2025.

Decoupling system

The decoupling scheme exempts private home owners from decoupling from the gas system by covering the decoupling fee of DKK 10.125 when switching to another heat source. The *agreement on the 2024 Finance Act* also added a further DKK 240 million in 2024-2026 to the decoupling scheme.

One-off payments to certain beneficiaries in exceptional circumstances

Denmark has implemented a number of one-off payments to specific target groups to address rising energy prices and inflation. It is noted that one-off payments represented temporary solutions at a time of exceptionally high energy and price increases.

Varmechecken

In August 2022, as a direct consequence of the energy crisis, a one-off subsidy was paid to low-income households and heat sources subject to exceptional price increases during the 2021-2022 heating season. This hot check is DKK 6.000 and is a tax-free one-off payment. Over 400.000 Danish households have received the hot checken. It should be noted that againstthe roofs of the hot cheque a wider group than the delimitation of energy-poor households.

Winter help to mitigate rising energy bills[40]

A broad political agreement on Winter aid was reached in the autumn of 2022 with a wide range of the Folketing's parties. It included the establishment of a temporary and voluntary scheme for households and businesses to freeze part of their energy bills for later payment. This is a scheme that small and medium-sized enterprises, which are under pressure on the economy due to increases in energy prices, can choose to make use of.

36 https://fm.dk/nyheder/nyhedsarkiv/2022/september/regeringen-indgaar-bred-aftale-om-vinterhjaelp-for-at-afbo- e-de-stigende-energy/

At the same time, the parties to the agreement agreed to grant a one-off increase in child and youth benefit of DKK 660 per child in January 2023, which would help the families of children through the current situation of high inflation. In order also to support theroll-out of district heating, the pool is increased by DKK 150 million in 2022 and DKK 100 million in 2023.

At the same time, the general electricity tax was temporarily relaxed to the EU minimum rate of DKK 0,8 per kWh in the first six-downwards of 2023. A reduction in the electricity tax benefits all Danes in the form of lower electricity consumption costs. In addition, the relief reduces income disparities, as the impact of the relief is relatively greatest on the lowest income grapsper.

Additional one-off tax-free payments

A broad political agreement was reached in June 2022 on a series of one-off tax-free payments tocertain beneficiaries to provide targeted help to these groups in a context of rising energy prices. As a result of the agreement, national pensioners who are entitled to an old-age cheque for 2022 received additional financial support of DKK 5.000 per litrewho received senior pensions, early retirement, pre-retirement, flexitime and early retirement pensions received DKK 2.000 free of tax. SU- recipients with disabilities and single parents also received DKK 2.000. All the lump-sum payments were tax-free benefits which did not result in a deduction from the citizen's other benefits.

A further political agreement was reached in February 2023 to compensate recipients of elder cheques and certain SUs beneficiaries for the high inflation. As a result of the agreement, national pensioners who are entitled to an old-age cheque for 2023 have received additional financial aid of an additional DKK 5.000 and single parents have received a lump sum of DKK 1.000. Both amounts were tax-free benefits which are and should not be deducted from the other benefits ofthe person concerned.

In addition, a political agreement was reached in February 2023 on inflation aid for financially vulnerable families with children. Per-person receiving benefits under the cash assistance system or rehabilitation benefit for January 2023 will thus receive inflation assistance of up to DKK 13.500 for up to 3 children under the age of 15. For the first child, DKK 7.500 is paid as assistance, the second child is paid DKK 3.750, and the third child is DKK 2.250. The amount is tax-free and should not be deducted from theother benefits provided by the child.

3.5 dimension of research, innovation and competitiveness

(1) Policies and measures relating to the elements set out in paragraph 2.5;

The Danish efforts for research, innovation and maturation of green solutions and climate and energy technologies are rooted ina mission-borne approach, in which a number of strategic focus areas have been identified. As part of the effort, Statefunding for green research was channelled through a variety of channels, mainly Denmark's Innovation Fund, Danmarks Free Research Fund, ELFORSK and the three Development and Demonstration Programmes: Energy TechnologyEnlargement and Demonstration Programme (EUDP), Environmental Technology Development and Demonstration Programme (MUDP) and Green Development and Demonstration Programme (GUDP). In addition, efforts consist of a number of initiativessupporting prone players in promoting a market for green technologies.

The effort can be divided into three main priorities phases:

- Climate research and innovation and energy technology
- Development and demonstration
- Market maturation

Research and innovation

In 2020, Denmark launched a green research strategy that sets the direction for research and innovation of green loosesolutions. Against this background, Denmark has allocated significant funding to research into green solutions, which is implemented, inter alia, through the four research and innovation partnerships.

Green research strategy and green missions

Denmark launched in September 2020 a comprehensive national strategy for green research and development *The future's green loose– Strategy for investing in green research, technology and innovation* to ensure a targeted, coherentand strengthened green research and innovation effort in response to the most important challenges to develop responses to meetDenmark's climate objectives and where research and business strengths are well placed to develop new technologies and create export opportunities and green jobs in Denmark.

With the strategy, Denmark has identified four green research and innovation missions that are particularly strategically important to meet Denmark's climate targets and that require targeted research, development and demonstration efforts:

- Capture and storage or use of CO_2
- Green fuels for transport and industry (PtX, etc.)
- Climate- and environment friendly agriculture and food production
- Circular economy with a focus on plastics and textiles

Figure

The missions address concrete challenges in sectors where the need for new solutions and the potential to achieve green objectives is greatest in both Denmark and globally.

With the agreements on the distribution of the research reserve in 2021-2024, Denmark prioritised a total of approximately DKK 1.76 billion (2024-pl) for the four green missions to contribute to research and development of the technologies. The Missions are realised through four partnerships of universities, knowledge and innovation institutions and companies. The Partnerships have developed joint roadmaps for a comprehensive research and innovation effort to help deliver on the four missions. The Innovation Fund has allocated four partnerships to achieve the targets and milestones set out in the roadmaps developed by a wide range of actors in each of the four mission areas up to 2030 and 2050, see Box 2.

Green research strategy and research and innovation partnerships support that research and innovation mixesaccelerate the green transition and the achievement of climate objectives. The government is continuously developing the framework for green innovation together with universities and experts.

Box 2

Four green research and innovation partnerships

Mission 1 – Green fuels for transport and industry: The MissionGreenFuels Partnership

The partnership will develop solutions to help phase out fossil fuels in shipping, heavy road transport, aviation and the maritime shipping industry. The partnership is working on two lines. One strand focuses on the commercial scaling up of already known technologies, the realisation of large-scale demonstrationprojects and the building of new value chains targeting transport customers in the relatively short term. The second track is also about research into new business models and forms of financing, behaviour and citizen engagement in the construction of PtX facilities. The PtX Partnership was launched in June 2022.

Mission 2 – Hunting and storing or using CO_2: INNO-CCUS Partnership

The partnership will contribute to achieving climate objectives by developing solutions to ensure effective capture and layersof CO_2 as well as the development of methods to reuse CO_2 as building blocks for new materials. The focus is, inter alia, on the chemical and biological capture of CO_2 and the storage and use of CO_2.

INNO-CCUS is a broad-based partnership with 54 different actors. Partners are public and private actors, including universities, knowledge institutions and large and small businesses. The partnership wasplanned in June 2022. So far, 20 projects in the five areas focus both on short- and long-term solutions that together can reduce CO_2emissions most effectively.

Mission 3 – Climate and environmentally-friendly agriculture and food production: AgriFoodTure Partnership

The partnership is united around a shared vision for the green transition of the Danish agricultural and foodsector. The partnership is the result of a joint roadmap, which approximately 300 researchers and experts from all Danish universities and several development organisations in the Danish food cluster wrote andsent in during the Innomission call of the Innovation Fund in April 2021.

The partnership was launched in April 2022. The partnership has already launched 11 projects to promotenew knowledge and solutions for the agriculture and food sectors. These include reducing greenhousegases from plant production, developing plant-based foods and developing completely new types of feed additives to reduce methane emissions from cows.

Mission 4 – Circular economy focused on plastics and textiles: The Circular Economy Partnership for Plast and Tekstil

The partnership will work to develop, deliver and implement solutions that can contribute to a more sustainable use and recycling of plastics and textiles.

So far, 14 projects in the partnership will explore, among other things, how information technology can contribute to better waste sorting, how engineers and moderators through better design and recycling technologiescan reduce CO_2e-emissions from plastics, textiles and other products, and how from plastics, text inclays and other products through robotics, and how circular business models can be established forclay and material circuits so that end-of-life products are not burned off but instead recycled. Thepartner was launched in August 2022.

Innovation Fund Denmark

Denmark's Innovation Fund provides funding for the four green research and innovation missions, see above, as well as for green research, technology development and innovation in seven green themes.

The seven green themes are:

- Energy production, etc.
- Energy efficiency
- Agriculture and food production
- Transportation
- Environment and circular economy
- Nature and biodiversity

- Sustainable behaviour and societal impacts (cross-cutting)

The Innovation Fund's allocation earmarked for the green area in 2024 was DKK 656.5 million, of which DKK 318.3 million was allocated for the realisation of the four green missions, cf. above, and DKK 338.2 million for green research, technology development- and innovation in the seven green themes.

Denmark's Innovation Fund provides funds specifically for strategic energy research across the programmes Innomis- sions, Grand Solutions, InnoBooster, Business Researchers, Innoexplorer and International Cooperation.

Development and demonstration

Most of the technologies that can contribute to the 70 % target require primarily development, testingand demonstration for commercialisation and scale-up. These are technologies that have been developed and have been successfully tested and have proven their function in its final form.

Development and demonstration programmes

Denmark has three concrete programmes for the implementation of public funding for the development and demonstration of green technologies: Environmental Technology Development and Demonstration Programme (MUDP), Green Development and- Demonstration Pro (GUDP) and Energy Technology Development and Demonstration Programme (EUDP).

Since the establishment of the UDPs in 2007, the programmes have supported more than 2.400 demonstration and developmenttests with more than DKK 10.1 billion.

The Energy Technology Development and Demonstration Programme (EUPD) provides funds for the development and demonstration of new innovative energy technologies. The aim of the EUDP is to support Denmark's energy policy objectives of ensuring security of supply, independence from fossil fuels and meeting climate targets. Efforts must go hand in hand with promoting business potential for growth and jobs in Denmark. Since itsestablishment in 2007, the EUDP has supported more than 1200 innovative projects with more than DKK 6.2 billion.

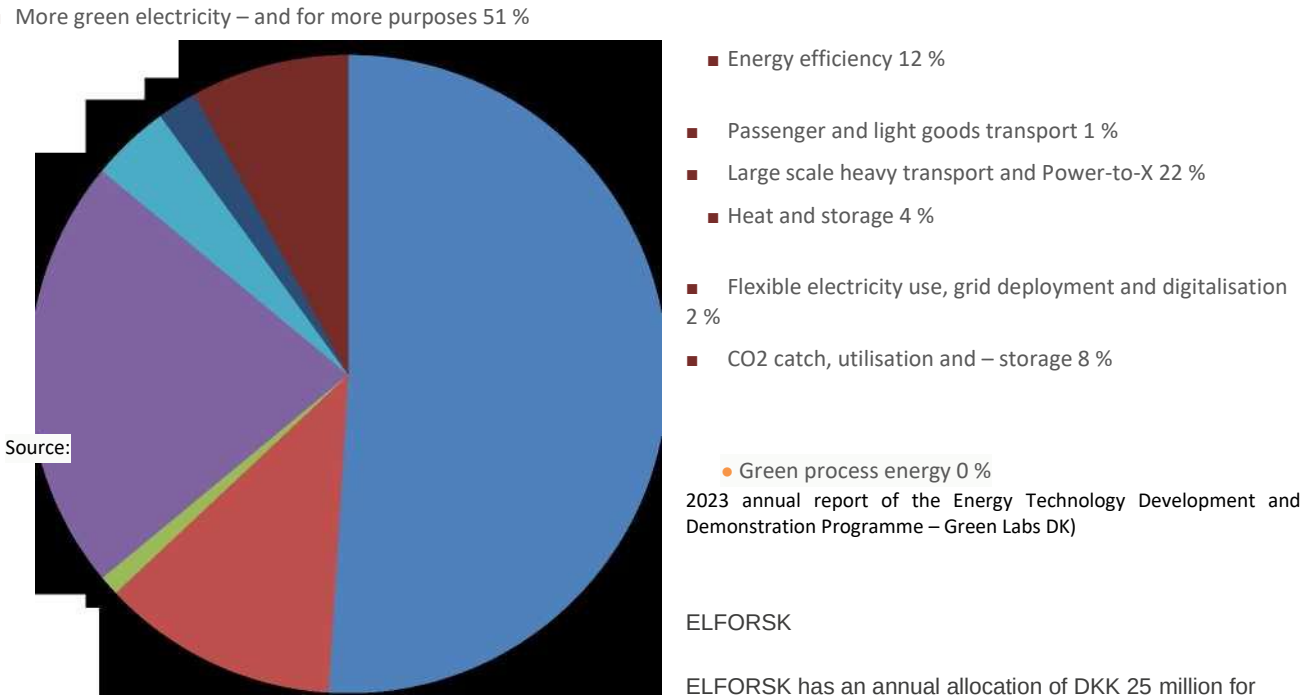
In 2020, the EUDP received a new strategy towards 2030, focusing in particular on eight areas reflecting the challenges facing society in the coming period. The areas include renewable energy, energy efficiency, electrification and sustainable fuels (PtX, etc.) for transport, flexible electricity use, grid expansion and digitalisation, and CCUS. The EUDP focuses on strategic investments that provide CO_2 e-reductionsand reflect the needs of the green transition.

The EUDP is financed by funds resulting from the implementation of the Research Reserve as well as other appropriations provided for in the Finance Act. In 2024, a total of DKK 521.7 million was allocated to the EUDP under the Finance Act and the Research Reserve. In addition to general energy research, there are ring-fenced funds for pyrolysis as well as research on environmentally friendly and energy-efficient production of oil and gas.

In 2023,the EUDP provided DKK 543 million in grants for 67 projects on the basis of 169 applications. Figure 32 shows the division of funds into focus areas.

Figure 32

EUDPcommitments by focus area in 2023



Source: 2023 annual report of the Energy Technology Development and Demonstration Programme – Green Labs DK)

ELFORSK

ELFORSK has an annual allocation of DKK 25 million for innovative projects to support the electrification and green transition of the Danish energy system. Grants are mainly awarded to research and development projects aimed at promoting efficient energy use and flexibility solutions in electricity and energy via data, digitalisation and sector coupling.

In 2022, DKK 20 million was allocated to 3 projects concerning the use of data in a port and the digitisation of thegame between transport and electricity networks.

Market maturation

When technologies are mature, it is essential to promote a market for the technology. Denmark has launched a number of initiatives that support private actors in promoting the market uptake of green technologies. This includes a number of funding opportunities as well as support schemes for technologies such as CCS and PtX.

Commercial lighthouses

In 2022, by agreeing on a new reform package for the Danish economy, a majority of the Danish Parliament's parties supported the development of eight commercial lighthouses. Business lighthouses will, among other things, mature green technologies in PtX, sector coupling, CCS, water technology, Biosolutions and sustainable construction for concrete business solutions. A total of DKK 1 billion is invested for the establishment and development of local business lighthouses in which state authorities contribute to the development of the eight partnerships with businesses, municipalities, universities, etc.

Danish Export and Investment Fund

In 2022, Denmark set up the Danish Export and Investment Fund by bringing together Vækstfonden, EKF Danmark's Eksportkredit and Danmarks Grønne Investment Fund. With a single fund, companies will have access toone pooling of government co-financing efforts that can help with capital and guidance where the private market cannot or does not want to take the risk alone. At the same time, existing fundingrates and specialised competences of existing funds are maintained and strengthened, for example in the area of financing the green transition. In order to strengthen the Fund's green effort, DKK 1.7 billion is permanently contributed to strengthening export efforts through commercial, green scale demon stringprojects.

Investment support scheme for innovative green key technologies

In 2022, Denmark set up an investment aid scheme of DKK 244 million, which supports companies' incrementin new green technologies and solutions focusing on testing, demonstrating and scaling the new technologies, thereby helping to support increased

innovation, development and market maturation of green technologies. In June 2022,the Danish Business Promotion Board granted funding of DKK 225 million to 14 projects to develop the PtX and hydrogen area throughout the country.

EU Regional Fund and EU Social Fund Plus (EU Structural Funds)

On the basis of the EU budget from July 2020, Denmark receives approximately DKK 2.7 billion from the EU Structural Funds for the 2021-2027pro gram period. The government has put a green focus on structural funds, consisting, inter alia, of the development of green SMEs and the development of green power positions, of which five out of eight commercial lighthouses are to promote green brick positionsand transitions in, inter alia, CO_2capture and storage, PtX and sector coupling, Biosolutions and water technology, as well as the development of relevant green skills, green entrepreneurship, etc., as well as the development of relevant green-competitiveness, green entrepreneurship, etc.

IPCEI

Denmark participates in an Important Project of Common European Interest (IPCEI) for hydrogen and has allocated a total of DKK 850 million to Dan mark's participation. DBA has selected two projects to participate in the joint European project and receive funding. The two projects will build large volumes of electrolysis capacity and produce alternative fuels as well as dekar- boning industrial processes.

Green investment scheme

In 2023, Denmark launched a green investment scheme of DKK 1 billion, which is aimed at establishing new or expanding existing production facilities in the fields of wind technology, Power-to-X technology (electrolysers)and entities producing key components thereof. In addition, the scheme also covers related production and extraction of related critical raw materials. The scheme makes use of the European Commission's temporary State aid rules, *Tem- port Crisis and Transition Framework,* applicable until the end of 2025. The green investment scheme opened for applications in 2024 and a decision to grant aid will be taken in the 1st half of 2024.

Comprehensive research, development and maturation roadmap

An expert group on the impact of research on the green transition was set up in June 2022. The expert group has been tasked with developing an analytical framework to assess the impact of research and innovation efforts on the development and maturation of solutions that contribute to the reduction of greenhouse gas emissions. The work should besuccessful in 2024.

In 2024, inter alia further to the work of the Expert Group, the Government will consider the forward-looking mission-driven research efforts as well as the cross-cutting efforts to accelerate the development of green solutions and how prioritiesbest support the objectives of the Climate Law, including with a focus on the long-term climate goals post-2030.

(ii) Where appropriate, cooperate with other Member States in this area, including, whereappropriate, information on how the objectives and policies of the SET Plan are being translated into a linguisticcontext;

Denmark launched an action plan to promote Danish participation in EU green programmes in December 2021,under the EU Innovation Fund and Horizon Europe. The Action Plan will help actors access moreEuropean knowledge, cooperation and funding to contribute to the green transition. The Action Plan launches a number of initiatives in the fields of advice, communication and advocacy.

As part of strengthening Denmark's repatriation of funds from EU support programmes for research, development and demonstration of climate and energy technologies, DKK 6.5 million was allocated in 2023 to strengthen Danish efforts to guide Danish companies on the repatriation of funds from the EU Innovation Fund and other EU support programmes. A secretary riat and travel team hasbeen set up in the Danish Energy Agency to assist in the development and qualification of project applications and to support a proactive national and international presence in fund related activities of the Funds and other Member States.

Denmark is also working globally to increase cooperation in research and technology development, as well as the repatriation of knowledge,calls and solutions – including through the Danish Innovation Centres and government cooperation. For example, Denmark, together with the United States, Norway, the Global Maritime Forum and Mærsk McKinney Møller Center for Zero Carbon Shipping, is leading an international public-private partnership to decarbonise shipping called Zero-Emission Shipping Mission under the international forum, Mission Innovation. In addition, Denmark concluded a cooperation agreement with the US onenergy technology-related research in April 2021.

(iii) Financing measures in this area at national level, including Union support and theuse of Union funds, where appropriate;

See previous section 3.5.2.

SECTION B: ANALYTIC BASIS

4. Current situation and upto date with existingpoles and measures

This section presents assumptions and results from Denmark's *Climate Status and Outlook 2024* (KF24) (KEFM, 2024) 41, which is a projection up to 2035 with existing policies and measures (WEM).

Technology cost projections and results are from Denmark's technology catalogues (Danish Energy Agency, 2024). The present-situation refers to 2022, the most recent statistical year. Projections refer to 2024-2040.

For knowledge of parameters and variables used for data see Annex 1. For detailed data on greenhouse gas emissions and removals, see Annex 2. For detailed energy prices, see Annexes 3 and 4. For a detailed description of existing actions and the modelling platform see Annex 5. For CO2 ETS price data used for KF24 see Annex 6. Forprojections of air pollutants see Annex 7.

4.1 Projected evolution of main exogenous factors influencing energy system and GHG emission developments

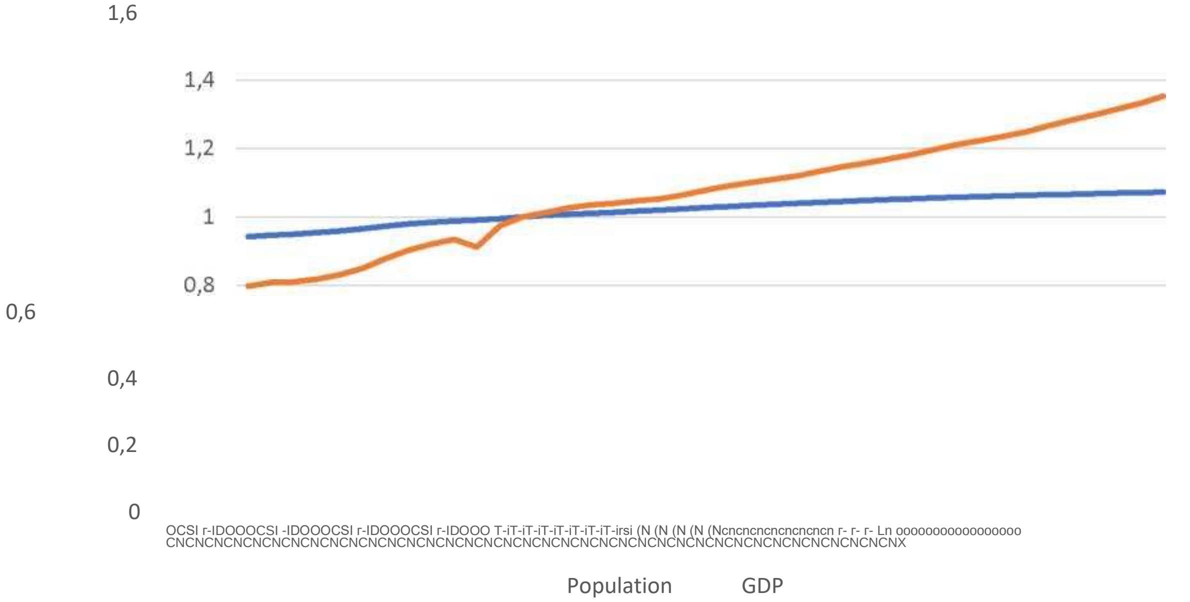
(i) Macroeconomic projections (GDP and population growth)

As shown in Chart 33, the population is expected to grow by 2022 % from 2030 to 2,7, while GDP is expected to grow by 7.8 %. The-trend is expected to continue beyond 2030, leading to population growth of 5.5 % and GDP growth of 19.6 % in 2040 compared to 2022.

41 https://kefm.dk/klima/klimastatus-og-fremskrivning/klimastatus-og-fremskrivning-2024

Figure 33

Population and GDP 2010-2050 [2022 = 1]



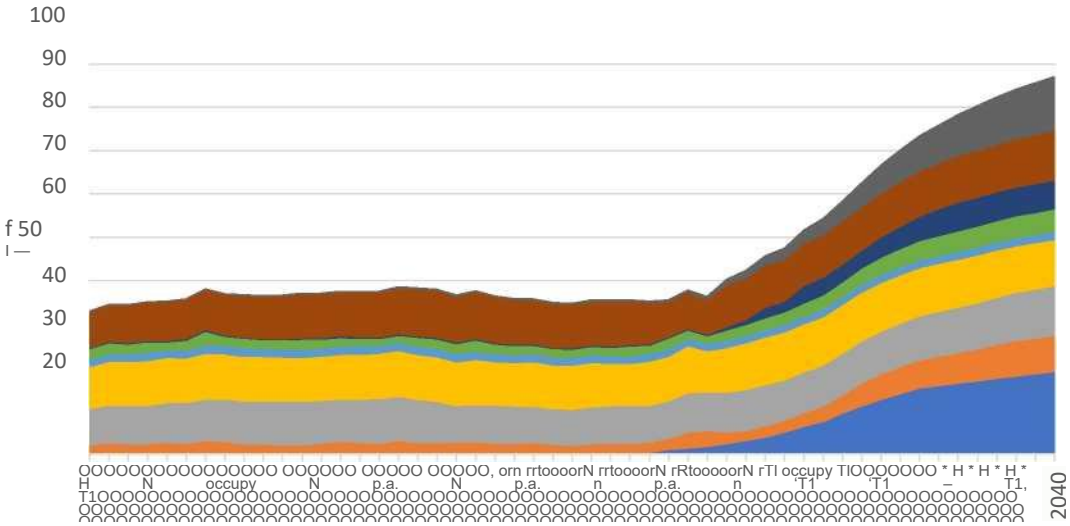
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

(ii) Sectoral changes that are expected to affect the energy system and greenhouse gas emissions

Figure 34 shows electricity consumption for the sectors from 1990 to 2040 and highlights significant impacts, mainly due to higher demand for electricity for data centres (HSDCs), electrification of road transport and to PtX. Greenhousegas flows will be affected to a lesser extent due to the increased amount of renewable energy capacity in the same period.

Figure 34

Danish electricity consumption (TWh) by sector 1990-2040

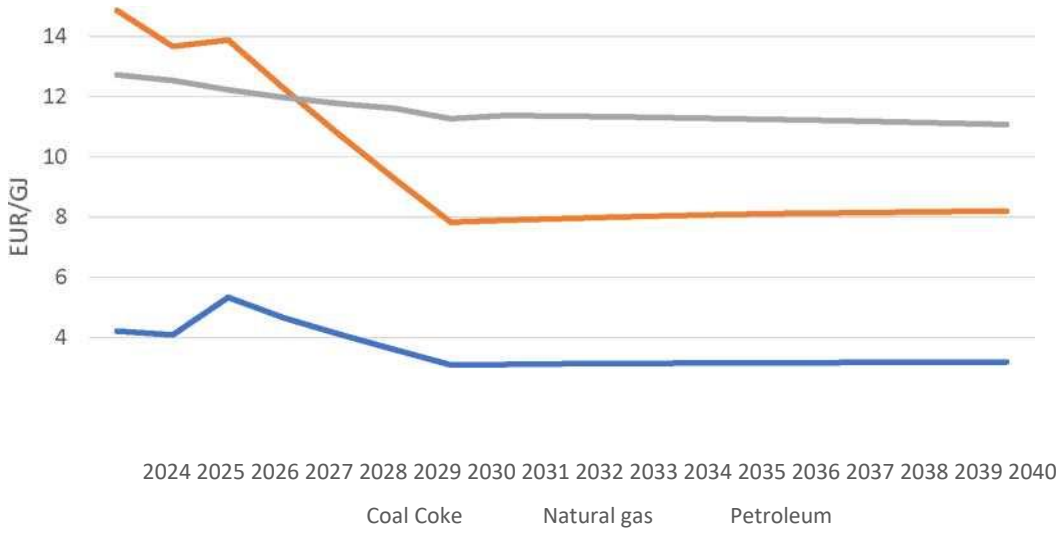


Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

(iii) Global energy trends, international fossil fuel prices, EU ETS carbon price

Figure 35 shows projections of fossil fuel prices used as assumptions in the National Energy and Climate Plan.

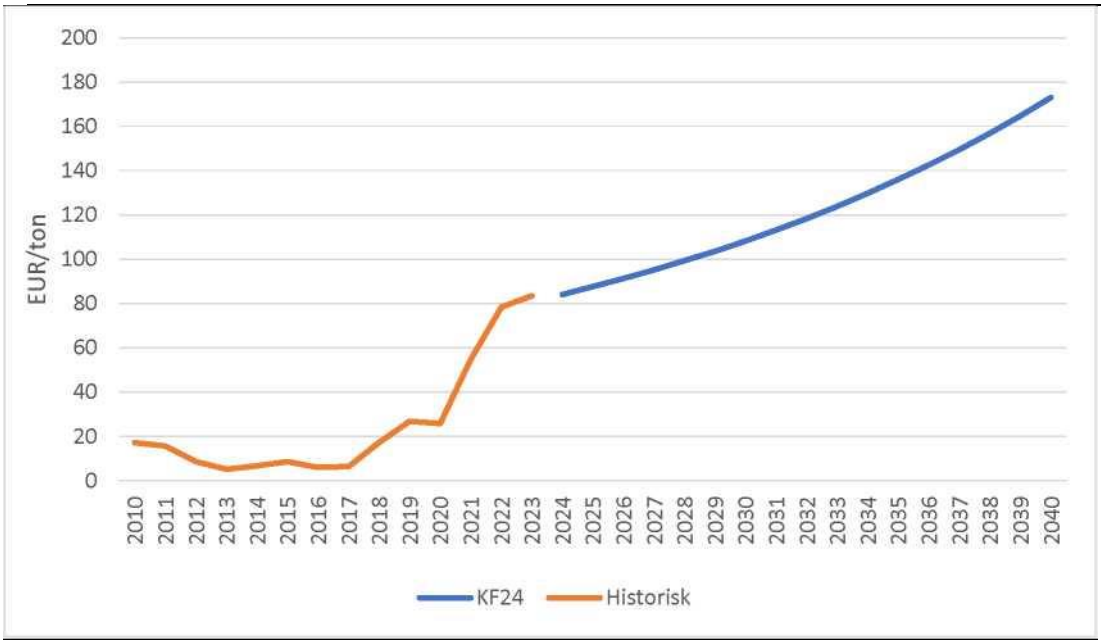
Figure 35
Fossil fuel prices 2024-2040 [EUR 2023/GJ]



Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Figure 36 shows projections for the CO2 allowance price for ETS sectors used in the National Energy and Climate Plan.

Figure 36
CO2 allowance price in ETS sectors used for projections in the National Energy and Climate Plan

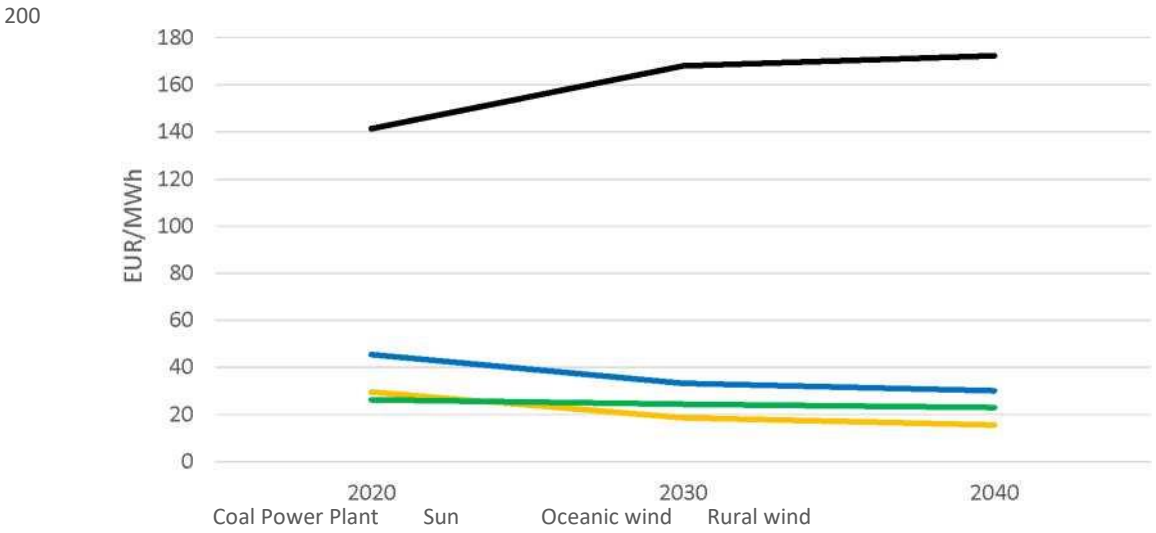


Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

(IV) Technology cost developments

Figure 37 shows the cost of electricity generation (LCoE) for wind and solar power compared to a coal power plant. Procriptshows that the LCoE for wind and solar power is lower than that of a coal-fired power plant throughout the projection period.

Figure 37



Note: For coal power plants, the starting point is "Combined heat and power coal 400-700 MW";
Source: *LCoE calculator*, Danish Energy Agency

4.2 Dimension related to decarbonisation

4.2.1 Greenhouse gas emissions and removals

(1) Trends in current greenhouse gas emissions and removals in the EU ETS, burden sharing sectors, LULUCF sectors and different energy sectors

Thetrends in current Danish greenhouse gas emissions and removals from 1990-2022, as well as projection to 2040, are shown in Figure 38. A key result is that total greenhouse gas emissions without LULUCF have fallen by 41 % from 1990-2022.

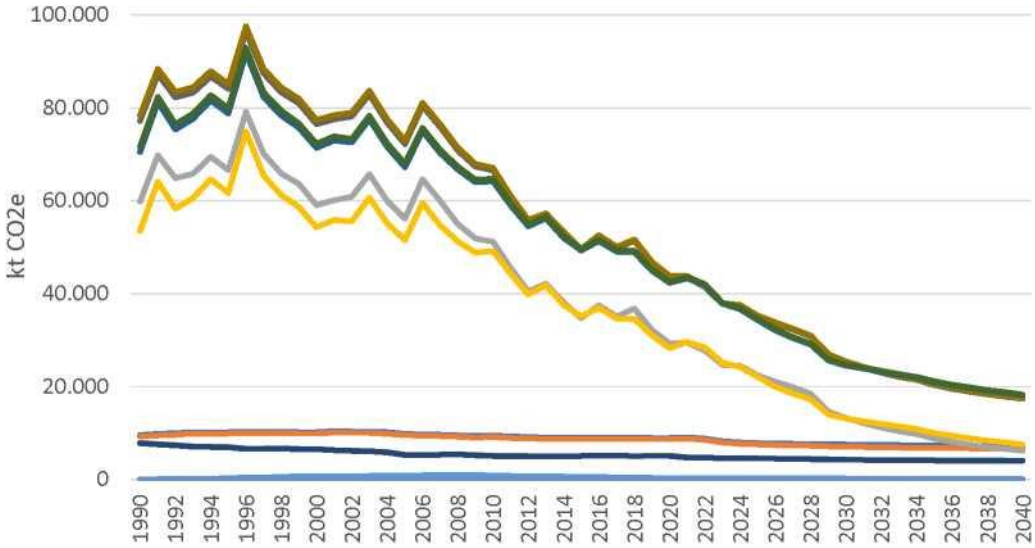


Figure 38

Greenhouse gas emissions by type of gas from 1990-2040

120.000

● MMMW SF6

Note: Co_2 Catch and Storage are integrated under CO_2 and total emissions
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Other results from 1990-2 022 are:

- Total GHG emissions with LULUCF have fallen by 46 %.
- CO2 emissions without LULUCF have decreased by 47 %.
- CO2 emissions with LULUCF have decreased by 54 %.
- CH4 emissions without LULUCF have decreased by 8 %.
- CH4 emissions with LULUCF have decreased by 8 %.
- N2O emissions without LULUCF have decreased by 40 %.
- N2O emissions with LULUCF have decreased by 40 %.

CH4 emissions with CH4 from LULUCF
CO2 emissions with net CO2 from LULUCF
HFCS
N2O emissions without N2O from LULUCF
Total (with LULUCF)
Total (without LULUCF)

In thecase of a national authority of the European Parliament and of the Council of the European Parliament and of the Council of the European Parliamentandofthe Council of the European Parliament and of the Council of the European Parliament and of the Council of the European

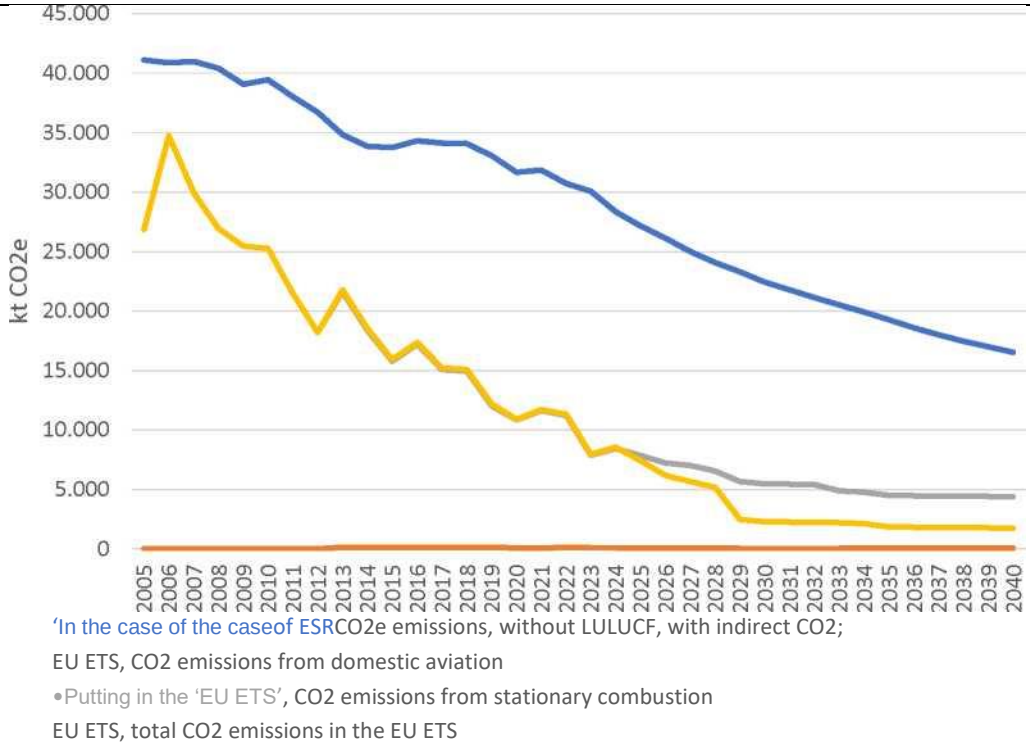
Figure 39 shows greenhouse gas emission reductions achieved, divided between emissions covered by the EU ETS and non-ETS emissions from 2005-2022, as well as a projection to 2040.

From 2005, when the reporting of ETS emissions started, to 2022:

- EU ETS CO_2emissions have decreased by 58 %.

- non-ETS CO2e emissions without LULUCF have decreased by 25 %.

Figure 39
Greenhouse gas emissions by EU ETS and non-ETS sectors from 2005-2040



Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Greenhouse gas missions have been reduced in particular in the energy sector, partly due to a decrease in emissions in the energy and conversionsector, as shown in Figure 40 below.

Results of greenhouse gas emission reductions by IPCC energy sector from 1990 to 2022:

- Emissions from the energy sector have been reduced by 49 %.
- Emissions from the energy and conversion sector have been reduced by 70 %.
- Emissions from the manufacturing and construction sectors have been reduced by 42 %.
- Emissions from transport have increased by 5 %.
- Emissions from other sectors have been reduced by 62 %.

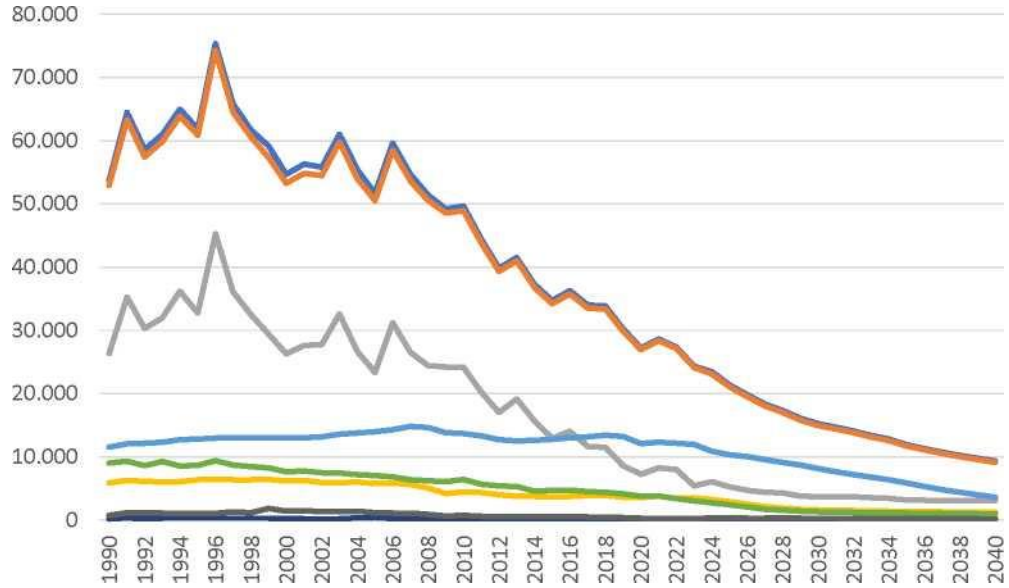


Figure 40

*ΓΓΓΓΓΓΓ02B2. Oil, natural gas and other emissions from energy production

Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

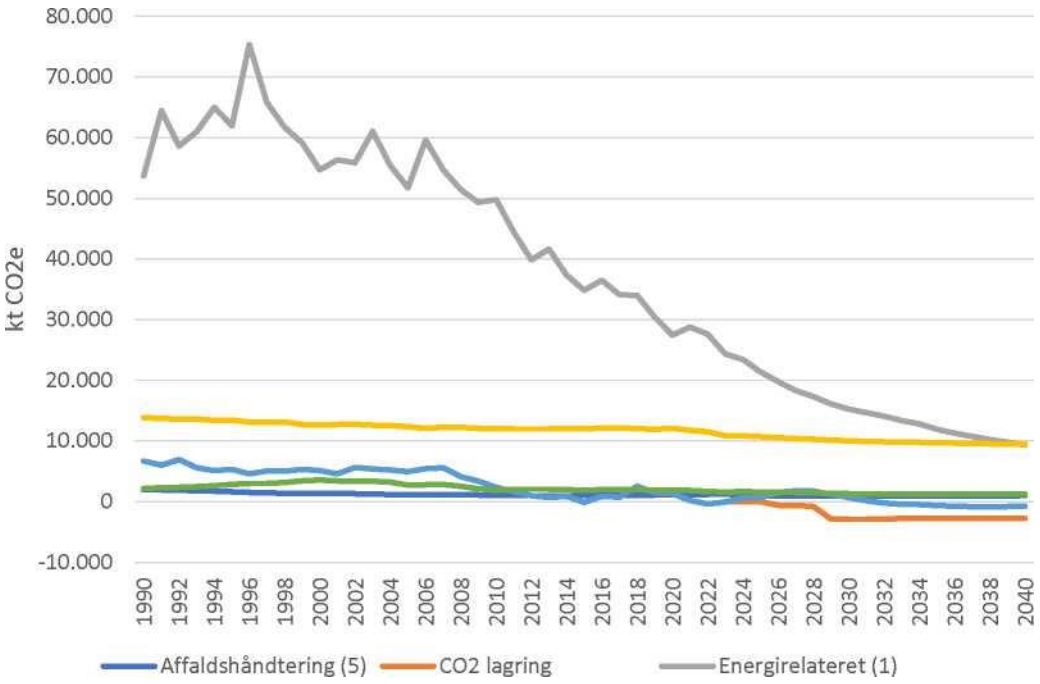
Figure 41 shows the total GHG emissions by IPCC primary sectors from 1990-2022:

- Energy related has been reduced by 49 %.
- Process emissions have been reduced by 21 %.
- Agriculture has been reduced by 17 %.
- LULUCF has been reduced by 106 %.
- Waste management has been reduced by 38 %.

1. Energy (with indirect CO2)
1A1. Energy and conversion sector
1A3. Transportation
1A5. Other

'IN THECASE OF A MEMBER STATE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL OF MINISTERS OF THE EUROPEAN PARLIAMENT AND OF THE COUNCILOF THEEUROPEAN COMMUNITIES, THE MEMBER

Figure 41



Greenhouse gas emissions by IPCC primary sectors from 1990-2040 (kt CO2e)

Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

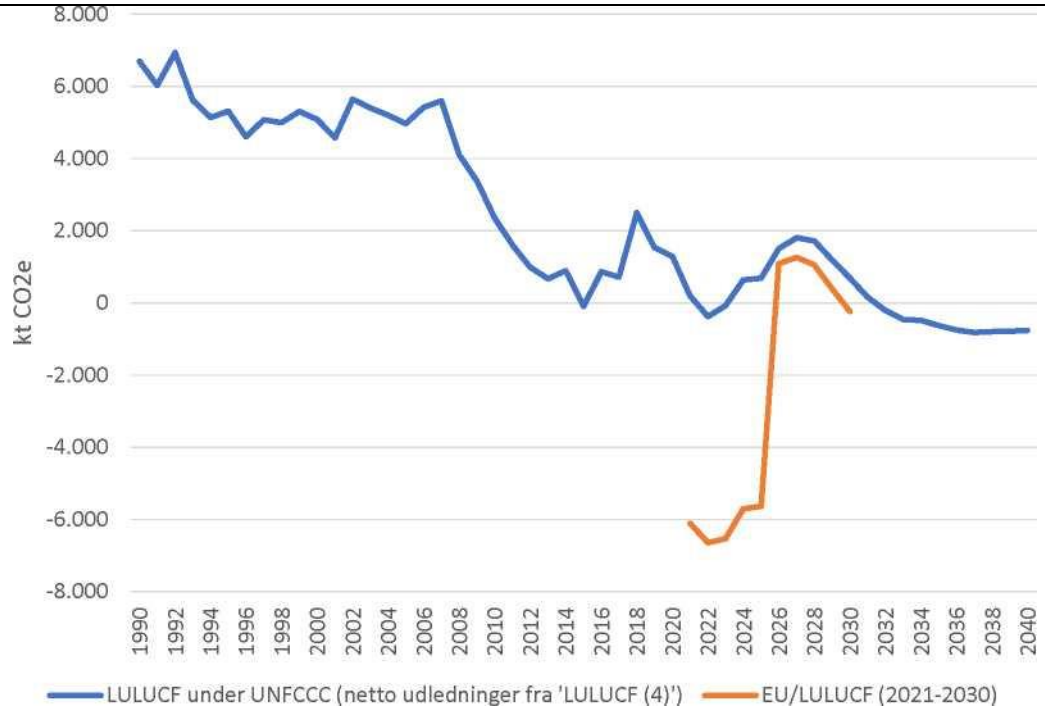
Figure 42 shows that:

LULUCF net emissions have been reduced by 106 % from 1990-2022, but are expected to increase by 2027, before declining again.

Figure 42

Agriculture LULUCF (4) Process emissions (2)

Greenhouse gas emissions in the LULUCF sector from 1990-2040



Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

(11)Projections of developments in each sector with existing national policies andmeasures and policies and measures at least until 2040 (including for 2030;

In the previous section, past and current emissions were presented to show developments from 1990-2022. This section presents projectionsfor 2022-2040, as shown in the figures in the previous section.

Figure 38 above shows the evolution of greenhouse gas emissions by type of gas from 1990-2040. Overall greenhouse gas emissions without LULUCF are projected to decrease by 65 % from 1990 to 2030 and 74 % from 1990 to 2040.

Other results from the projections are:

- Total GHG emissions with LULUCF are reduced by 67 % from 1990 to 2030 and 77 % from 1990 to 2040.
- CO_2emissionswithout LULUCF are reduced by 76 % from 1990 to 2030 and 86 % from 1990 to 2040.
- CO_2emissions with LULUCF are reduced by 78 % from 1990 to 2030 and 90 % from 1990 to 2040.
- CH_4emissions without LULUCF are reduced by 24 % from 1990 to 2030 and 29 % from 1990 to 2040.
- CH_4emissions with LULUCF are reduced by 21 % from 1990 to 2030 and 26 % from 1990 to 2040.
- N_2Oemissions without LULUCF are reduced by 46 % from 1990 to 2030 and 48 % from 1990 to 2040.
- N_2Oemissions with LULUCF are reduced by 46 % from 1990 to 2030 and 48 % from 1990 to 2040.

Figure 39 shows greenhouse gas emissions in the EU ETS and non-ETS from 2005-2040. From 2005, when reporting on ETS emissions started, the projection shows that:

- EU ETS CO_2emissions are reduced by 92 % from 2005 to 2030 and 94 % from 2005 to 2040.
- non-ETS emissions without LULUCF are reduced by 46 % from 2005 to 2030 and 60 % from 2005 to 2040.

The projection for the non-ETS should be seen in the context of Denmark's obligation to limit greenhousegas emissions from the non-ETS by 50 % in 2030. Further steps to achieve this are described in Section 3.1.1.

Figure 40 shows the total greenhouse gas emissions by sector. The projection shows that:

- Emissions from the energy sector are reduced by 72 % from 1990 to 2030 and 83 % from 1990 to 2040.
- Emissions from the energy and conversion sector are reduced by 86 % from 1990 to 2030 and 88 % from 1990 to %. 2040.
- Emissions from the manufacturing and construction sectors are reduced by 73 % from 1990 to 2030 and 79 % from 1990 to 2040.
- Emissions from transport will be reduced by 29 % from 1990 to 2030 and 69 % from 1990 to 2040.
- Emissions from other sectors will be reduced by 85 % from 1990 to 2030 % and 89 % from 1990 to 2040.

Figure 41 shows the total greenhouse gas emissions from 1990-2040 by IPCC sector. The projection shows that:

- Emissions from the energy sector will be reduced by 72 % from 1990 to 2030 % and 83 % from 1990 to 2040.
- Emissions from process emissions will be reduced by 39 % from 1990 to 2030 % and 43 % from 1990 to 2040.
- Emissions from agriculture are reduced by 28 % from 1990 to 2040 and 31 % from 1990 to 2040.
- Emissions from LULUCF are reduced by 90 % from 1990 to 2030 and 111 % from 1990 to 2040.
- Emissions from waste management will be reduced by 49 % from 1990 to 2030 and 49 % from 1990 to 2040.

Figure 42 shows emissions from LULUCF (net emissions). The projection shows that:

- Emissions from LULUCF are reduced by 90 % from 1990 to 2030 and 111 % from 1990 to 2040.
- EU/LULUCF (2021-2030) net emissions accumulate to -27.081 kt CO_2e (-27 Mt CO_2e).

Projections for air pollutants

Projections for WEM are included in Annex 7.

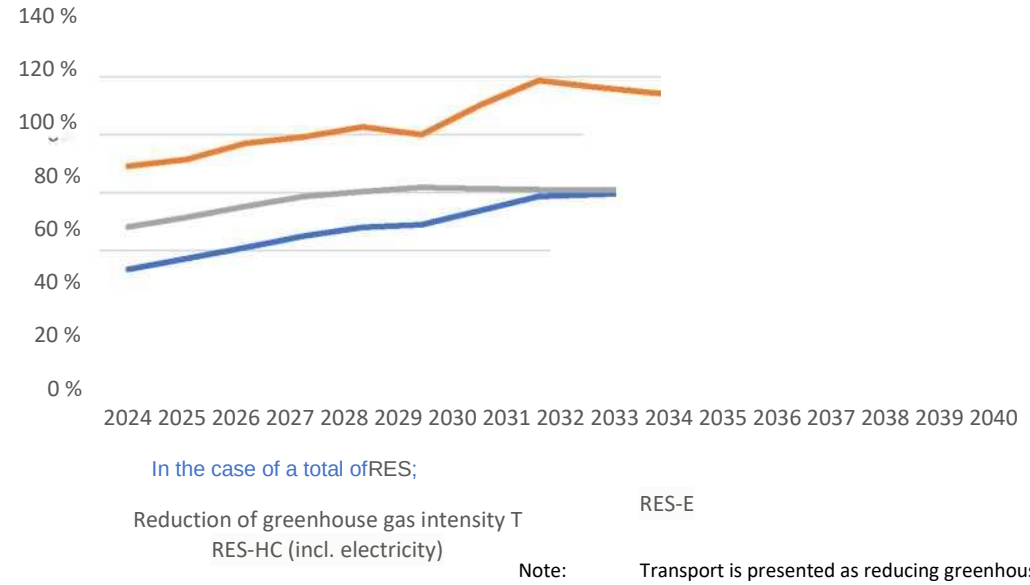
4.2.2 renewable energy

(i) The current share of renewable energy in gross final energy consumption and in different sectors (heatingand cooling, electricity and transport), as well as per technology in each of these sectors).

Figure 43 shows the share of renewable energy both overall and broken down by individual sectors. It can be seen that this is steep- in the coming years. For the transport sector, the greenhouse gas intensity reduction requirement (minimum 14.5 % in 2030) applies. There are thus reductions in% rather than the share of RES.

Figure 43

Total share of renewable energy (RES), share of renewable energy in the electricity sector (RES-E), share of renewable energy in heating/cooling (RES-H/C) and reductionof greenhouse gas intensity in the transport sector



Note: Transport is presented as reducing greenhouse gas intensity by at least 14.5 % in 2030 – compared to fossil reference (Article 25, 1 (a) (ii) of the Renewable Energy Directive)

Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Figure 44 shows the composition of renewable energies both in total and for respective sectors in 2023. This shows that bioenergy in particular represents a large share of total renewable energy, the electricity sector and the heating/cooling sector respectively. For the electricity sector, land and sea wind alsomake a significant part.

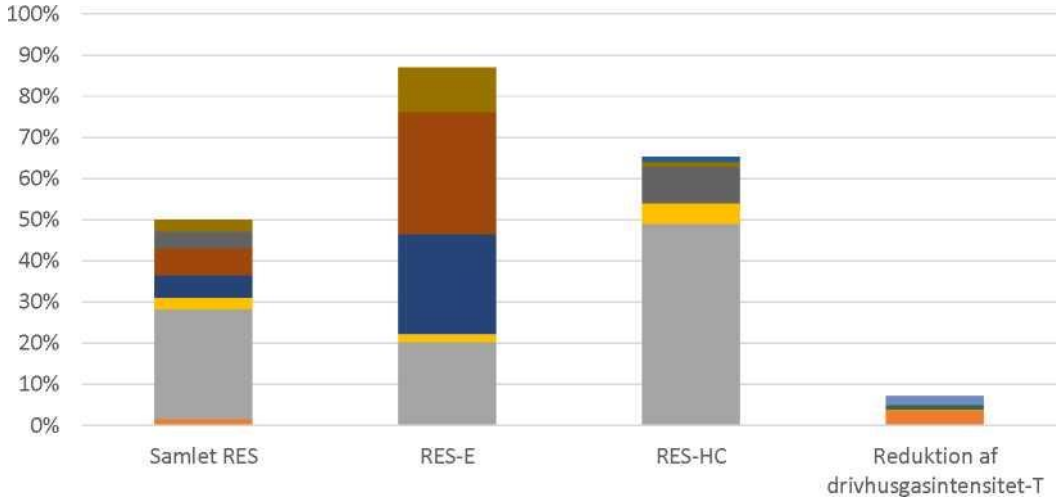


Figure 44
The composition of renewable energy for total renewable energy; (Res), electricity (RES-E), heating/cooling sector (RES-H/C) and reduction of drifting — domestic gas intensity in the transport sector

Note: **To avoid double counting, hydrogen is not produced separately in the figure. The category "Other bioenergy" includes: biogas, upgraded biogas (green gas), wood chips, straw, wood pellets and firewood.**
Source: *Climate status and projection 2024*

Figures 45, 46, 47 and 48 further develop the shares of energy technologies in the respective sectors.

(ii) Indicative projections of development with existing policies for the year 2030 (with an outlook to the year 2040)

Figure 43 shows the share of renewable energy in various sectors. The figure shows the expected trend from 2024 to 2040. Progressshows that the overall share of renewable energy is rising from 53.5 % in 2024 to 73.8 % in 2030. With this, the ambition of 55 % renewable energy in 2030, cf. the 2018 Energy Agreement, will be met.

It is also projected that the share of renewable energy generating electricity is expected to increase from 89.1 % in 2024 to 110.1 % in 2030. From 2030 onwards, Danish electricity consumption can therefore be covered entirely by energyon average. Figure 43 also

- Biofuels
- Wastes (bio)
- Brint
- Rural wind
- In thecaseof a company
- In thecaseof RES rail transport
- Other bioenergy
- Inthe case of VES
- Havvind
- Theambient heat for heat pumps;
- Putting the electricity into line
- In thecaseof **RES** road transport

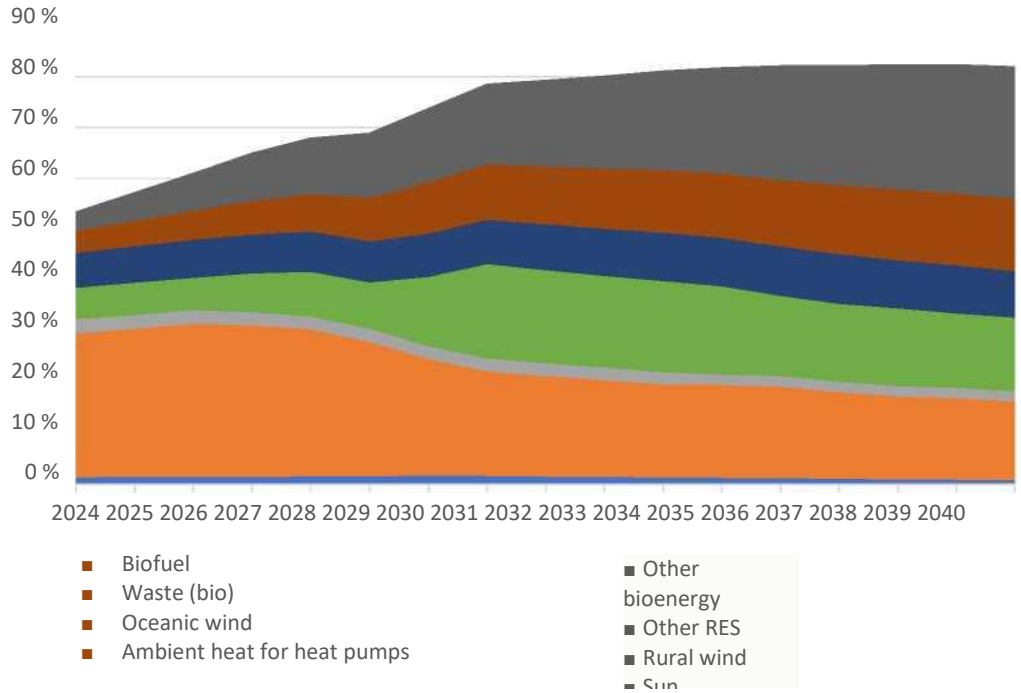
shows that after 2031 the share of renewable energy in the electricity sector will decrease by 2040. This is largely due to expectations of increased electricity consumption by 2040.

For the heating/cooling sector, the share of renewable energy is expected to be 81.3 % in 2030, up from 68.1 % in 2024. For the transport sector, the greenhouse gas intensity reduction is expected to be 26.7 % in 2030.

Figure 45 below shows the share of renewable energy technologies in the overall energy mix from 2024-2040. It is projected that bioenergy is expected to account for a high share of energy consumption by 2024 both in 2040 and beyond, while themost leading technologies play a particular role from 2030 onwards. In particular, solar is projected to play a long-term role, rising from 2024 % in 3,7 to 25.9 % in 2040. In particular, the share of marine wind is expected to increase in 2031, when it stands at 18.5 %, compared with 6.1 % in 2024.

Figure 45

Share of renewable energy technologies in the total energy mix from 2024-2040

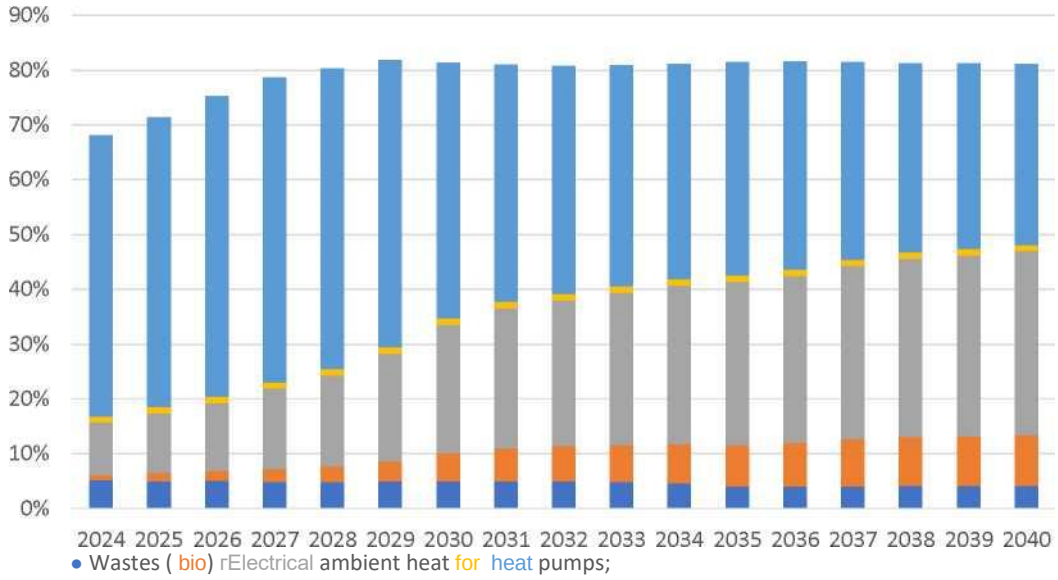


Note: The category 'Other bioenergy' includes biogas, upgraded biogas (green gas), wood chips, straw, wood pellets and firewood.
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Figure 46 below shows the share of renewable energy technologies in the heating/cooling sector from 2024-2040. The figure shows, among other things, that the share of bioenergy is expected to increase from 2024 to 2027, after which the share of bioenergy is expected to decrease by 2040. From 2024 until 2040, a significant increase in the share of renewable energy in the heating/cooling sector is expected to come from ambient heat to heat pumps, which is expected to increase from 9.5 % in 2024 to 33.6 % in 2040.

Figure 46

Share of renewable energy technologies in the heating/cooling sector from 2024-2040

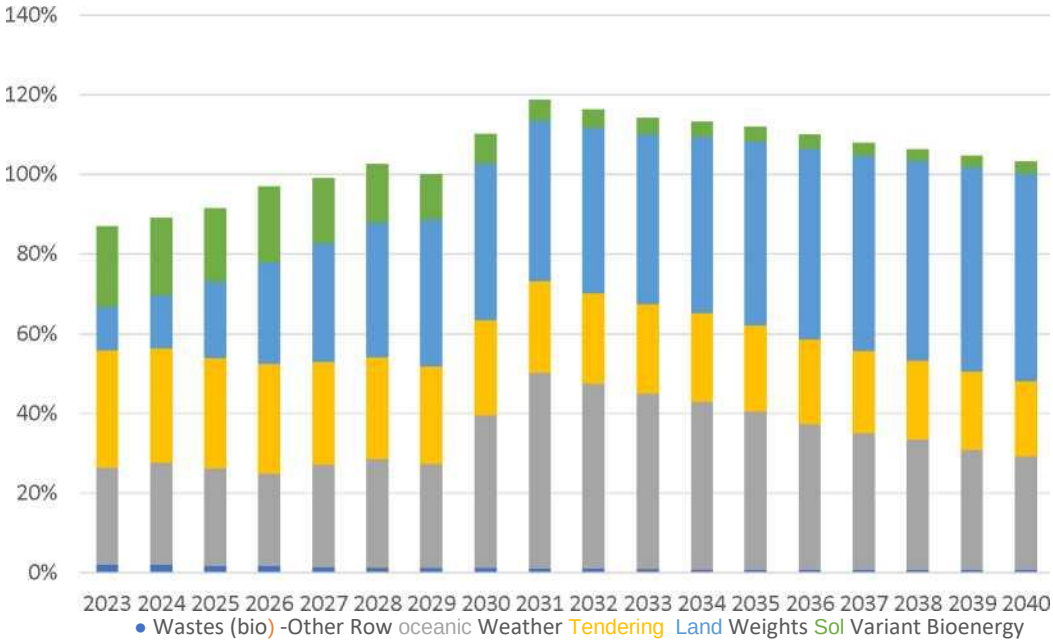


Note: The category 'Other bioenergy' includes biogas, upgraded biogas (green gas), wood chips, straw, wood pellets and firewood.
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Figure 47 shows the share of renewable energy technologies in the electricity sector from 2024-2040. In particular, by 2030, the share of solar and marine wind is expected to increase, while the share of bioenergy is decreasing. From 2030 until 2040, the proportion of sun is expected to increase in particular. The share of bioenergy is expected to decrease from 19.5 % in 2024 to 2.8 % in 2040. The share of seawind is expected to increase from 25.7 % in 2024 to 49 % in 2031. The share of sun is expected to increase from 13.3 % in 2024 to 52.3 % in 2040.

Figure 47

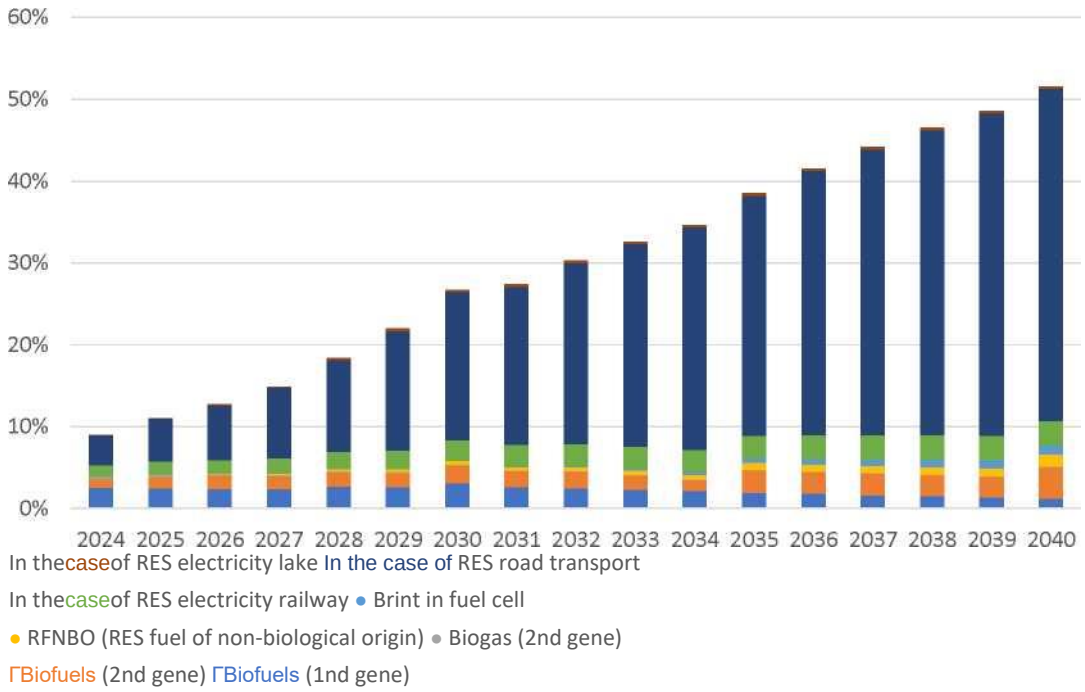
Share of renewable energy technologies in the electricity sector from 2024-2040



Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Figure 48 shows the share of renewable energy technologies in the transport sector from 2024-2040. It is mainly a road transport-sector which is expected to account for the largest share of renewable technologies in the transport sector from 2024 until 2040. The high contribution of RES electricity is partly due to increasing electrification of passenger and goods cars and later truckclays, but also to a high share of renewable energy in electricity.

Figure 48
Share of renewable energy technologies in the transport sector from 2024-2040



Note: Hydrogen used elsewhere than in the fuel cell is included in the RFNBO category.
Source: *Climate status and projection 2024* pg Danish Energy Agency

4.3 dimension related to energy efficiency

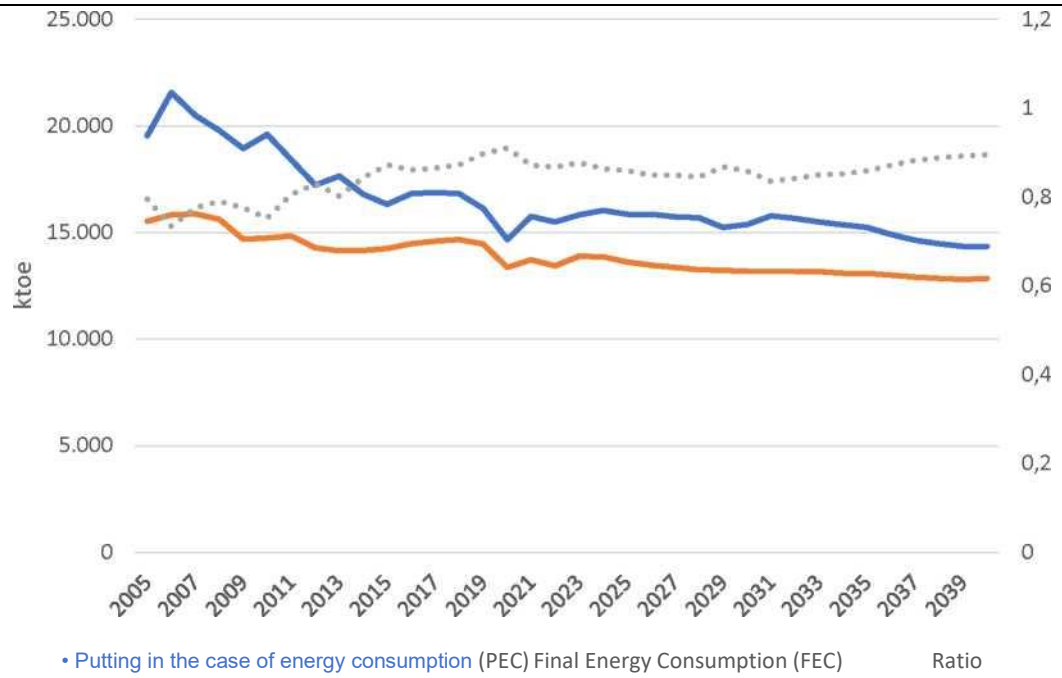
(i) Current primary and final energy consumption in the economy and per sector (including industry, residential, service and transport)

Primary and final energy consumption in the period 2005 to 2022 is shown in Figure 49 below. The primary and final energy foruse in the period 2005 to 2022 is shown in Figure 49 below.

The figure shows that in 2022:

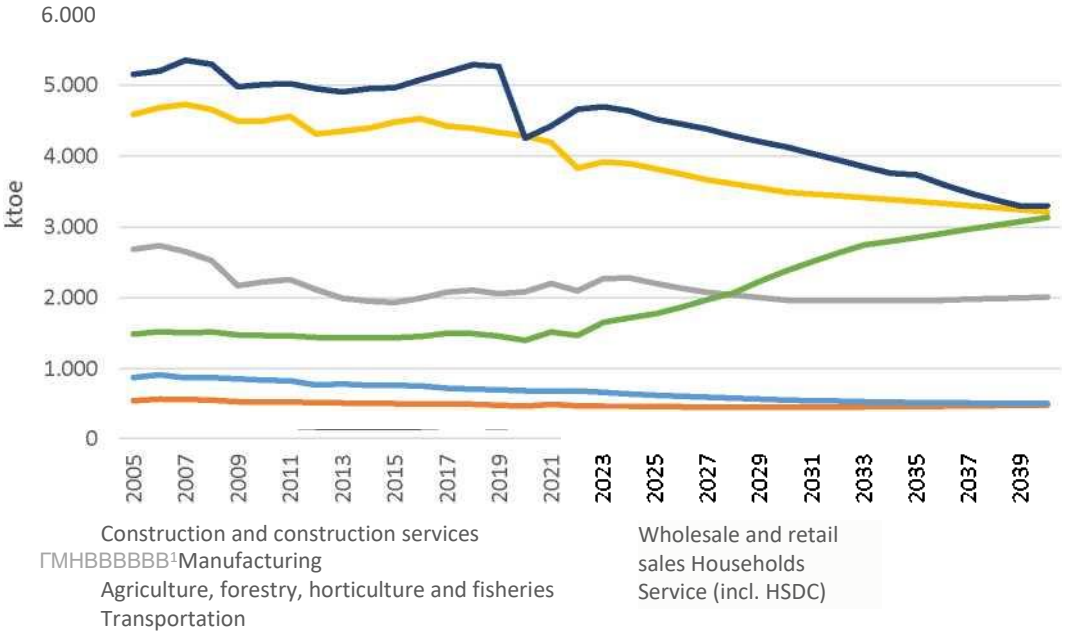
- Primary energy consumption 15.487 ktoe
- Final energy consumption 13.425 ktoe
- The ratio between primary and final energy consumption is 0,87

Figure 49
Primary and final energy consumption 2005-2040



Note: Without ambient heat and energy for non-energy purposes

Figure 50
Final energy consumption by sector



Note: Without ambient heat and energy for non-energy purposes
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

The breakdown of final energy consumption by sector in 2022 was:

- Construction: 1.6 %
- Wholesale and retail trade: 3.5 %
- Agriculture, forestry; horticulture and fisheries: 5.1 %
- Transport: 34.7 %
- Industry: 15.6 %
- Households: 28,5 %
- Service: 10.9 %

(ii) Current potential for the application of high-efficiency cogeneration and efficient district heating and cooling

Efficient district heating and cooling

Denmark uses the current definition of efficient district heating and cooling systems as presented in Article 26(1)of the Energy Efficiency Directive. The definition can be used, inter alia, to determine the share and potential for efficient district heating and cooling. With the most recent Danish calculation from 2024, which uses the most recent data from 2022, it was calculated that approximately 98 % of the Danish district heating systems can be defined as efficient. For this, 100 % of Denmark's district cooling systems are efficient. This leaves less potential for the efficiency of Denmark's existing district heating systems if the startingpoint of the definition from the Energy Efficiency Directive is taken. More specifically, 15 district heating systems do not followthe definition. These are expected to comply with the definition of efficient district heating by at least 2030. Looking at the potential for developing efficient district heating, it is expected that any new or renovated district heating capacity will comply with the definition. This is because all new or renovated district heating capacity will be based on a minimum of 50 % relatedto energy and/or cogeneration, thus complying with the definition of the Directive.

Due to a 2024 report, drawn up jointly by KL and the Ministry of Climate, Energy and Utilities and with input from the State gas distribution company Evida42, there is good progress in the roll-out of green heat. The report shows that in 2023 almost 40.000 private gas customers switched out to the benefit of district heating and heat pumps, among others, while Evida has had access to just 156 new private gas customers. At the end of 2023, there were around 302.500 private gas customers compared to around 342.000 in 2022. To this end, approximately 107.000 (35 %) of private gas customers remaining at the end of 2023 were covered by an approved project proposal for district heating and almost 59.000 (20 %) of the remaining private gas customers were located in an area designated for individual heat supply in a heating plan by the end of 2023 and would thus have to invest in an individual heat solution by replacing the gas fired. Finally, the municipalities expect to approve around 119 project proposals in 2024, which includes a minimum of 65.000 buildings with gas furnaces. The group of 122.000 private gas customers inpotential district heating facilities is therefore likely to decrease over the coming years.

The remote cooling potential is not expected to change significantly in the period 2022-2030 and it is expected that theremote queue potential will reach 2.866 MW by 2030. The socio-economic potential is 2.211 MW and is therefore almost equivalent to the technical potential. The minimum change is due to the colder climate in Denmark, where cooling needs remain more or less constant. It is expected, as with the expectation for district heating, that any new or renovated district cooling infrastructure will be efficient as it is expected to be based on renewable energy.

High-efficiency cogeneration

The most recent calculation of high-efficiency cogeneration in Denmark, which was reported to Eurostat in 2023 with 2021 data, calculated that 99 % of all cogeneration is highly efficient. A new inventory and reporting will be made in 2024, but the share is not expected to decrease. The potential for efficiency of existing cogeneration in Denmark is therefore minimal and the potential for the expansion of new high-efficiency cogeneration capacity is decreasing.

[42] Denmark's global climate footprint (kefm.dk)

Indeed, the potential for cogeneration in Denmark has decreased from 76 % of district heating demand in 2011 to 65 % in 2022 and is

expected to decline further to 63 % in 2025 as a result of the integration of renewable energy sources into the electricity grid. Heat has relatively high marginal costs, such as wind and solar cells, and is therefore considered to be less feasible in the future energy system in Denmark. When there is a reduced market incentive to produce electricity from cogeneration, it is more economically feasible to invest only in heat generators. The decrease in cogeneration is not replaced by thermal electricity production but by a fluctuating share of renewable energy.

There are no national strategies to change this development, as the level of energy security is high in the Danish electricity grid (99.99 %) and because there are more renewable alternatives to producing heat for the district heating network.

(iii) Projections taking into account existing energy efficiency policies, measures and programmes referred to in point 1.2 (ii) in terms of primary and final energy consumption for each sector, at least until 2040 (including for 2030);

Section 4.3 (i) describes primary and final energy consumption from 2005 to 2022. This section describes the expected expansionof energy consumption from 2022 to 2040. The evolution of primary and final energy consumption by 2040 is shown in Figure 49**Error! Reference source not found**.

Energy consumption projections show that:

- Primary energy consumption decreases by 0.9 % from 2022 to 2030 and 7.4 % from:2022 to 2040.
- Final energy consumption decreases by 1.9 % from 2022 to 2030 and 4.4 % from: 2022 to 2040.
- The ratio of primary energy consumption to final energy consumption decreases by 1 % from 2022 to 2030 and ladders by 3.3 % from 2022 to 2040.

Figure 50 shows the evolution of final energy consumption by sector from 2022 to 2040. Overall, it can be seen that most of the sectors' energy consumption is decreasing until 2040. In particular, energy consumption in the transport sector is expected to decrease significantly. The largest increase in energy consumption is in the services sector (including HSDC), as large data centres (HSDC) are expected to increase energy consumption in this sector.

Evolution of final energy consumption by sector:

- Final energy consumption in buildings and plants decreases by 4 % from 2022 to 2030 and by 10 % between 2022 and 2040.
- Final energy consumption in wholesale and retail trade decreases by 4 % from 2022 to 2030 and increases by 3 % from 2022. to 2040.
- Final energy consumption in agriculture, forestry, horticulture and fisheries decreases by 19 % from 2022 to 2030 and decreases by 26 % from 2022 to 2040.
- The finalenergy consumption I Transport decreased by 12 % between 2022 and 2030 and decreases by 29 % between 2022 and 2040.
- The finalenergy consumption I Industry decreases by 6 % from 2022 to 2030 and decreases by 4 % between 2022 and 2040.
- The finalenergy consumption I Households decrease by 9 % from 2022 to 2030 and decrease by 16 % from 2022 to 2040.
- Final energy consumption in Service (including HSDC) increases by 62 % from 2022 to 2030 and increases by 114 % between 2022 and 2040.

Furthermore, Graph 50 shows that until 2040, the Services (including HSDC), Transport and Households sectors continue to account for the largest share of final energy consumption.

Share of final energy consumption by sector in 2030 and 2040:

- The share of final energy consumption in construction is 1.5 % in 2030 and 1.5 % in 2040.
- The share of final energy consumption in wholesale and retail trade is 3.5 % in 2030 and 3.8 % in 2040.
- Share of finallyenergy consumption I Agriculture, forestry, horticulture and fisheries are 4.2 %. in 2030 and 4 % in 2040
- Share of finallyenergy consumption I Transport is 31.3 % in 2030 and 25.6 % in 2040
- Share of finallyenergy consumption I Industry is 14.9 % in 2030 and 15.7 % in 2040.

- Share of finallyenergy consumption I Households are 26.5 % in 2030 and 25 % in 2040
- The share of final energy consumption in Service (including HSDC) is 18.1 % in 2030 and 24.4 % in 2040.

(IV) Cost-optimal levels of minimum energy performance requirements according to national calculations in

compliance with Article 5 of Directive 2010/31/EU.

Article 5 of the current EPBD requires Member States to calculate and report on the cost-optimal levels of minimum energy performance requirements for buildings and building elements.

Denmark submitted the latest cost-optimal report to the European Commission on 27 March 2023. The dietoptimal report shows the following overall conclusions:

In general, the overall level of energy performance requirements for new buildings is tighter than the EPBD requirement. The weighted average for new construction shows that the Danish requirements are 20 % stricter than the cost-optimal level, but with variations between different building types.

For building elements subject to renovation, the requirements are similarly close to the cost-optimal point. Theregulations show variations for different types of structures depending on the starting point of the insulation levels ofthe existing constructors.

For buildings under major renovation, the building regulations include renovation classes that can be used. The levels in these classes have been evaluated in the cost-optimal report and the report showed that the level was very close to that of the costoptimal level. The weighted average showed that the requirement was on average 4 per cent tighter than the nutritionoptimal point.

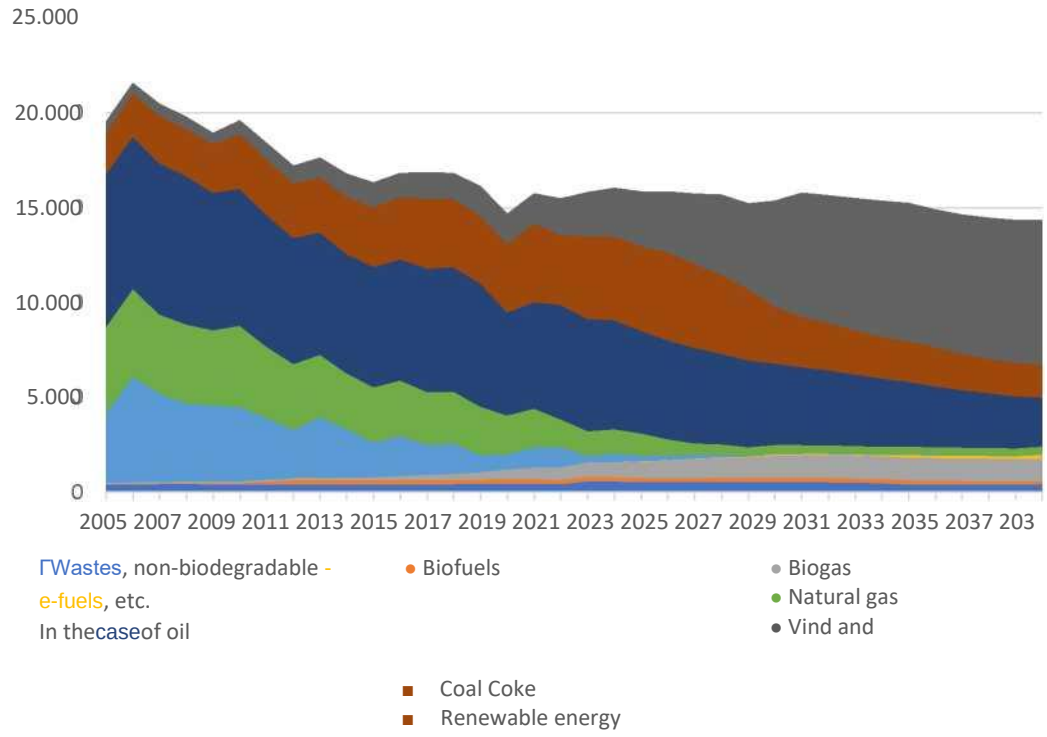
Overall, the report shows that Denmark meets the requirements for cost-optimal levels in the building regulations.

4.4 dimension related to energy security

(I) Current energy mix, indigenous energy sources and import dependency, including relevant risks;

Figure 51 shows the actual gross inland energy consumption by energy sources from 2005-2040:

Figure 51
Denmark's actual gross energy consumption

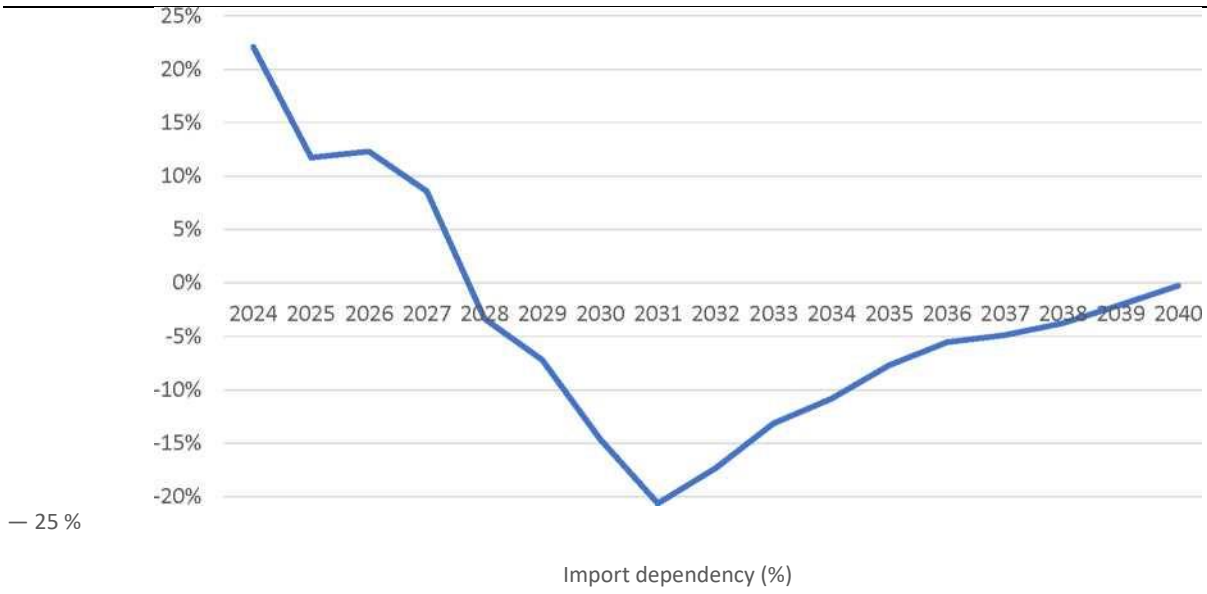


Note: Without ambient heat and energy for non-energy purposes. E-fuels include Sustainable Aviation Fuel and E — Fuels
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

The EU's energy security consists of the mutual exchange of energy sources between Member States. Denmark thus contributes to

energy efficiencythrough the export of energy sources, while at the same time drawing on energy security by importing energy. Due to declining domestic production of oil and gas, as well as the fact that renewable energy production has not yet been sufficient to cover the deficit, Denmark's import dependency has increased in recent years. Figure 52 below shows that in 2024 import dependency was 22 %. However, as the figure shows, import dependency is expected to decrease by 2040. Already from 2024, import dependency decreases and with the Tyra gas field back into operation, import dependency is expected to decrease further, as shown in Figure 52. Developments in the mid and second half of the 2020s reflect several developments, including the reflection ofthe energy efficiency improvement measures of the June 2018 Energy Agreement, which will take effect in 2024. In addition,a major wind farm is expected to start operating, as well as 4 more in the course of 2030. The projected developments from 2024 to 2040 reflect the methodology used, i.e. projections carried out with existing policies and measures (frozen PO- licy). This implies that while projections assume an expected increase in energy consumption, mainly from datathree and HSDCs, there are currently no decisions on the deployment of new generation capacity after 2030 to offset this increase. For the same reason, the projection shows that import dependency reaches its lowest level in 2031.

Figure 52
Denmark's import dependency 2024-2040 (%)



Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

(II) Projections of development with existing policies and measures at least until 2040 (including for the year 2030)

The results described in this section refer to Figure 51 and Figure 52 presented in the previous section.

Figure 51 shows the actual gross inland energy consumption from 2005-2040. A key result is that the combined consumption offossil fuels such as oil, natural gas and coal/coke falls from 46.5 % of total fuel consumption in 2024 to 31.0 % in 2030 and 20.9 % in 2040, a fall of 15.5 % and 25.6 % respectively up to 2030 and 2040 %. Whereas 'Vind and sol' increases from 15.9 % in 2024 to 36.1 % in 2030 and 53.2 % in 2040.

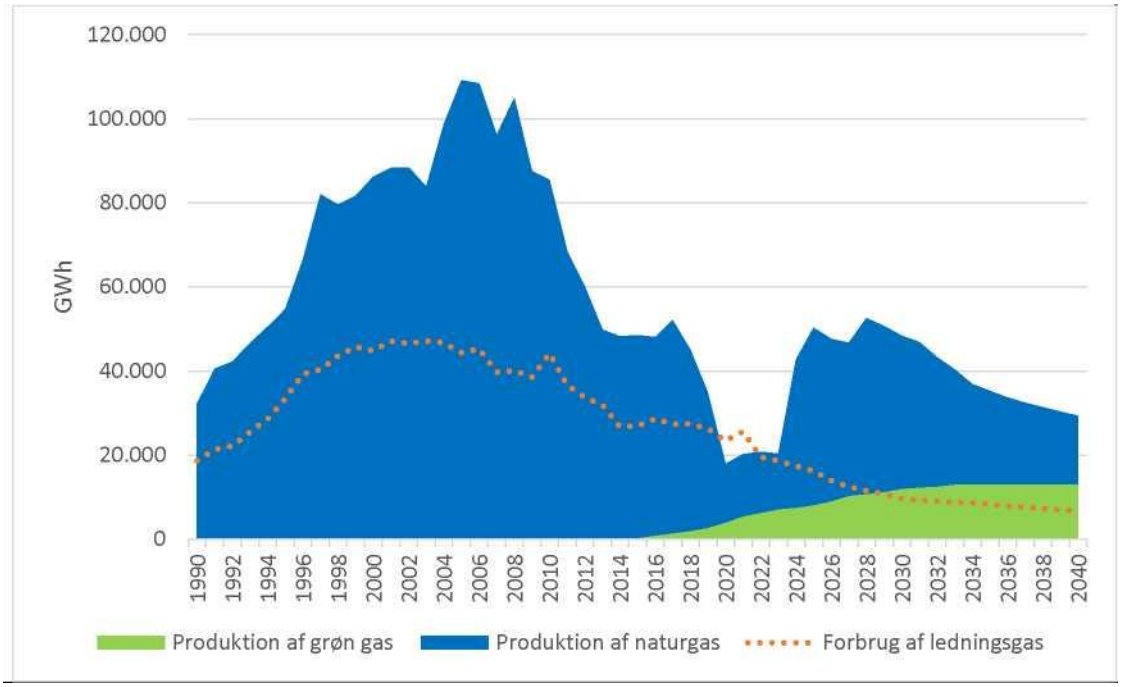
Figure 52 shows import dependency from 2024-2040. Import dependency is projected to decrease from 22 % in 2024 to -14.6 % in 2030, before rising to -0.3 % in 2040.

Gas

The current projection of Danish gas consumption and extraction is illustrated below.

Figure 53

Current projection of Danish gas consumption and extraction

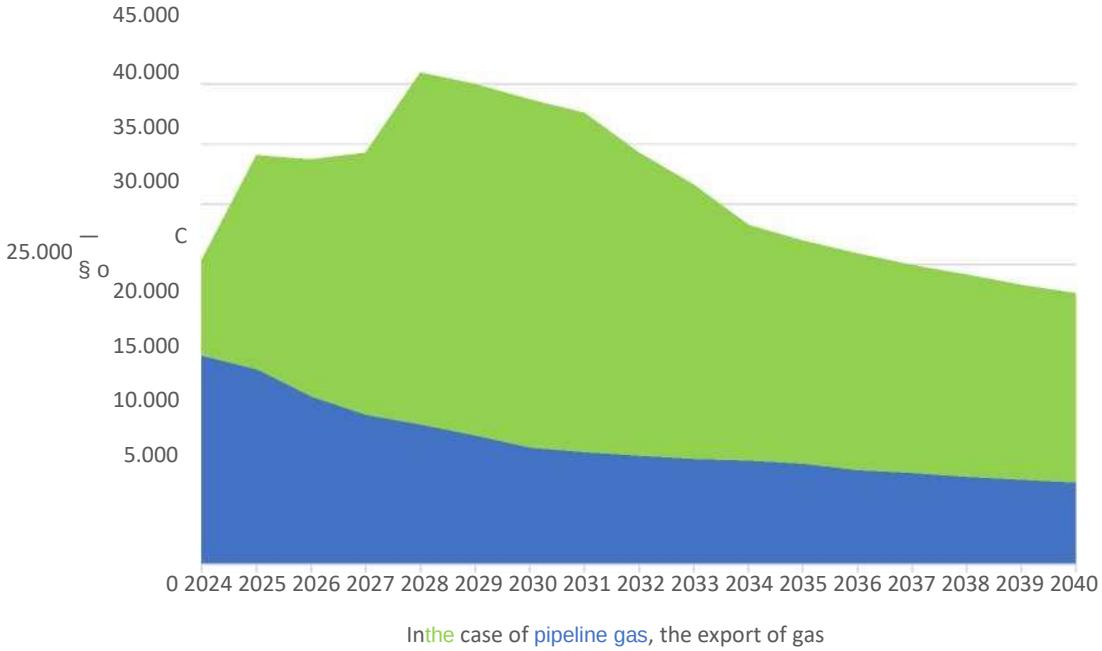


Note: The green gas product ion category contains production of natural gas and e-methane. In the projection there is no taken into account for**gas** storage.

The supply of gas to the Danish system consists of natural gas production from the Danish part of the North Sea and Danish production of green gases. The gas in the Danish system is either consumed in Denmark or exported to Sweden, Germany or Poland. An estimated distribution of the projected gas flows in the Danish transmission network is illustrated below for 2024.

Figure 54

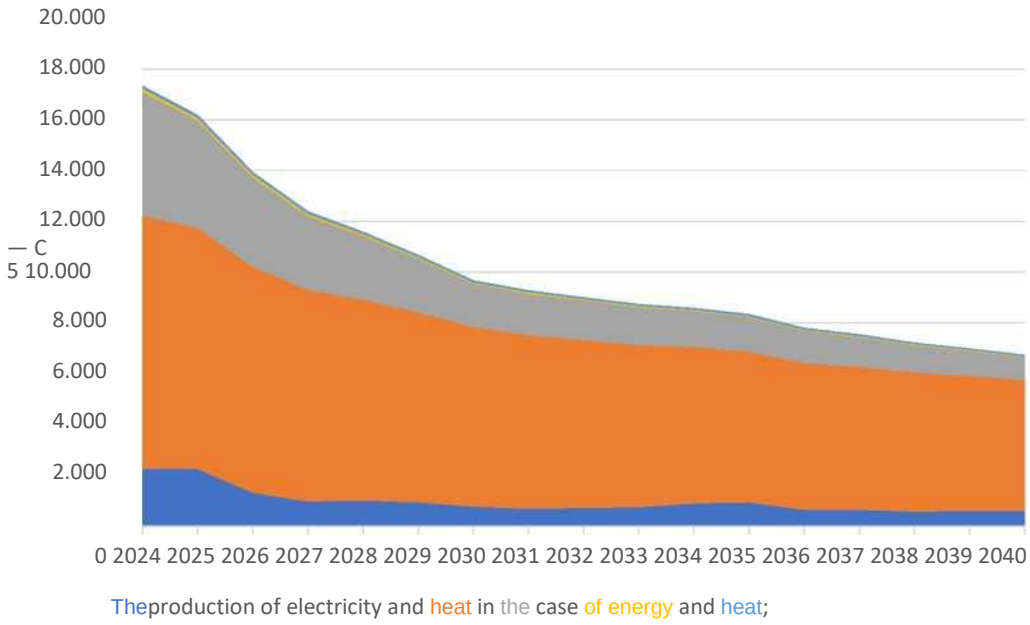
Gas consumption and exports (GWh/year)



Note: Gas storage is not taken into account in the projection.
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

The evolution of the consumption of pipeline gas by use can be seen in the graph below. Consumption is significantly reduced by 2030, largely due to a phase-out of pipeline gas consumption for heating in households, as well as the phasing out ofbase and intermediate loads in district heating production based on pipeline gas. Over the period 2022-2050, total Danish consumption of pipeline gas is projected to be reduced from around 19.5 TWh per year to around 5.3 TWh per year, a corresponding reductionof around 73 %.

Figure 55



Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

The consumption of pipeline gas stabilises after 2030 on the basis of non-convertible needs in the corporate sector, as well as a small amount of households which are not expected to have the possibility or wish to convert to alternative heating methods such as district heating or heat pumps.

4.5 internal energy market dimension

4.5.1 Electricity interconnectivity

(i) Current interconnection level and main interconnectors

Tables 23 and 24 show the current interconnectors and interconnectors currently under development.

Table 23
Current interconnectors

Name	Connected price areas	Capacity (MW)
Skagerrak 1-4	DK1 – NO3	1700
Konti-Skan	DK1 – SE3	740
Kassø-Audorf	DK1 – DE	2500
Bornholm-Sweden	DK2 – SE4	60
Great Belt	DK1 – DK2	600
Öresund	DK2 – SE4	1300 (imports)/1700 (exports)
Chamber	DK2 – DE	585
COBRAcable	DK1 – NL	700

Kriegers Flak CGS	DK2 – DE	400
Viking Link	DK1 – UK	800 * (1 400 in 2025)

Note: * Viking Link will run in the start-up phase with a capacity of 800 MW, but once the Danish electricity grid is ready in 2025, it will run with a capacity of 1 400 MW.

Table 24
In-construction interconnectors

Name	Connected price areas	Capacity (MW)	Year of completion
Endrup-Niebüll	DK1-DE	1000	2025

(ii) Projections of interconnector expansion requirements (including for the year 2030)

It is politically desirable to establish two energy islands by 2030, one in the North Sea (3 GW) and one in the Baltic Sea at Bornholm (3 GW). Against this background, TSOs in Denmark and relevant cooperating countries have continuously explored the potentials ofpremixtures, etc. Danish energy islands and relevant countries. Thus, energy grids and Elia have concluded a cooperation agreement for a 2 GW interconnector between the energy island of the Danish area of the North Sea connected to Belgium and a cooperation agreement between Energinet and 50 Hertz for a 2 GW interconnector between Bornholm and Germany has been concluded in the Baltic Sea. There is ongoing dialogue with other countries and TSOs to explore the potentials of interconnectors.

Other interconnectors are reaching the end of their life expectancy and a decision on whether to reinvest in them, build new interconnectors or otherwise. The ENTSO-E's Ten-Year Network Development Plan for 2022 provides for a newforeign connection, Kontiskan 2, between DK1 and SE, in addition to the projects from the table above.

4.5.2 Energy transmission infrastructure

(i) Key characteristics of the existing electricity and gas transmission infrastructure

Electricity

Denmark is divided into two price areas, West Denmark (DK1) and East Denmark (DK2), divided by the Great Belt. West Denmark is forbiddenand operated synchronously with the continental European electricity grid, and East Denmark is connected synchronously with the Nordic electricity grid. West and Eastern Denmark are exclusively connected through the Great Belt Fixed Link of 600 MW. Tables 25 and 26 show detailed information on the internal network in Denmark.

Table 25
AC/DC overhead line length (distributed in volts level)

kV	AC	DC	Total
132	1.615,3		1.615,3
150	2.661,7		2.661,7
220	147,5		147,5
400	1.573,4	546,8	2.120,2
285		248,6	248,6
350		89,0	89,0
0.4 kV		2,6	2,6
20		153,0	153,0
250		7,2	7,2

320		653,5	653,5
Total	**5997,9**	**1700,7**	**7698,6**

Table 26
Transformers in MW

kV	Sum of Power MVA]
132	9.060
150	13.977
400	14.510
Total	37.547

Gas

The Danish gas transmission system (80 bar) is owned and operated by Energinet, the Danish TSO. The gas system is connected to natural gas fields in the North Sea and the international gas market through five entry points in the North Sea, Nybro, Ellund, Faxe and the common balancing zone with Sweden (JBZ). There are four transit exit points (Nybro, Ellund, Faxe and the Single Balance Zone with Sweden (JBZ)). In addition, there is a virtual entry point for biomethane (RES entry point) where transport customers can virtually bring biomethane and other types of renewable energy into the transmission network.

Gas can be supplied to domestic consumers via the transmission and distribution system. The transmission tariff varies depending on where the ships book entry and/or exit capacity.

Energy networks have fully implemented the Network Code on Harmonised Transmission Tariff Structures for Gas (TAR NC) with a goodruling on the methodology by the Utilities Regulator in May 2019. Since October 2019, the tariffs have been in line with the TAR NC. In the future, there will be ongoing methodological approvals by the Utility Regulator of tariff structures. TheTRANS mission system currently consists of approximately 1 100 km of pipelines within Denmark. The transmission system is connected tothe stribution system via 41 currently active M/R stations, which regulate the pressure down to the level of the distribution companies' pipeline systems.

(ii) Projections of network expansion requirements at least until 2040 (including for the year 2030)

Renewable electricity produced from photovoltaic installations and wind farms onshore and offshore will represent an even greater share of the Danish electricity mix in the years up to 2030 and beyond. At the same time, electricity consumption is expected to grow significantly, drivenby the current current of the household heating and transport sectors, in data centres and for the production of PtX fuels. This expansionposes a challenge for the transmission network, which must be able to cope with higher demand and production, which is often not geographically balanced.

Figure 56 shows the reference electricity grid in 2026, consisting of the current network and approved maintenance or extension-projects.

Figure 56

Net Reference for 2030, including existing electricity grids and approved maintenanceor extension projects

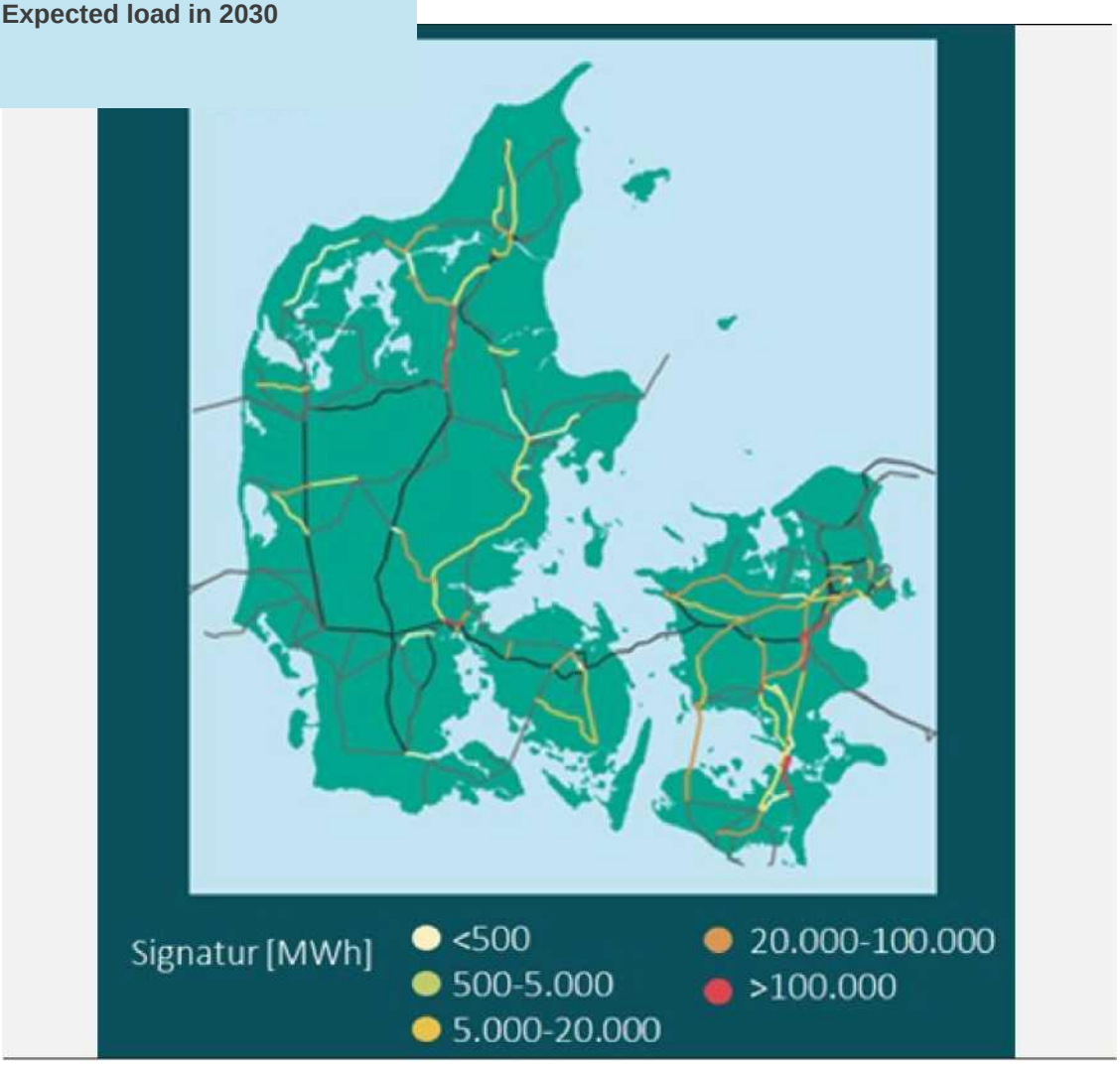
Source: Long-term Development Plan 2024, Energinet

Looking forward to 2030 and 2040, the Danish TSO has analysed the long-term needs for new investments as well as the need for reinvestments in the existing network. The coverage of needs is highlighted in Figure 57 and Figure 58 below. These needs are described in the long-term electricity network development plan 2024 (LUP)43.

43 https://energinet.dk/media/0kuiq1gp/behovsanalyse-for-eltransmission.pdf

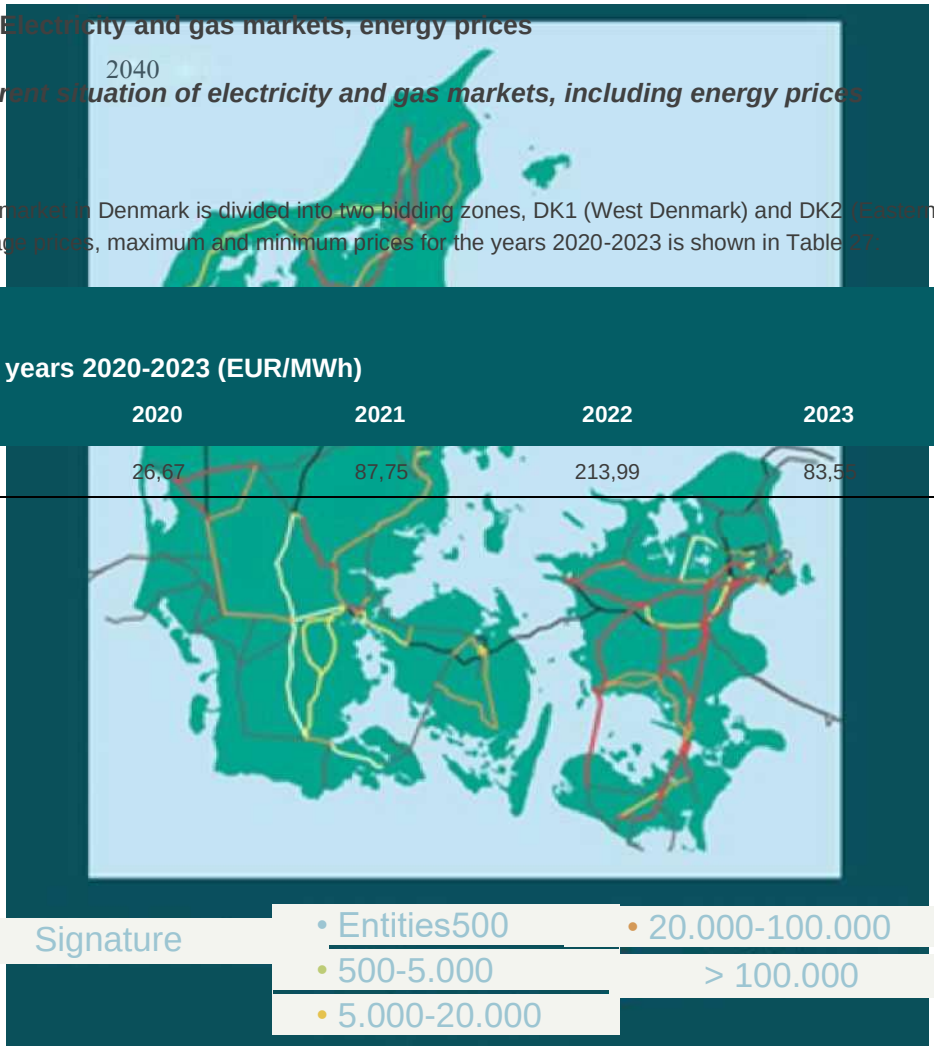
Figure 57

Expected load in 2030



Source: Long-term Development Plan 2024, Energinet

Figure 58
Expected load in 2040



Source: Long-term Development Plan 2024, Energinet

4.5.3 Electricity and gas markets, energy prices

(i) Current situation of electricity and gas markets, including energy prices

Electricity

The electricity market in Denmark is divided into two bidding zones, DK1 (West Denmark) and DK2 (Eastern Denmark). An overview of hourly average prices, maximum and minimum prices for the years 2020-2023 is shown in Table 27.

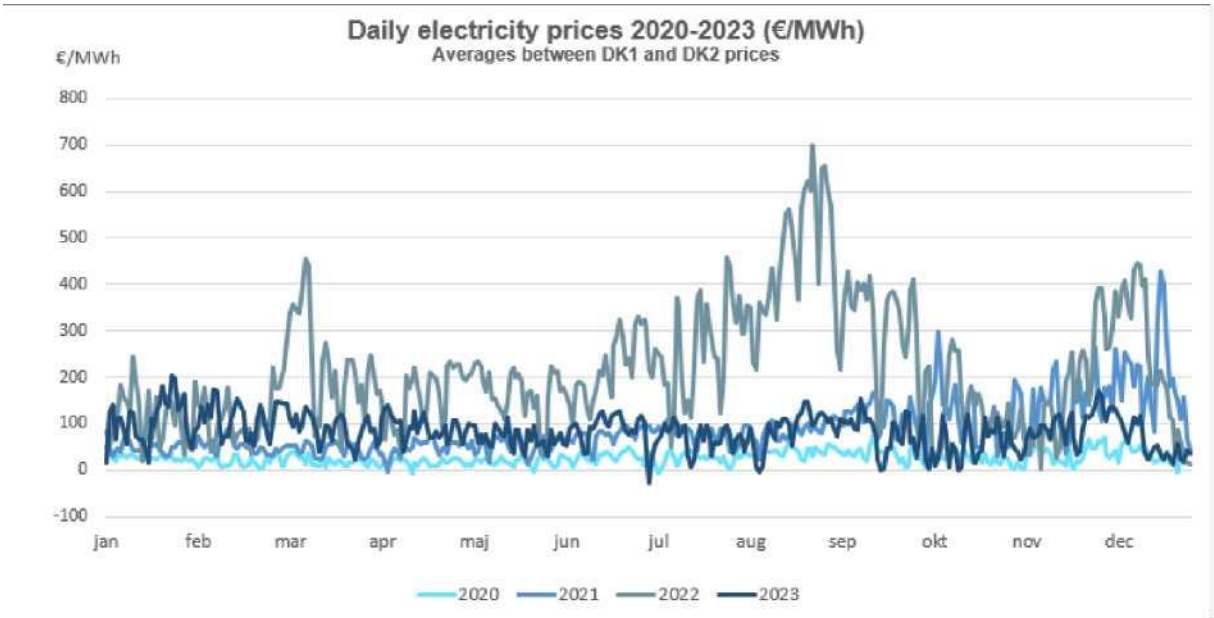
Table 27
Prices for years 2020-2023 (EUR/MWh)

	2020	2021	2022	2023
Average price	26,67	87,75	213,99	83,55

Min. price	— 7,6	— 3,5	2,67	— 29,01
Max. Pris	71,89	429,07	700,59	201,91

The following graph shows the average daily electricity price across DK1 and DK2 for the years 2020 to 2023:

Figure 59
Daily average price for the years 2020-2023



Kilde: Energinet – Energi Data Service

In 2020,the price rarely exceeded EUR 100/MWh, but in 2022 we experienced prices that exceeded EUR 700/MWh in some hours. The increase in prices in 2022 has to be seen in the light of several factors influencing the European electricity market, including gas supply/demand, low water stocks in Norway, heatwaves leading to higher fuel prices for coal and lower output at French nuclear power plants and maintenance of Swedish nuclear power plants.

Denmark is a highly connected country. The reduced import possibilities due to the above, as well as the fact that the generated electricity from VE in Denmark was shared with the neighbouring related countries to Denmark, resulted in strong electricity prices in Danmark in late summer 2022.

In 2023, prices remained more stable, although still around 3 times higher than prices in 2020. In addition, 2023 was also characterised by significantly more hours of negative prices compared to previous years. This is due, inter alia, to the high share of renewable energy in the electricity mix. Electricity production and imports/exports in 2023 were:

- Electricity generation: 32.6 TWh
- Net imports: 3.2 TWh

The 32.6 TWh of electricity produced in Denmark in 2022 was produced from the table below. Data are from Energinet.

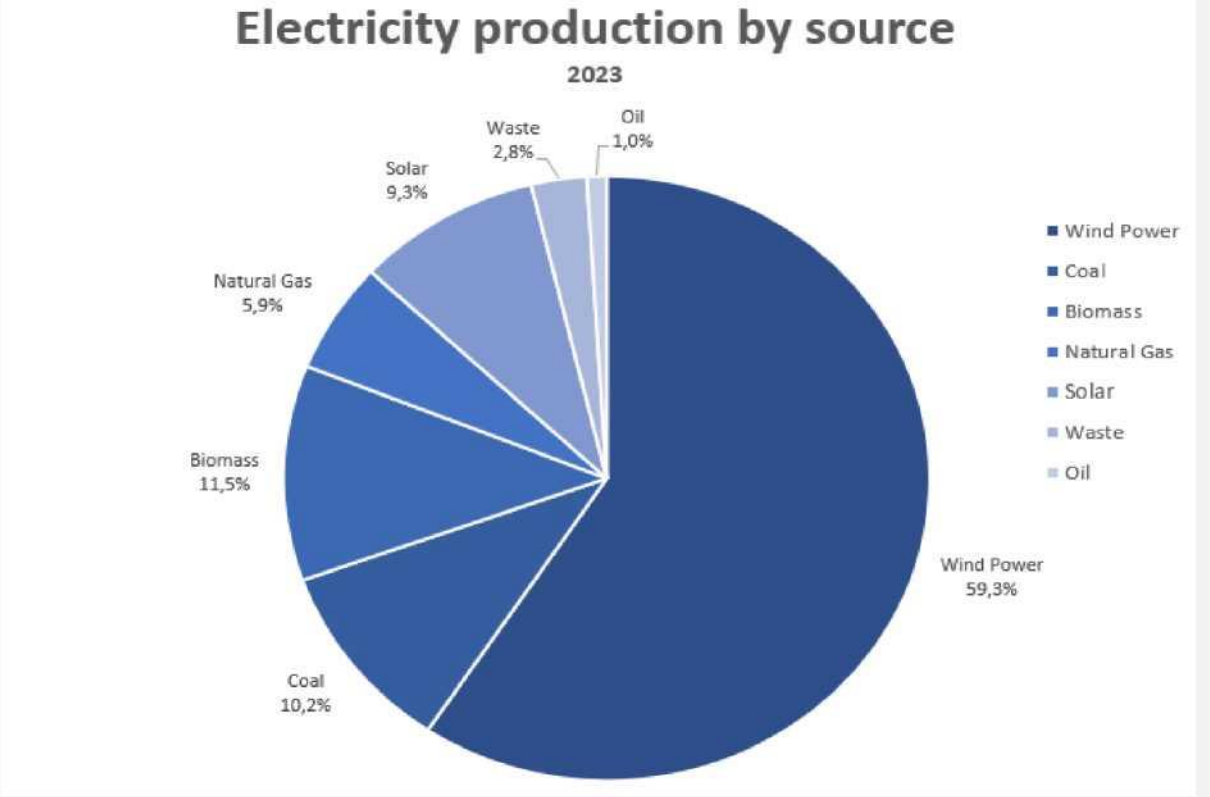
Table 28
Electricity generation

	Electricity generation	Share
Wind	19.4 TWh	59.3 %

Coal	3.3 TWh	10.2 %
Biomass	3.8 TWh	11.5 %
Gas	1.9 TWh	5.9 %
Sun	3 TWh	9.3 %
Waste	0.9 TWh	2.8 %
Oil	0.3 TWh	1 %

This distribution is also visualised in the following Figure 60.

Figure 60
Electricity production by source

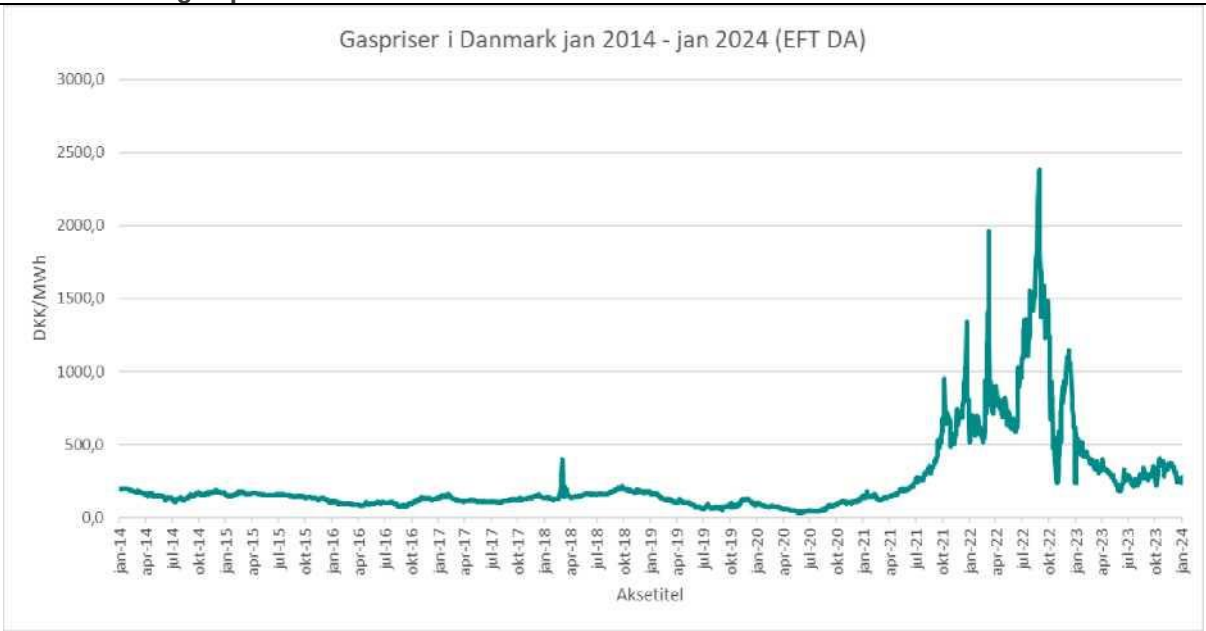


Source: Energy network Energy data service

Gas

Denmark produced around 0.79 billion Nm^3 sales gas in 2022 and Nm 0.75 billion[in] 2023. Denmark is expected to produce between 2,5-3 billion Nm^3 per year after the rebuilding of the Tyra complex. In comparison, 0.63 billion $Nm^{3\ replenished}$ biogaswas produced in 2022 and 0.76 billion Nm^3 upgraded biogas was produced in 2023. The gas price increased markedly following Russia's invasion of Ukraine. Gas prices have since fallen to a similar level of 2021, albeit with price fluctuations. The fall in prices is due, among other things, to lower consumption, filled gas storage and large LNG supply. Realised gas prices in the spot market for the period January 2014 to January 2 024 are shown in Figure 61:

Figure 61
Evolution of the gas price 2014-2024

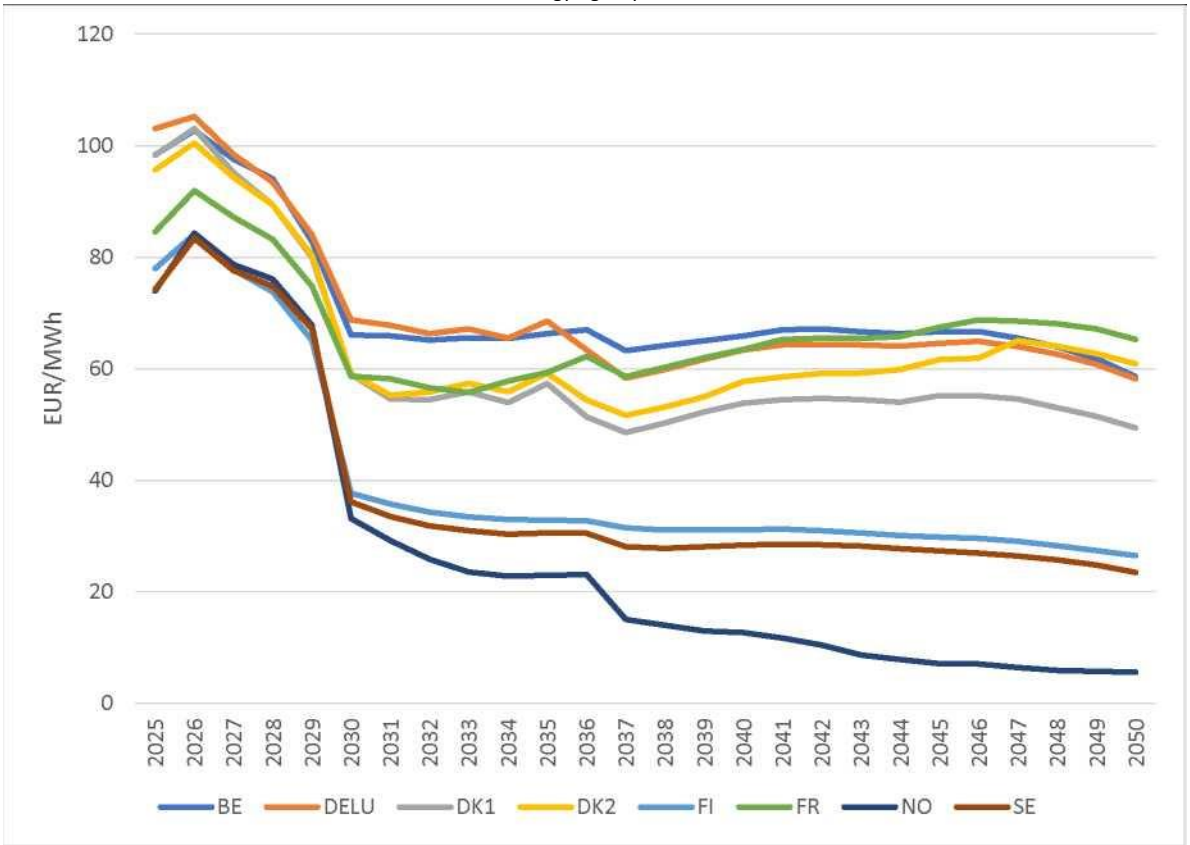


(ii) Projections of development with existing policies and measures at least until 2040 (including for the year 2030)

Chart 62 shows Denmark's average price, which is expected to fall by 39.1 % from 2025 to 2030, 42.5 % from 2025 to 2040 and 43.1 % from 2025 to 2050. The decrease has to be seen in particular in the light of the very high electricity prices in the current period.

Figure 62
Expected electricity price for 2025-2050

Source: *Climate Status and Outlook 2024* and the Danish Energy Agency



Graph 63 shows that electricity production (including grid losses) is expected to increase by 67.3 % from 2024 to 2030 and 118.8 % between 2024 and 2040.
Around 2026, it is expected that Denmark will move from a net importer of electricity to a net exporter.

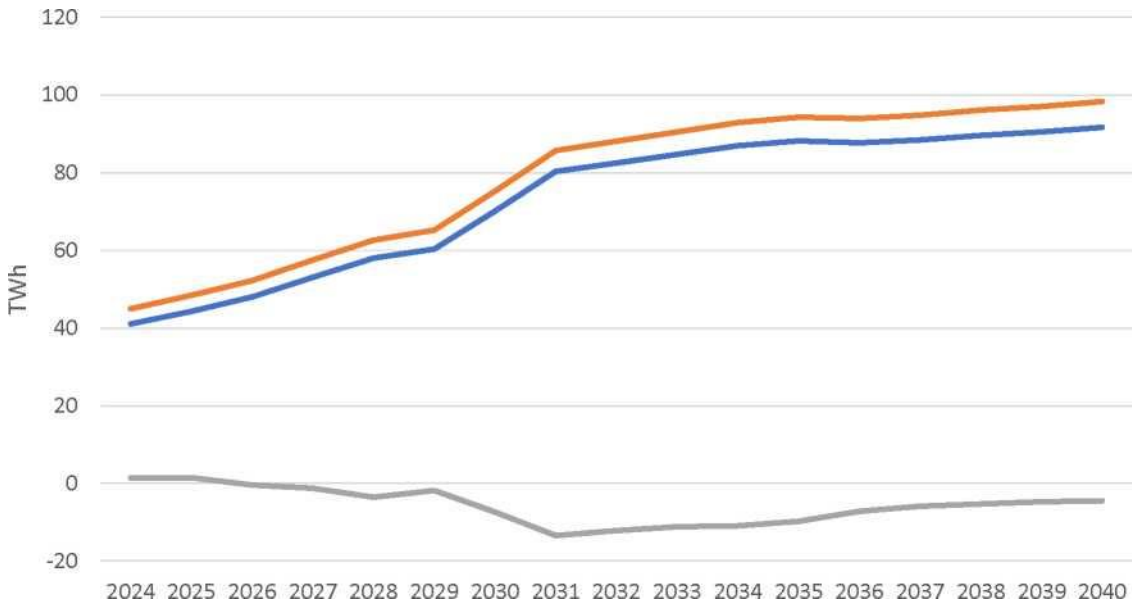


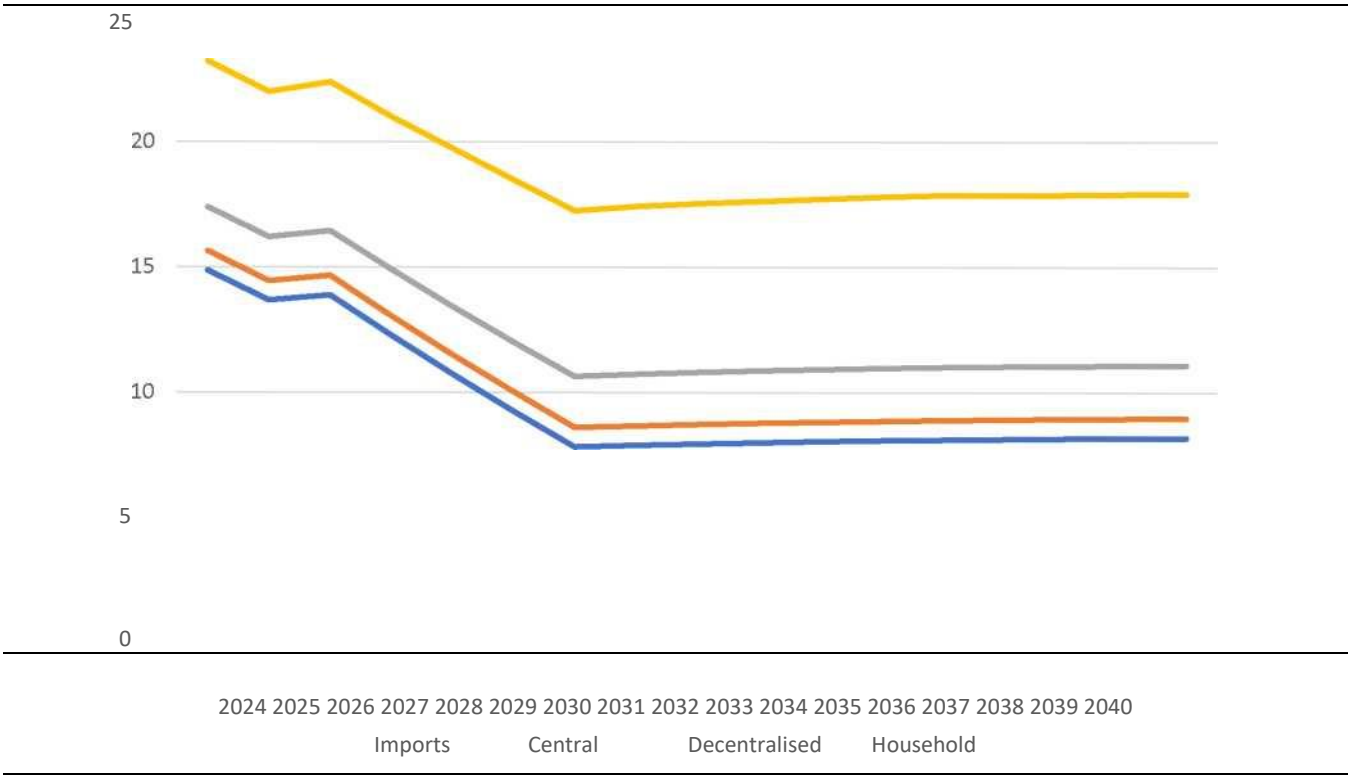
Figure 63

Expected production of electricity and net electricity imports for the years 2024-2040 (TWh)

Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Figure 64 shows that the price of natural gas is expected to decrease by 2030.

Figure 64
Estimated gas price for the years 2024-2040 (EUR/GJ)



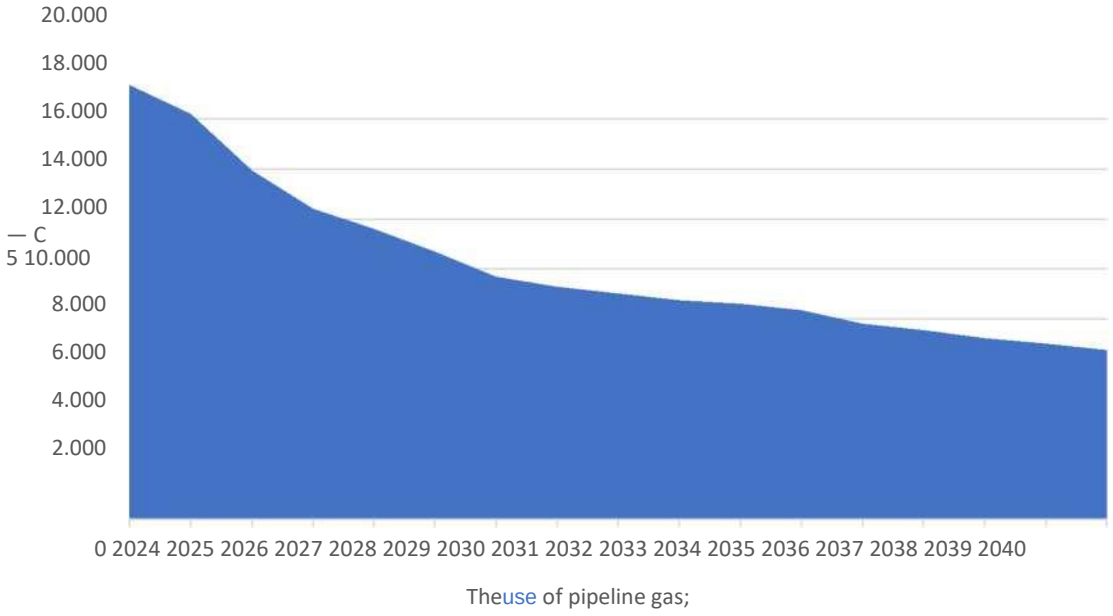
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Figure 65 below shows the total projected consumption of pipeline gas from 2024-2040. The projection is as follows:

- Denmark's gas consumption decreases by 44 % from 2024 to 2030 and 61 % between 2024 and 2040.

Figure 65

Expected gas consumption for the years 2024-2040



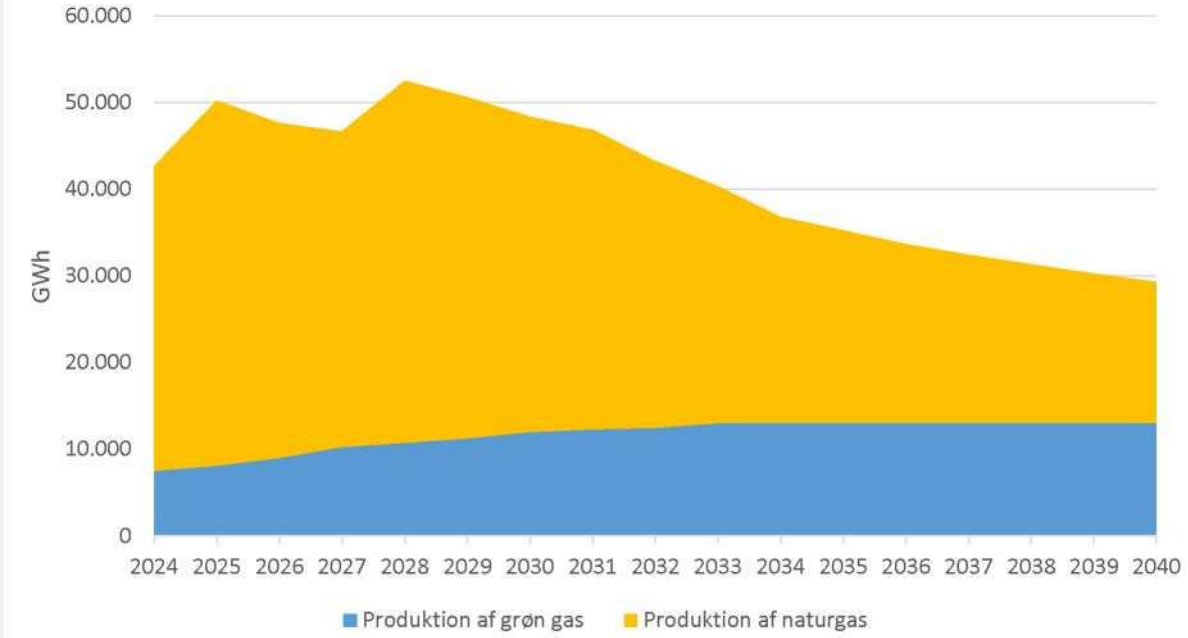
Source: *Climate Status and Outlook 2024* and the Danish Energy Agency

Figure 66 shows the total expected gas production including green gas from 2024-2040. As the total production is hayexceeds the consumption of pipeline gas, there will be no imports by 2040. The projection is as follows:

- Green gas production increased by 60 % from 2024 to 2030 and by 74 % between 2024 and 2040.
- Production of natural gas increased by 3 % from 2024 to 2030 and reduced by 54 % from 2024 to 2040.

Figur 66

Forventet gasproduktion + import for årene 2024 – 2040



Anm.: Der forventes ingen import frem mod 2040, da den nationale produktion vil være højere end forbruget.
Kilde: *Klimastatus og -fremskrivning 2024* og Energistyrelsen

4.6 dimension of research, innovation and competitiveness

(i) Current situation of the low-carbon technologies sector and as far as possible extent of its position on the global market (this analysis needs to be carried out at EU or global level)

The low-carbon sector in Denmark includes, in this chapter, all low-carbon technologies such as wind, solar, bioenergy, district heating and other efficient energy. It includes both the generation, distribution and storage of energy, as well asenergy-saving products and components.

In 2023, Denmark exported energy technology for DKK 64 billion and environmental technology for DKK 23 billion, which corresponds toa pit of 33 % and 85 % respectively. 2010. Exports account for 2 % and 6 % of total Danish exports of goods. In 2023, Denmark exported green services for DKK 20.6 billion (green energy services amounted to DKK 15 billion and environmental services DKK 5.6 billion). As services exports for 2022 and 2 023 are projected on the basis of 2020 data, they can continue to materialise here. The estimated service exports for these years will therefore be subject to extra uncertainty.

Just under one third is exported outside the EU. Denmark's main exporting countries are Germany, the United Kingdom and the United States.44

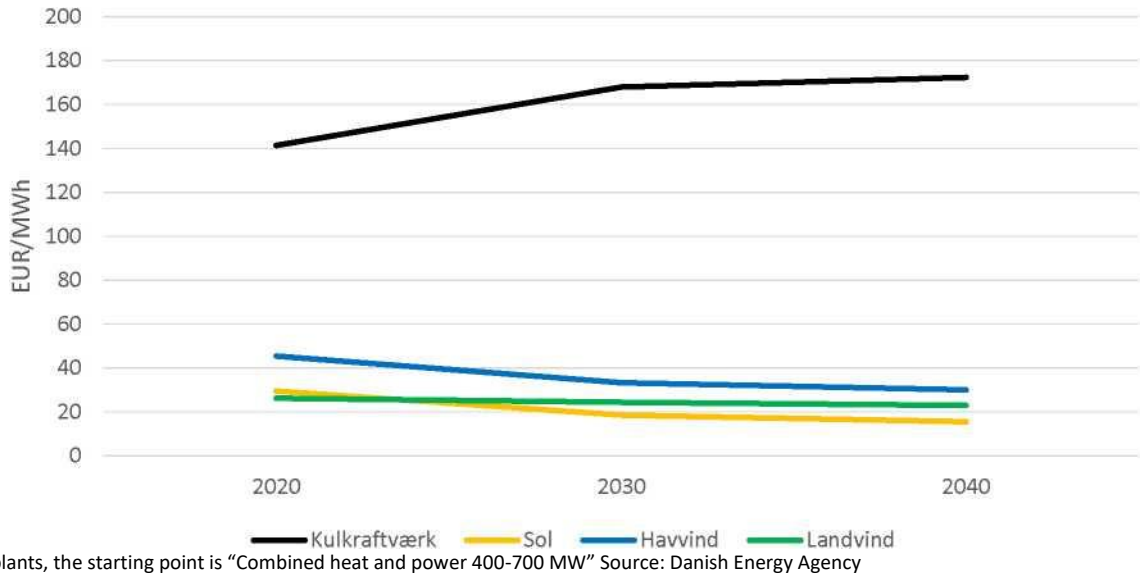
Figure 67 below shows the competitiveness of land wind, sea wind and solar based on their smoothedelectricity

44Global report 2024 – Danish Energy Agency

costs (LCoE). In 2023, the cost of energy production is lower for these renewableenergy technologies, and thus more economically competitive, than coal power generation. With the hopefuldevelopment of renewable energy technologies, their competitiveness will only increase in the coming years.

Figure 67

Smoothed electricity costs (LCoE) 2020-2 040 in EUR/MWh broken down by solar, landwind, oceanic wind and coal power



Note: For coal power plants, the starting point is "Combined heat and power 400-700 MW" Source: Danish Energy Agency

(ii) Current level of spending in terms of public and, where possible, private research and innovation inlow-carbon technologies, current number of patents and current number of researchers;

Level of state research and innovation funds in 2024

With the agreement on the distribution of the research reserve etc. in 2024 and the Finance Act 2024, the government and a broad majority in the Danish Parliament have earmarked DKK 2.64 billion for ambitious and green research initiatives in 2024. In addition, the Government and the parties to the agreement agree to maintain the level of green research fundingfrom the 2023 Focus Reserve Agreement on the state research budget of at least DKK 2.4 billion per year until 2025 inclusive.

Mapping funding for green research and innovation in 2022

Alongside the increased prioritisation of green research in the state research budget, there is also a significant increase in private funding for green research and innovation. A mapping exercise carried out by the Danish Ministry of Education and Science in 2023 shows that a total of approximately DKK 4.6 billion (2023-pl) was distributed in 2022 for green research and innovation projects from public, European and a number ofprint funds and programmes. In addition, green research is financed from the basic funds of universities and from companies which are not included in the statement.

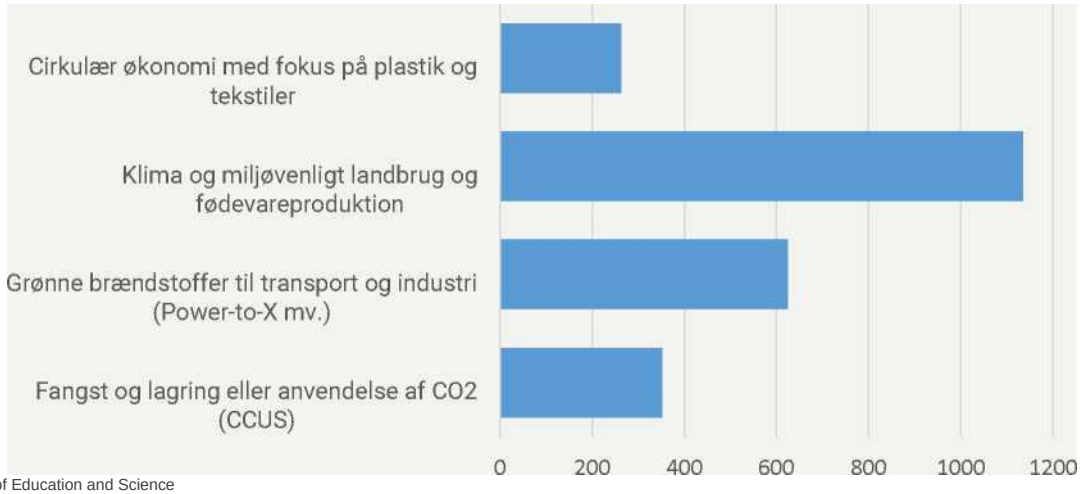
The mapping shows that despite the significant increase in green research funding, there is no shortage of qualified applicants. The success rates of the Innovation Fund and the Danish Free Research Fund range from 6 % to 15 %. The success rates of development and demonstration programmes are around 30 %, which is also similar to the success rates for business-oriented programmes in the Innovation Fund.

The mapping shows how many of the funds delivered in 2022 have gone to projects falling below it for one ofthe four mission areas from the green research strategy. In four missions, just over DKK 1.12 billion has been allocated to agri-

environmental and food production projects, almost DKK 625 million for green fuels for transport and industry, DKK 353 million for the capture and storage or useof CO2 (CCUS) and DKK 263 million goes to the circular economy with a focus on plastics and textiles. DKK 1.2 billion for the capture and storage or use of CO2 (CCUS), some DKK 600 million for green fuels (PtX, etc.) and DKK 260 million for the circular economy. The figures include both appropriations from the Innovation Fund for the four GreenForward and Innovation Partnerships, as well as other types of project allocations from all funds and programmes included in the mapping exercise.

Figure 68

Allocation of appropriations within green missions

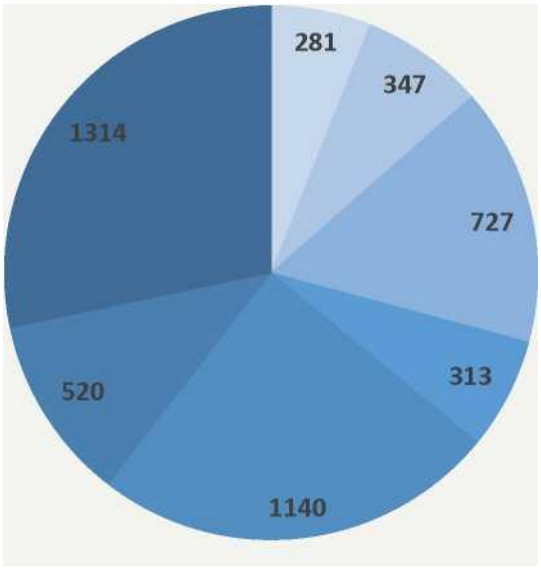


Source: Ministry of Education and Science

Finally, the mapping exercise shows that out of the seven themes of the green research strategy, energy efficiency, sustainable energy technologies and production (including CCUS and green fuels (PtX) as well as sustainable agriculture and food production, agriculture and forests, see Figure 70.

Figure 69

Allocation of appropriations in green themes



Source: Ministry of Education and Science

(III) Breakdown of the current price elements that make up the three main price components (energy, networks, taxes/levies)

The following tables show a breakdown of electricity and gas prices between energy, networks and taxes/levies for businesses and houseattitudes.

Table 29 and Table 30 show price elements for businesses and households:

- For businesses, the energy price is between 67 % and 85 % of the total price;
- For households, the energy price amounts to 37 % to 55 % of the total price;

Table 29

Price elements for industries in 2023 [EUR/kWh]

Range (MWh)	Electricity prices	Net	Taxes and tariffs	Total prices
0-20	13,58	4,91	1,74	20,23
20-500	11,60	3,76	0,15	15,51
500-2.000	10,09	2,31	0,13	12,53
2.000-20.000	9,89	2,29	0,13	12,31
20.000-70.000	10,11	1,73	0,13	11,98
70.000-150.000	10,48	1,73	0,13	12,34
> 150.000	9,17	1,73	0,13	11,03

Table 30

Price elements for households in 2023 [EUR/kWh]

Range (MWh)	Commercial price	Net	Taxes and tariffs	Total prices
0-1.000	16,44	13,89	14,27	44,59
1.000-2.500	16,44	9,72	13,23	39,39
2.500-5.000	16,44	7,64	12,71	36,78
5.000-15.000	16,44	6,59	8,47	31,50
> 15.000	16,44	6,20	7,15	29,79

Table 31 and Table 32 show gas price elements for businesses and households:

- For industries, energy amounts to 51 % to 56 % of the total price before deduction of taxes/levies. However, somecustomers are entitled to a deduction of taxes/levies on energy prices, after which the energy price represents on average up to around 75 % to 85 % of the total price of industries with high gas consumption.
- For households, the energy price amounts to 49 % to 62 % of the total price.

Table 31
Price elements for industries in 2023 [EUR/m³]

Professions	Including taxes and duties					Refundable taxes/duties offset				
EUR/m³	Band I	Band II	Band III	Band IV	Band V	Band I	Band II	Band III	Band IV	Band V
Gas price	0,65	0,61	0,56	0,54	0,55	0,65	0,61	0,56	0,54	0,55
TRANS-mission and Distri-bution	0,17	0,19	0,08	0,06	0,03	0,17	0,19	0,08	0,06	0,03
Taxes	0,41	0,40	0,40	0,40	0,40	0,35	0,24	0,12	0,05	0,05
Total, exl. WADDING	**1,23**	**1,19**	**1,04**	**1,00**	**0,98**	**1,17**	**1,03**	**0,76**	**0,65**	**0,64**

Table 32
Price elements for households in 2023 [EUR/m³]

EUR/m³	Band I	Band II	Band III
Gas price	0,737	0,788	0,950
Transmission and Distri-bution	0,358	0,209	0,194
Taxes	0,398	0,398	0,398
Total, exl. WADDING	**1,492**	**1,395**	**1,541**

(IV) Description of energy subsidies, including for fossil fuels

Denmark provides support for renewable energy technologies such as marine and land wind, solar energy, biogas, etc. The aid is typically given DKK per unit. However, for some schemes, start-up aid, etc. may also be granted.

In Denmark, there is an overall objective of being able to promote energy technologies producingrelated energy in a support-free market.

Supply

- District heating pool supports conversion projects for the deployment of district heating.
- The decoupling scheme compensates for charges for decoupling from the gas system.
- The scrapping scheme supports heat pumps on subscription.
- Building pool supports conversion to heat pumps and energy renovation

PTX

- PtX procurement to reduce the costs of producing green hydrogen.

Biogas

- Tenders for biogas and other green gases must increase the production of green gas for the grid and reduce the level ofsupport.

Renewable energy

- Support for the installation of RES on less accessible areas, such as rooftops, along motorways, etc.
- Grants for renewable energy on land. In Denmark, onshore renewable energy could receive support through technology-neutral tenders in the past. Over the last few years, there has been a clear political ambition for a more marsh-based onshore renewable energyexpansion in Denmark. The cost of deploying onshoreenergy has decreased markedly in recent years and is expected to continue to decrease. With *the Climate Agreement on Green Power and Heat 2022*, it has been decided that the funds from the technology-neutral tenders from 2022-2024 will then be reprioritised to other initiatives, because onshore renewable energy can be largelyeabated without subsidies.
- Subsidies for marine wind. Since 2018, several political agreements have been concluded on the development of Danish marine wind. In these agreements, there has been a clear ambition to adopt a more market-based approach to the expansion of marine wind. In 2021, the tender for Thor wind farm was the first tender for offshore wind to be carried out without subsidies. In June 2022, it was politically decided to offer an additional 4 GW of marine wind in 2030 withoutshooting.

For energy subsidies for fossil fuels see Section 3.1.3. (IV).

5. Impact assessment ofplanned policies andmeasures

5.1 The impact of planned policies and measures listed in paragraph3 on the energy system and greenhouse gas emissions and removals, including projections with existing policies andmeasures (see paragraph 4).

With the Climate *Action Programme 2023*, the government presented a climate policy work programme containing the barley blocksto meet the climate targets, including individual plans for energy and supply, dispute, waste, transport and agriculture to meet the targets. These include plans for re-visits to the agricultural agreement, a new forest plan and the state of play of green road transport in Denmark. In addition, in the Government *Basis Responsibility for Denmark*, the Government has undertaken to present a proposal for a climate tax on agriculture once the Expert Group for Green Tax Reform has presented their conclusions. The climate tax shall ensure the implementation of the development track and the achievement of the binding reduction target for the rural and forestry sectors of 55-65 % in 2030 compared to 1990. The Government has asked the Expert Committee to present different scenarios to achieve this objective, in line with the recommendations it presented in the context of the CO_2e-tax on industry, including consideration of discouraging the relocation of production, taking into account interna theoreticalexperiences and the possibility of adding CO_2e-tax to final consumption as a possible instrument.

Against this background, the Expert Group on Green Tax Reform presented in February 2024 three main options for a new and uniform climate tax on agriculture. The Expert Group for Green Tax Reform Reporting has been the basis for the Green Tripartite Government negotiations. The Green Tripartite consists of the Government, the Danish Agriculture and Food Council, the Danish Society for Nature Conservation, the Local Government Association,the Danish Food Council, the Danish Metal and the Danish Industry. CONCITO has participated as a separate knowledge partner. A green tripartite has submitted an agreement on 24 June 2024, which the government will subsequently bear into the Danish Parliament in autumn 2024.

The agreement meets the 70 % target in 2030, as well as Denmark's commitments in the EU burden-sharing agreement and the LULUCF Regulation. To this end, the agreement implements the EU Water Framework Directive. The Green Tripartite Agreement is estimated toreduce agriculture's non-energy related greenhouse gas emissions by 1,8-2.6 Mt CO_2e-reductions in 2030, rising to 3,3-3.6 Mt CO_2e-reductions in 2035. In the event that the planned reductions are not realised, the Parties agree that equivalent CO_2e-reductions up to 2.2 million tonnes shall be achieved by 2030 through other actions in thefield of agriculture. The main elements of the agreement are summarised in Table 33.

Table 33
CO2 E-reductions byinstrumentof the Tripartite Green Agreement

Million tonnes of CO_2e	2027	2028	2029	2030	2035
CO2e livestock tax	0,0	0,0	0,1	0,4	1,3
Manure regulation (and lime)	0,0	0,3	0,3	0,3	0,3
Supplements to feed additives	0,4	0,4	0,4	0,4	0,0
Pyrolysis subsidy pool	0,1	0,1	0,2	0,3	0,3

Afforestation	0,0	0,0	0,0	0,1	0,5
Low bottom removal	0,0	0,0	0,0	0,3	0,8
CO2e tax on F-gases	0,0	0,0	0,0	0,1	0,1
Total CO2e reductions (estimate)	**0,5**	**0,9**	**1,0**	**1,8**	**3,3**

Additional potentials					
Increase in the rate of set-aside and wetting of lowland (2 yearsmore)	0,0	0,3	0,5	0,6	0,0
Greater potential for pyrolysis deployment	0,1	0,1	0,2	0,3	0,3
Total additional potentials	0,1	0,4	0,7	0,9	0,3
Total CO2e reductions including upper spread for potentials	0,5 — 0,6	0,9 — 1,3	1,0 — 1,7	1,8 — 2,6	3,3 — 3,6
Low bottom removal	0,0	0,0	0,1	0,4	1,3
CO2e tax on F-gases	0,0	0,3	0,3	0,3	0,3
Total CO2e reductions (estimate)	**0,4**	**0,4**	**0,4**	**0,4**	**0,0**

Source: Ministry of Finance on the basis of the Expert Group for Green Tax Reform *and Climate Status and Outlook 2024*.

Climate Status and Outlook 2024 (KF24) and is based on existing policies and ahead ofmeasures adopted before 1 January 2024. Against this background, KF24 is a so-called WEM projection ("WEM": With Existing Measures').

As indicated in Chapter 3, the Government will take the necessary decisions to bring Denmark fully into line with the-liberalisation of the nationally set reduction targets for 2025 and 2030. To this end, the government has a work rogram for the climate policy, containing the building blocks to achieve the climate targets.

The work programme does not contain concrete initiatives that can be categorised as "planned policies and actions" as defined in the Governance Regulation, i.e. as "(...) options under discussion that have a realistic chance of being adopted and implemented after the date of submission of the INTEGRENECP (...). "This must be seen in the light of the fact that, although, for example, a decision has been taken on the existence of a climate tax on agriculture, a concrete model has not yet been adopted. Therefore, no analysis of the impact of planned policies has been carried out in the form of actual projections with additionalmeasures defined in the Governance Regulation as a With Additional Measures (WAM) projection.

5.2 The macroeconomic and, to the extent possible, health, environmental, employment and education, acquired skillsand social impacts, including aspects related to a just transition, (in terms of costs and benefits as well as on cost efficiency) of the planned policies and measures referred to in Section 3, at least until the last year of the period covered by the plan, including projections with existing po litiksand measures;

GreekREFORM

Denmark is continuously working on developing methodologies to assess the macroeconomic effects of climate policy, assessing inter alia shadow price calculations of CO_2 impact reducing measures. In addition, a pair of efforts has been launchedto develop Green Reform. GrønREFORM is an environmental and climate economic model for the Danish economy. The model may assess how future economic activity is expected to affect the environment and climate.

The main objective of Green REFORM is to assess the climate and environmental impacts of policy orientations, e.g.- greenhouse gas taxes. The model can estimate the impact on both the social economy and the environmental and climate impacts. Thus, Green REFORM can be used to prioritise differencesin environmental, energy and climate policy. This can help Denmark to achieve the green transition at minimum cost.

In order to provide a detailed description of the sectors of particular importance for the environment and climate, GrønREFORM includes sub-models for the energy sector, agriculture, transport, waste, etc. As aboveconstruction for these sub-models, a main model is in the form of a general equilibrium model which describes the overall economic activity in Denmark on the one hand and brings together the results of the sub-models on the other.

The development of Green REFORM started in 2017. The model has been developed by the DREAM Model Group in cooperation with researchers from the University of Copenhagen and Aarhus. The model has been used by the Green Tax Reform Expert Group, which chose to base its impact assessments on runs in GrønREFORM. In the context of the presentationof the final report of the Expert Group in February 2024, the version of the Green REFORM used, including all model technical prerequisites, has been made publicly available, see the example below.

Example of calculation of socio-economic effects of CO_2e-taxes

Table 34 below shows some of the socio-economic effects that the three models will have on thesame Danish economy.

In 2030, Danish GDP and balance of payments are projected to be around DKK 2.920 billion and DKK 33.7 billion respectively, while Danish employment is expected to be around 3 million people.

Option 1 will have the largest socio-economic impact on the Danish economy and is expected to reduce GDP by around DKK 11.2 billion in 2030, corresponding to a decrease of around 0.4 %. Structural employment is expected to fall by 800 people, corresponding to a decline in employment of less than 0.0 %. The limited decline masks the fact that the vast majority of the around 8.000 people who are expected to lose their jobs in agriculture and the catchingindustries of option 1 are expected to enter employment in other occupations in the economy. Thebalance sheet of payments is expected to deteriorate by approximately DKK 0.41 billion in 2030, equivalent to 1.2 %. For options 2 and 3, the corresponding fund-economyeffects are lower.

The limited socio-economic losses mask the fact that the agricultural sector and its downstream industries account for a smaller share of the Danish economy. Agriculture and its downstream industry thus contribute approximately 2 % to Danish prosperity (measured by gross value added). Similarly, agriculture and its downstream industry account for only 3 % of Danish employment, while the value of agricultural exports and its downstream industries corresponds to around 7 % of the value of total Danish exports.

Table 34

Socio-economic effects on the Danish economy in 2030 of the expert group's members

	Baseline	Option 1	Model 2a	Model 3a
		Absolute change (% change)		
GDP (DKK billion)	2.920 11,2	6,4 (0,4)	3,8 (0,2)	(0,1)

Contours(1.000 persons)	3.000	0,8 (0,0)	0,4 (0,0)	0,3 (0,0)
Payment ba — the lane (billions) DKK)	33,7	0,41 (1,2)	0,37 (1,1)	0,35 (1,0)

Note: GDP and balance of payments are shown at 2023 levels.
Source: Ministry of Finance

Social Climate Plan

Through the EU support scheme Technical Support Instrument (TSI), Denmark is granted aid in the form of- consultants to draw up the Social Climate Plan. The support will help to identify vulnerable transportwalls and vulnerable micro-enterprises and assess the impact of the new ETS (ETS2) on emissionsfrom fuels for road transport and heating of buildings in target groups. It is thus considered that the TSI will play a key role in ensuring that Denmark develops a social climate plan that counters the Nega's socialimpact of ETS2 on the target groups.

5.3 Overview of investment needs

(i) Existing investment flows and investment assumptions in relation to theplanned policies and measures

With *the agreement on the establishment of the Green Fund of June 2022*, DKK 1.5 billion is reserved in 2024 and DKK 3.25 billion annually from 2025 to 2 040 in the fiscal space for the creation of a new green space (2022-PL). DKK 53,5billion will be reserved for the green transition by 2040. Of this, DKK 10.6 billion was allocated to the *Green Tax Reform Agreement for Industry, etc. of June 2022*. In addition, with the agreement on *the implementation of the Green Fund* from April 2024, DKK 6.4 billion was further allocated to climate, nature and marine action by 2030. The greenspace must be prioritised for major and longer term investments in climate, green energy and the environment.

Since December 2019, Denmark has prioritised more than DKK 129 billion for a number of major climate and energy agreements up to 2030, see Table 35.

Table 35

Priority funding for climate agreements 2019-2030 (DKK Mia. (2024-PL))

Agreements since the adoption of the Climate Law	Priority funds 2020-2030
Agreement on the Finance Act 2020 (S, SF, RV and EL)	5,7
Climate agreement for energy and industry, etc. 2020 (s, V, DF, RV, SF, EL, K, LA and ALT)	25,0
Agreement on the future of oil and gas extraction in the North Sea (S, V, DF, RV, SF and K)	1,0
Agreement on the green transition of road transport (S, SF, RV, EL)	23,4
Agreement on the Finance Act 2021 and Stimulus and Green Recovery Agreement (S, SF, RV, EL and ALT)	2,9
Green tax reform agreement (S, V, RV, SF, K)	7,1
Danish participation in an "Important Project of Common European Interest" (IPCEI) on hydrogen (S, V, DF, SF, RV, EL, K, LA, ALT)	0,9

Aftale om grøn omstilling af dansk landbrug (S, V, DF, SF, RV, EL, K, NB, La og KD)	28,9
Aftale om finansloven for 2022 og Delaftale om Investeringer i et fortsat grønnere Danmark (S, SF, RV, EL, ALT og KD)	2,4
Aftale om udvikling og fremme af brint og grønne brændstoffer (S, V, SF, RV, K, DF, LA og ALT)	1,2
Grøn skattereform for industri mv. (S, V, SF, RV, og K)	16,3
Klimaaftale om grøn strøm og varme 2022 (S, V, SF, RV, EL, K, DF, LA, ALT og KD)	3,1
Tillægsaftale om udbudsrammer for 6 GW havvind og Energiø Bornholm (S, V, M, SF, LA, K, EL, RV, DF, ALT)	1,5
Klimaaftale om mere grøn energi fra sol og vind på land 2023 (S, V, M, SF, K, EL, RV, ALT)	0,6
Aftale om finansloven for 2024 (S, V, M, DD, LA, K, RV, DF, ALT, NB)	0,4
Grøn luftfart i Danmark 2023 (S, V, M, SF, EL)	4,4
Deludmøntning af Grøn Fond (S, V, M, SF, K, EL og RV)	6,4
Omprioriteringer mellem aftaler	-1,8
Total mia. kr.	**129,5**

Note: Including derived tax losses, administrative costs, if any, but excluding revenue from tax increases. Corrected for price and wage developments with the general PL index.
Source: Ministry of Finance

Furthermore, one of Denmark's priorities during the North Sea Cooperation Presidency (NSEC) is also to develop an Investor Transparency Framework in cooperation with the other members of the cooperation. The framework plant is designed to give greater transparency to offshore wind developers and investors in particular and to informthem about future projects in the North Sea. This will help attract more private investment in future offshore wind projects in the North Sea by 2030, 2040 and 2050.

(ii) Sectoral or market risk factors or obstacles in the national or regimecontext;

National risks or barriers in relation to investment needs relate to the financing needed to meet Denmark's overall climate targets, including objectives related to, inter alia, the expansion of renewable energy. The implementation of the agreements concluded is continuously followed up to ensure that the necessary repetitionis delivered.

Risks or barriers to investment needs are mitigated by the ongoing follow-up so that any needfor additional public financial support will be identified well in advance.

(iii) Analysis of additional public financial support or resources to address it under-compliance identified under point (ii);

For an overview of public support and investment needs, see Annex 12.

5.4 Impacts of the planned policies and measures referred to in paragraph 3 on other Member States and the regionalsamar, at least until the last year of the period covered by the plan, including projections with existing policies and measures;

Nordic Energy Research, a platform for joint energy research and policy development under the NordicMi Nister Council and jointly funded by Nordic governments, has published the *Nordic Clean Energy SCE narios –Solutions for Carbon Neutrality* report, which contains updated scenarios on how the Nordic region can achieve climate neutrality. The report is a follow-up to *Tracking Nordic Clean Energy Progress 2019* and *Nordic Energy Technology Perspectives 2016.*

The report presents three scenarios showing different pathways to CO_2e-neutrality and focusing on different core elements:

- *Carbon Neutralic Nordic* looks at the least costly methodologies and includes considerations on national plans, strategies and targets.
- *Nordic Powerhouse* is exploring the possibility for Norden to play a greater role in the wider euenergy transition by providing clean electricity, clean fuels and carbon storage.
- *Climate Neutral Behaviour* reflects on the implementation by Nordic countries of further initiatives for increased energy and resource efficiency across sectors, which could lead to lower demand in both.

In all scenarios, the energy supply to the Nordic countries is undergoing a major transformation leading to a reduction in CO_2emissions of up to 95 %. Facilitating a clean energy supply, supporting cocklingand accelerating energy technology research and innovation are key focal points for achieving this result. Wind energy plays a key role in a Nordic context and is considered to be dominant in the future electricity system. In particular, Swedish and Danish transmission networks and interconnectors shall facilitate the export of, inter alia, electricity from sea wind to continental Europe.

Five solutions capture the majority of available options on the basis of the analysis: Direct electrification, PtX (fuels), bioenergy, CCS (also in combination with bioenergy, BECCS) and behaviouralchanges. Direct electrification is at the core of all scenarios, but all five solutions are needed to unlocknational starting points, rather than a one-sided focus on a couple of solutions.

The share of electricity in final energy consumption increases from around 30 % in 2020 to 50 % in 2050, and Nordic electricity demand increases by between 40 % and 100 % across scenarios. The analysis shows that direct electrificationring has gained greater momentum according to applications that seemed unlikely for just five years of its operation, such as heavy road transport and even some aviation fuel that can ease the need for bioresources.