



THE DANISH GOVERNMENT

Energy – for a green Denmark

Danish Ministry of Energy, Utilities and Climate



APRIL 2018

2017/18:34

APRIL 2018

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ISBN print: 978-87-93635-46-3
ISBN web: 978-87-93635-46-3

Design, cover: B14
Press: Rosendahls A/S

The publication can be obtained at:
regeringen.dk

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1. Introduction



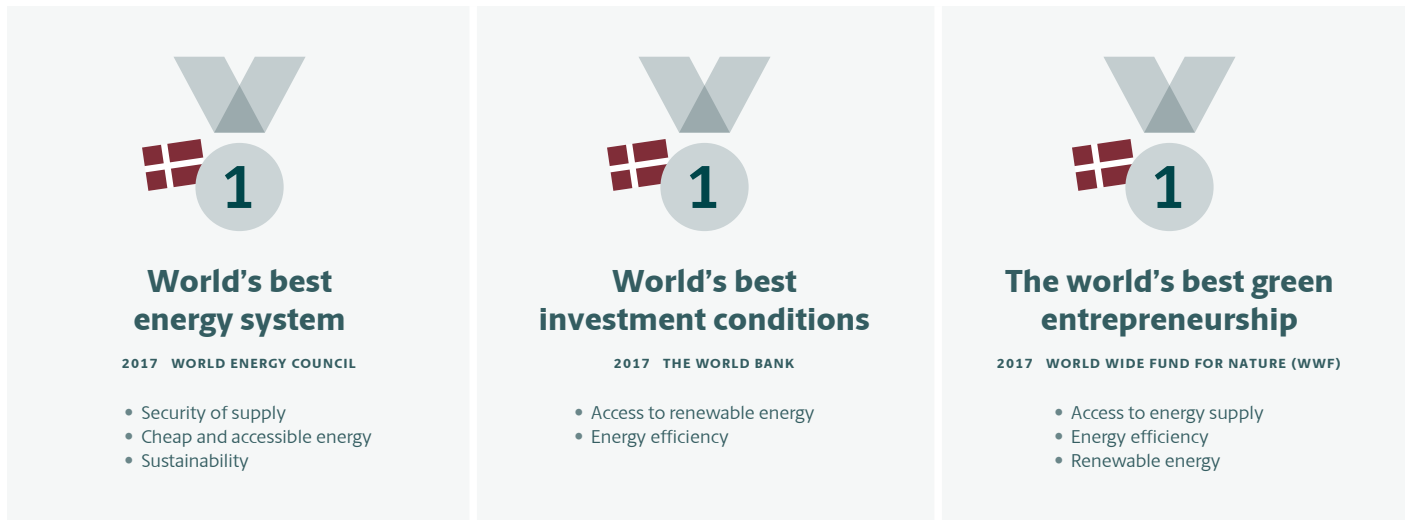
Denmark is internationally recognised as a pioneer country in the fields of energy and climate. Through decades of extraordinary and sustained efforts, we have built a world-class green energy system that delivers a cleaner everyday life and

more green energy, while remaining among the global leaders in security of supply. Denmark’s valuable green brand has generated growth and jobs throughout the country and given our nation an influential voice in the international arena.



Figure 1

Denmark is number one in several international rankings from 2017



However, we must not take Denmark’s position as a green global role model for granted. Significant investments are required to achieve the ambition of a low-emission society that is independent of fossil fuels by the year 2050. We have built a strong foundation for charting a new course in energy policy – a course that works in tandem with market developments, enabling us to maintain our strong green ambitions with fewer costs.

The energy proposal is a breakthrough in Danish energy and climate policy. For the first time ever, consumers and businesses will enjoy an unprecedented combination of more green energy and lower electricity bills.

The government is taking the lead and proving it is possible to maintain high green ambitions while making life in Denmark less expensive, strengthening growth and boosting exports. The energy proposal fulfils the government’s ambitious goal of Denmark meeting at least 50% of its energy needs with renewable energy by 2030.

We can only remain a pioneer country by proving the feasibility of a cost-efficient energy policy that unifies climate efforts with growth, competitiveness and employment. At the same time, the government supports an expansion of energy policy solutions at the EU level and through regional cooperation.



Box 1

Overall goals in the government’s energy proposal

1. More green energy, with at least 50% renewable energy in 2030.
2. Cheaper and greener energy for the individual and the Danish community as a whole.



Box 2

Key results in the energy proposal

- Establishes a roadmap for achieving the government's goal of at least 50% renewable energy in 2030 – a monumental step in the green transformation of our energy system.
- Concrete initiatives amounting to approximately DKK 15 billion, which include expanding of renewable energy for a total of DKK 4.2 billion to ensure continuous expansion of onshore wind turbines and solar PV among other RES-technologies.
- Immediate easing of taxes on electricity and taxes on electricity for heating purposes for Danish households and businesses for more than DKK 3.5 billion in 2025.
- Furthermore, an additional DKK 500m annually will be allocated to a renewable energy reserve from 2025.
- Charts a new course towards a market-based energy system, laying the groundwork for a future where sustainable energy can be established without subsidies.
 - Harmonises and simplifies the subsidy system for renewable energy from 35 different types of subsidies to 4-6 new schemes. At the same time, the average level of direct support is reduced from approximately .22 to approximately .10 DKK/kWh.
- Procurement of the largest offshore wind farm in Danish history.
- Introduces competition to the field of energy-saving initiatives, where companies will compete to deliver energy savings. An elimination of the current energy efficiency scheme will save the consumers approximately DKK 1.5 billion on the energy bill.
- Initiates a reform of the heating sector, marking a departure from the imposition of historically-based commitments on production and consumers.
- Ensures an ambitious framework for Danish energy research and export efforts.
- Promotes a better climate and helps to meet Denmark's climate obligations in non-ETS sectors with a 1.1-1.5 million tonne reduction in carbon dioxide emissions.
- Accelerates the phase-out of coal through a modernisation of the heating sector that provides a new framework for the role of central plants in the future.

The majority of initiatives in the proposal will be realised in the period from 2020 to 2024.

They will help to ensure that we are well on the way towards the goal of at least 50% renewable energy by 2030. The government is allocating approximately DKK 15 billion to a series of prioritised, concrete initiatives, the majority of which are new measures to expand renewable energy capacity. The government is also prioritising significant tax reductions, rising to more than DKK 3.5 billion annually in 2025. Beginning in 2025, an additional DKK 500m annually will also be allocated to a renewable energy reserve.

The proposal is fully funded by a contribution from the government's fiscal surplus and funds generated in the energy sector.

Given the uncertain nature of technology and price developments between now and 2030, we must avoid planning the precise details of energy policy this far into the future in areas where such planning would be inexpedient economically or otherwise. Instead, we will assess our efforts on a running basis to ensure that the renewable energy goal for 2030 is reached at the lowest possible cost. Therefore, well in advance of the expiry of this agreement, the government will convene negotiations on an energy agreement for the period after 2024.



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2. Change of course in Denmark's energy policy

We have made tremendous progress in the green transition of our energy system, establishing a strong foundation for the next great strides towards a society independent of fossil fuels by 2050.

Denmark's successful transition to a sustainable green society is widely recognised around the globe. For the second consecutive year in 2017, World Energy Council ranked the Danish energy system as the world's best.¹ Not resting on its laurels, the government has now set ambitious goals for Denmark's efforts going forward – goals that few countries can match.

Development of the energy system provides basis for new direction

The Danish energy system is in the midst of a major evolution, powered by rapid developments in the market and technology – we must reap the fruits of this progress for optimum socioeconomic benefit.

Many technologies and solutions that are central to the transformation of our energy system are gradually becoming profitable. We anticipate that renewable energy will become feasible without subsidies within the foreseeable future, while the heat pump market has already matured and can serve as a catalyst for electrification of the heating sector. Significant advances in data and digitisation also hold great potential for the energy sector.



Not resting on its laurels, the government has now set ambitious goals for Denmark's efforts going forward – goals that few countries can match.



Box 3

The government's energy and climate goals

- In 2030 Denmark will meet at least 50% of its energy needs with renewable energy.
- In 2030 coal will be completely phased out of electricity production.
- In 2050 Denmark will be a low-emission society and independent of fossil fuels.
- Renewable energy must account for 20% of the EU's energy consumption (Danish target at 30%).
- Increase in energy efficiency by 20% for the whole of EU (The annual Danish target is energy savings at 1.5% of energy consumption).

And in 2018, a ban was imposed on all exploration and drilling for oil, gas and shale gas on land and in Denmark's internal waters.

Denmark has also committed to reaching a series of energy and climate goals in the EU.

"20-20-20" goals in 2020:

- Greenhouse gas emissions from non-quota sectors must be reduced by 20% compared to 2005 (Danish target at 20 %).

Targets in 2030:

- The EU must reduce carbon dioxide emissions at least 40% by 2030.
- The EU must reduce total emissions in the EU's quota trading system by 43% in 2030, compared to 2005.
- Denmark must reduce emissions in the non-quota sectors by 39% compared to 2005.

Additionally, ambitious targets for renewable energy and energy efficiency in 2030 are currently being negotiated in the EU.

The government wants Denmark to have the most integrated, market-based and flexible energy system in Europe, and we are well on the way. However, new solutions are needed for a number of reasons:

- The green transition still entails extensive costs.
- Subsidies for renewable energy are not keeping up with technological and market developments.
- In a number of areas, Denmark's outdated energy regulations and tax structure impede an ambitious green transformation with fewer costs.
- Increasing volumes of renewable energy are challenging the energy system's ability to fully utilise this energy and may eventually also impair the security of supply.
- Regulations in the heating sector are blocking new green technologies, thus limiting opportunities for delivering inexpensive green heat.
- The current scheme for energy saving efforts has entailed large costs and supported savings that would also have come about without subsidies.

With the aid of new technological solutions, the government will realise its grand ambitions – without major additional expenses for society, citizens and businesses. To manage these challenges optimally requires a change of course in Denmark's energy policy – a course where

we use the market and technology to drive an ambitious green transition, in close collaboration with our neighbouring countries and the EU, while reducing costs for the benefit of growth and employment.

Principles for achieving the energy policy goals

The government's energy proposal marks a departure from detailed and inflexible energy policy planning, moving us towards a self-sustaining market-based energy system where renewable energy subsidies are phased out. We must also use the new technologies and business models to promote an even better energy system.

The government wants to expand the scope of energy policy solutions at the EU level and through regional cooperation. The EU must be at the heart of the national energy policy. Meanwhile, we must increasingly capitalise on our status in the international sphere as a green pioneer.

Denmark has reached a point in the green transition where, more than ever before, the energy policy of tomorrow is about creating a flexible and integrated system – an energy system where citizens and businesses play a key role, and where we are linked even closer with our neighbouring countries.

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¹ "World Energy Trilemma Index", World Energy Council december 2017.



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3. Initiatives in the energy proposal



The energy proposal specifically outlines how the goal of at least 50% renewable energy by 2030 can be realised while promoting a market-based energy system with lower costs.

Goal

- More green energy, with at least 50% renewable energy in 2030.
- Cheaper and greener energy for the individual and the Danish community as a whole.



Principles

- An ambitious green transition with the lowest possible costs.
- Competition and focus on harmonisation of subsidy conditions.
- The energy policy must be flexible in order to seize the benefits of a changing world.
- Maximum benefit from increased internationalisation of Denmark's energy policy.
- The energy markets must be integrated, and the energy system must be made flexible and digital.



Focus areas

- Introducing competition to the renewable energy sector.
- The biggest offshore wind farm in Danish history – and a blueprint for offshore wind energy without public subsidies.
- Tax reform that promotes green transition and delivers socioeconomic benefits.
- Competition in the field of energy-saving initiatives.
- Modernisation of the heating sector.
- An integrated and flexible world-class energy system.
- Strengthened research and export efforts.

3.1. Introducing competition in the expansion of renewable energy

Within the foreseeable future, renewable energy sources such as solar and wind will become our primary energy sources; therefore, the foundation must be laid for our next step towards an energy system free of fossil fuels. The government has an ambition that, within the next decade, expansions of renewable energy will function purely on market conditions, without public subsidies. As far as possible, the government wants to harmonise and simplify subsidies for renewable energy so that different technologies receive equal subsidies on equal conditions. This will

ensure that public support goes to the most efficient technologies. In the long term, subsidies for renewable energy will be phased out, but we are not yet in a situation where this is possible. However, the government’s proposal harmonises renewable energy subsidies from approximately 35 different types of subsidies to 4-6 new schemes.²

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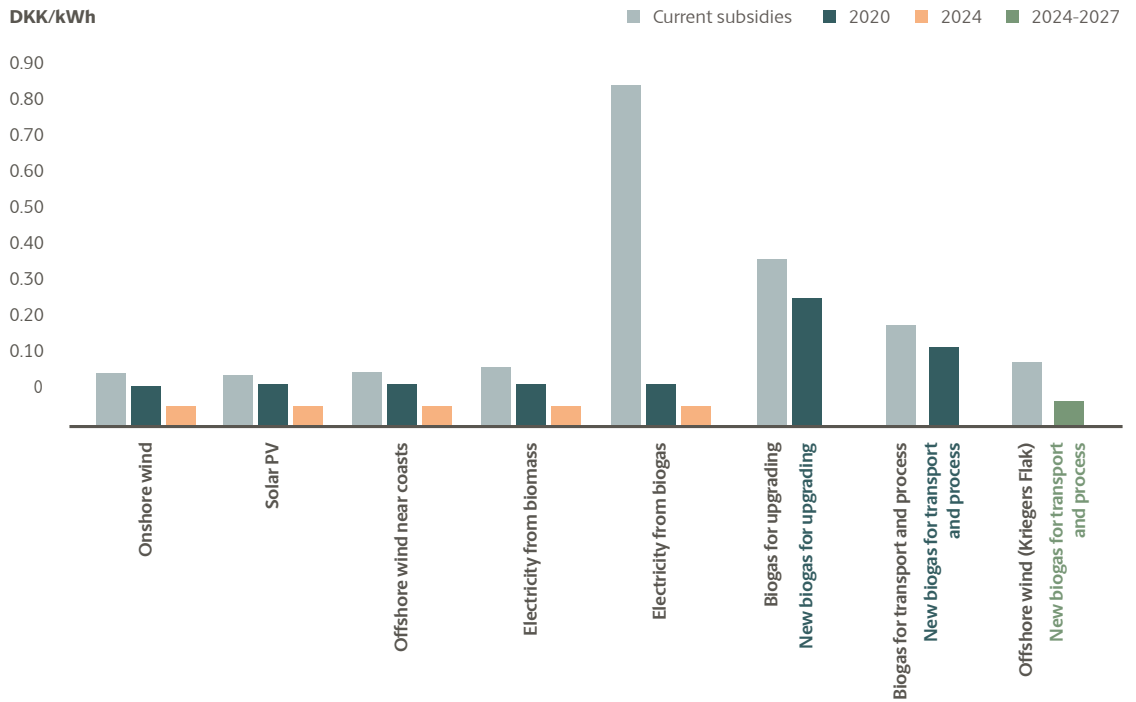
² These schemes are: Technology-neutral procurement of solar, onshore wind and offshore wind near coasts; subsidies for electricity production using biomass and biogas-based technologies; offshore wind; and new biogas for upgrading, transport and process. Subsidies for new biogas for upgrading, transport and process can be viewed as constituting one scheme or three separate schemes.



Figure 2

The government’s proposal for a new subsidy system

Note The figure shows the direct support for different technologies, whereas the indirect support is not shown. There is currently no subsidy scheme for solar PV. The latest subsidy scheme was a procurement process that resulted in a subsidy of 0.1289 DKK/kWh.



Box 4

Future subsidy needs for new renewable energy

The subsidies required for renewable energy will gradually decline. The point at which renewable energy becomes feasible without subsidies will largely depend on developments in electricity prices and the production costs associated with renewable energy. By most indications, renewable energy will be produced without public subsidies within the coming years.

Developments in electricity prices depend in part on the EU, including the development of an integrated electricity market and a well-functioning, common carbon quota trading system. Therefore, together with other countries in the EU, the government has worked hard for the implementation of a reform of the European quota trading system. The quota reform will contribute to raising quota prices and accelerating the onset of subsidy-independent renewable energy.

The government proposes

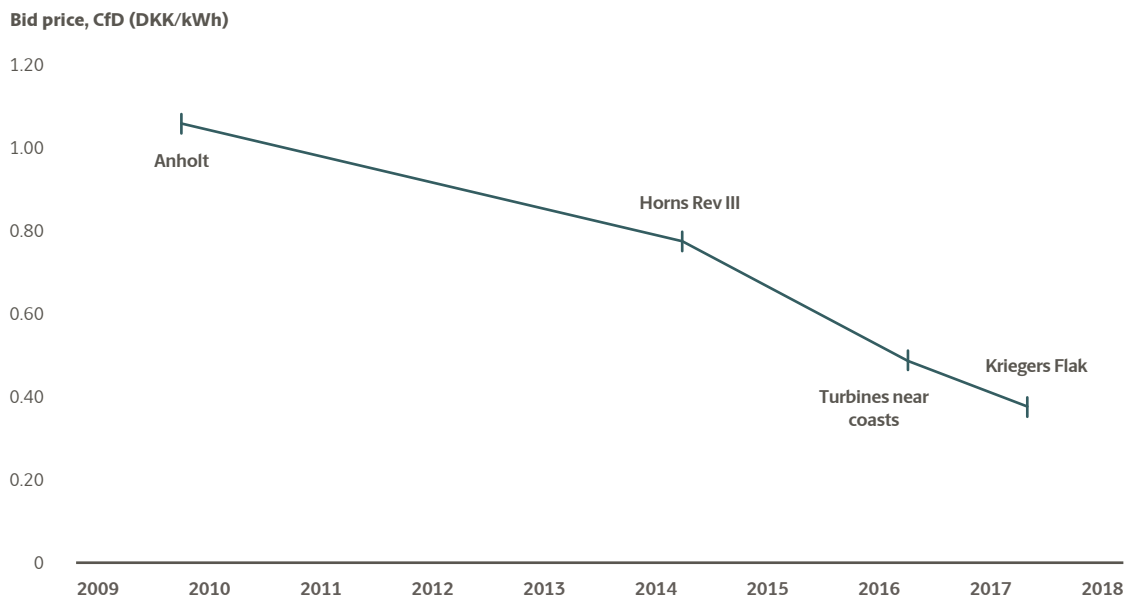
- Uniform subsidies for all technologies, enabling the market to push the most cost-efficient technologies to the forefront.
- Allocating a total of DKK 4.2 billion for annual public procurement of solar and wind energy from 2020-2024, and funding for test wind turbines.
- Allocating a total of DKK 4 billion to ensure the continued expansion of biogas and other green gases, and to support technological development in the sector.
- Continued subsidies for existing biomass-powered CHP plants, adapted to EU requirements stipulating the maximum subsidy period.
- Continued subsidies for existing biogas applications, adjusted for overcompensation based on EU requirements.
- Appointment of a bioenergy task force for more effective utilisation of bioenergy. Initiation of general inspections of wind and solar schemes.
- Elimination of direct subsidies for the establishment of new household systems based, wind turbines, etc as of 2020.
- Strong modelling and analysis framework for assessment and verification of the energy policy's initiatives, including monitoring of developments in the renewable energy market.



Figure 3

Danish offshore wind farm prices (2010-2017)

Note The bid prices were submitted under varying tender conditions. Therefore, direct comparisons between the figures are not necessarily possible. For example, the procurement of offshore wind turbines near the coast (North Sea South/North) are inclusive of grid connection. However, the figure reflect the clear trend of declining bid prices in offshore wind.



3.2. The biggest offshore wind farm in Danish history – and a blueprint for offshore wind energy without public subsidies

Denmark must maintain its position as the world's leading offshore wind nation. Therefore, the government intends to procure the largest offshore wind farm in Danish history – an approximately 800 MW project to be built in the period 2024-2027. The government also has an ambition of establishing more offshore wind between now and 2030, with a more detailed decision scheduled for 2022.

The government has a stated goal of ensuring that offshore wind projects can be established without subsidies as soon as possible. Therefore, efforts will be made to establish the wind farm without public subsidies, although such subsidies will likely be necessary for installation of cables,

etc. Subject to further analysis, the government also envisions a scenario in which the cable installation procurement process is also subject to competition. In the area of offshore wind, the government proposes the provision of subsidies as a fixed price supplement.

The government wishes to develop the North Sea, which holds great potential to become “a Silicon Valley” for offshore wind. The government will pursue this aim when Denmark assumes the presidency of the North Seas Energy Cooperation this summer. Here, the government will proactively seek backing for concrete measures that promote offshore wind on market conditions. The government also proposes launching an offshore wind analysis, which will help ensure an optimum market framework for supporting the commercial utilisation of offshore wind potential as soon as possible.



Box 5

The North Sea – green powerhouse of tomorrow in offshore wind

The North Sea cooperation will pave the way for common rules and standards for offshore wind turbines, and increase international collaboration in the procurement of offshore wind farms. A harmonisation of the rules for offshore wind turbines and increased coordination of procurement will benefit the Danish wind industry's ability to adapt and standardise production, which can contribute to driving costs down. The European Commission estimates that offshore wind energy from the North Sea holds the

potential to supply approximately 12% of Europe's total energy consumption in 2030. This corresponds to installed offshore wind capacity of approximately 100 GW – a ten-fold increase on existing wind energy capacity in the EU today. 1 GW can power approximately 1 million Danish households. According to Wind Europe, 80% of the expected offshore wind farms will be installed in the North Sea – thereby justifying its moniker of tomorrow's Silicon Valley in offshore wind.

The government proposes

- Procurement of a new offshore wind farm that will supply as much as 800 MW to the grid, to be established in the period 2024-2027. The contract will be awarded in 2021.
- Execution of a large scale screening of potential locations for new offshore wind farms with a total capacity of up to 10 GW.
- Making a decision in 2022 regarding additional offshore wind before 2030.
- Extension of the municipal right of rejection of offshore wind farms from 8 km to 15 km from the coast.
- Initiation of analyses to establish an optimum framework for offshore wind going forward.

3.3. Tax reform that promotes green transition and delivers socioeconomic benefits

High Danish taxes on electricity consumption impede green solutions and better utilisation of surplus heat. This also means that Danish households pay high energy costs compared with other countries. Therefore, the government intends to reduce the very high taxes on electricity and electric heating, and to make electricity more competitive with other fuels.

The government’s specific proposals include a reduction of the electricity tax by a total of .25 DKK/kWh, to be phased in from 2019 to 2025, and a reduction of the tax on electricity for heating purposes from approximately .30 DKK/kWh to .15 DKK/kWh, effective 2021. This corresponds to a permanent reduction of the tax on electricity for heating purposes by .25 DKK/kWh compared to today

The government intends to reduce the electricity tax for liberal professions to the EU’s minimum level. Liberal professions currently pay the

high electricity tax rate of .914 DKK/kWh. The elimination of this tax will establish an equal footing with other VAT-registered businesses, whereby they will only have to pay the low electricity tax rate of .004 DKK/kWh. This represents a significant tax reduction for these businesses.

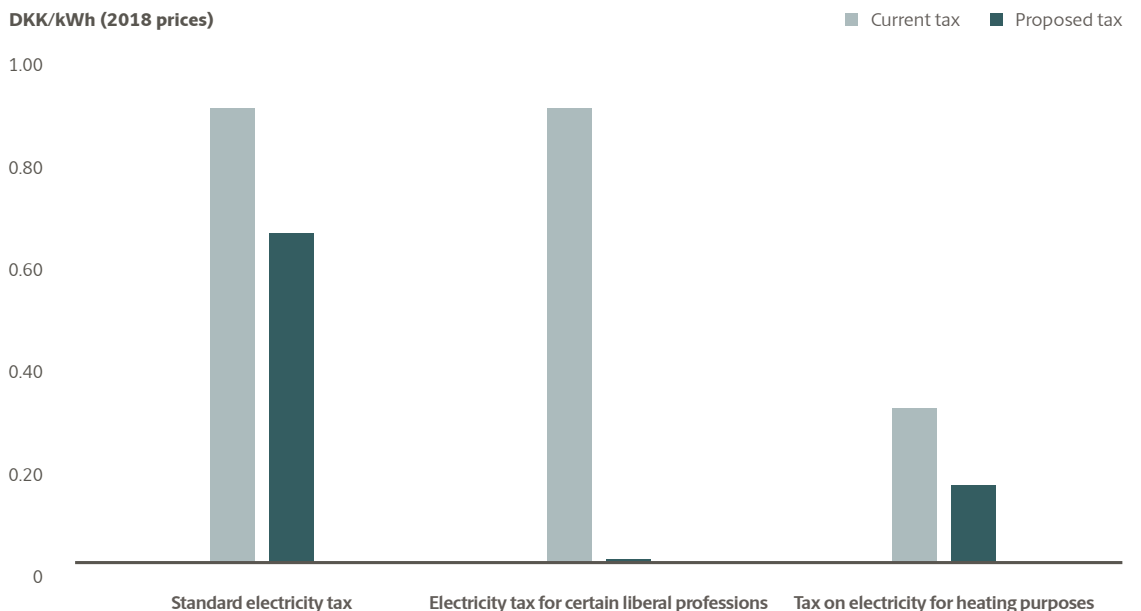
The elimination of the PSO tax and the government’s desire to permanently reduce tax on electricity for heating purposes tax to approximately 0.15 DKK/kWh will promote surplus heat more than at present. The government also intends to earmark DKK 100m annually to promote surplus heat. We will improve transparency and information relating to the regulation of surplus heat and reduce the bureaucracy for smaller suppliers.

The government proposes the appointment of a working group whose tasks will include exploring more cost-reflective tariffs. The government will also examine the need to change the rules to avoid double taxation of VAT-registered businesses for electricity initially stored in batteries, etc, and later sold to the grid.



Figure 4

The government’s proposed tax reductions



The government proposes

- Substantial reduction of:
 - The electricity tax by a total of .25 DKK/kWh, to be phased in from 2019 to 2025.
 - The tax on electricity for heating purposes to approximately .15 DKK/kWh, effective 2021.
 - The electricity tax for liberal professions from .914 DKK/kWh to 0.004 DKK/kWh, effective 2022.
- Better utilisation of surplus heat by:
 - Allocating DKK 100m to promote surplus heat. Restructuring of the surplus heat tax, taking into account the phasing out of existing schemes.
 - Increasing transparency in the regulation of surplus heat.
 - Reducing bureaucracy for smaller suppliers, such as retail, etc.
 - Strengthening information efforts relating to surplus heat.

3.4. Competition in the field of energy-saving initiatives

Energy efficiency measures have been a core element of Danish energy policy since the 1970s, and today they represent one of Denmark's international positions of strength in the energy sector. The world thereby looks to Denmark to find solutions for generating growth without increasing energy consumption.

The starting point for future efforts is to carry out energy efficiency initiatives where they provide maximum benefit for Danish consumers and society. In addition, the costs of energy efficiency initiatives must be balanced with the costs of expanding renewable energy.

Therefore, the government proposes the elimination of the current scheme, which instead will be replaced with market-based subsidies targeting savings relating to energy used for industrial processes, where the allocated funds will deliver the greatest possible effect.

Furthermore, the government will ensure that consumers receive information on new opportunities for savings. We must also utilise the increasing digitisation of the energy system.

The government will support Danish businesses in the field of energy-efficient solutions by focusing on exports, including efforts under the export scheme. Efforts for energy efficiency in the EU will also continue, and the government will give greater priority to Danish efforts for stronger ecodesign requirements to ensure high product standards throughout the EU.

The government also proposes the preparation of a long-term building renovation strategy for the construction sector, including indicative building renovation milestones for 2030, 2040 and 2050.



The government proposes

- The allocation of DKK 400m in annual subsidies for energy efficiency measures in the period 2021-2024.
- Focusing efforts on energy used for industrial processes, which offers a significantly better savings effect for the money.
- Easing burdens on consumers by moving the funding of these subsidies from energy bills to the national budget.
- Initiating targeted information campaigns to ensure that consumers are aware of the potential savings opportunities, and timing this information according to when consumers make decisions.
- Utilising the increasing digitisation of the energy system by collecting and actively using data to identify energy efficiency measures that offer the most value for Danish consumers and society.
- A longterm strategy for energy renovation of existing buildings in connection with the implementation of the EU Building Directive.
- Optimisation of the Danish implementation of common EU instruments, including energy inspections of businesses and the energy labelling scheme for buildings.
- Continuing proactive Danish efforts for energy efficiency in the EU, and intensifying efforts for stricter product requirements through the EU ecodesign regulations.
- Further boosting export efforts to promote energy efficiency solutions.

3.5. Modernisation of the heating sector

Due to technological developments, regulation of the heating sector now stands in the way of new green solutions and technologies; therefore, the government is proposing a historic change of course in the heating sector, where plants and consumers will be free to make their own investment decisions.

The change of course will modernise the heating sector and improve the options of plants to manage the expiration of a subsidy for natural gas supplied CHP plants at the end of 2018 and the resulting impacts on heat prices and consumers. The government wants to assist heating customers who no longer have access to collective heating, as well as the CHP plants that cannot compete with individual solutions and therefore must cease operations at a loss. The change of course will also apply for investments in the larger cities, which to a large extent have been supplied by CHP plants.

A total of DKK 540m will be allocated for initiatives relating to the subsidy for natural gas supplied CHP plants, of which DKK 150m including administrative costs is allocated to an initiative targeting the heating customers who will experience higher heating bills for a period, until their individual district heating companies have made the necessary investments that can reduce the heating bills.

In connection with the gradual modernisation of the sector, the government will eventually allow heat production companies and grid owner companies to apply to the Danish Utilities Inspection Agency for exemption from the revenue framework regulation.

The initiatives will support the realisation of DKK 2.3 billion in potential efficiency improvements in the heating sector by 2025, thereby benefitting consumers and businesses.

The government proposes

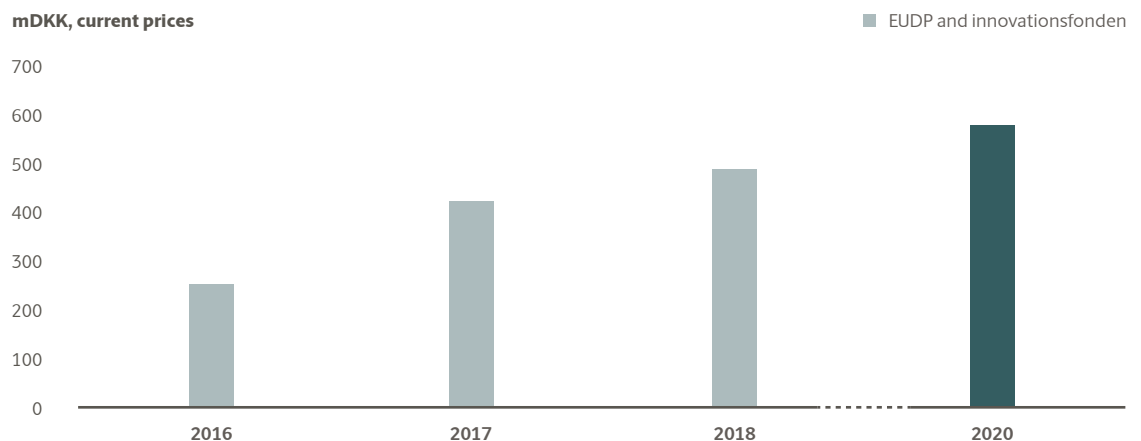
- Elimination, effective 1 January 2019, of restrictions in production in the form of CHP requirements and fuel commitments in the small district heating areas.
- Elimination of restrictions in production in the medium-sized district heating areas as quickly as possible in the period 2020-2025, if analyses of the security of electrical supply show that this is feasible.
- Elimination of production obligations in the large district heating areas by 2030 at the latest. Advance implementation of these policies will be possible by application on a case by case basis.
- New consumer commitments will be prohibited as of the 1st of January 2019. Existing consumer commitments will be nullified 4 years after the production commitments are phased out in an area.
- Allocation of 540m DKK in the period 2018-2023 in connection with the elimination of the subsidy for CHP plants.
- Retention of the revenue framework regulation as the basis for the district heating sector, with future access to exemptions from revenue framework regulation according to certain rules.
- Free choice of technology in the district cooling sector and better options for the operation of cross-municipal district cooling projects.



Figure 5

Implementation of the Danish commitment under Mission Innovation (DKKm, current prices)

Note Excluding EUDP's account: "Research in environmental friendly and energy effective production of oil and gas".



The calculation includes funds from EUDP and Innovation Fund Denmark's funds earmarked for energy research (i.e. excluding funds for energy research through the fund's open bidding rounds). Budget figures are stated for the years 2016-2018. The figure for funds in 2020 reflects the government's intention to implement the Mission Innovation goal.

3.6. Strengthened research and export efforts

Denmark is a leader in the development of innovative green energy solutions, and there is strong demand for Danish energy technologies, solutions and knowledge.

To maintain Denmark's leading position in research and development, the government has committed to Mission Innovation, whereby we will increase state funding for research, development and demonstration of energy technology to DKK 580m in 2020. After 2020, the government intends to further increase the state funding for research, development and demonstration of energy technology. To maintain Denmark's leading position in research and development, the government proposes a comprehensive new national strategy for research, development and demonstration, which will: ensure a closer-knit value chain for research, development and demonstration of new energy technology; draw maximum benefit from growing international research and development efforts; and make state-subsidised energy technology projects as attractive as possible to private investors.

The government will also propose the establishment of new smart energy testing facilities. This will include grants for large-scale testing facilities for the testing of interaction and integration between new technological solutions, thus contributing to the development of a cohesive and flexible energy system. Within the framework of research, development and demonstration

funds for the energy sector, a proposed DKK 60m will be earmarked for this purpose in 2021.

Research, development and demonstration of new green solutions not only promotes the green transition in Denmark, but also generates growth, jobs in the energy sector and exports of Danish energy technology.

Danish knowledge and Danish energy solutions are increasingly in demand globally, as more and more countries pursue a transition to green energy. Denmark must seize these opportunities.

Therefore, the government intends to significantly intensify export promotion activities in the energy sector – both in scale and volume – by a total of DKK 175m from now until 2024. Denmark must establish presence in more markets, while remaining agile and able to focus its efforts where demand is greatest. Furthermore, the current export scheme will be extended and expanded in the key export markets of Germany, the UK and the United States. Denmark will also increase its collaborations with authorities in future growth markets, with an increased focus on the promotion of Danish exports, market development and investments. This will make an important contribution towards realising the government's goal of at least doubling Danish exports of energy technology to more than DKK 140 billion by 2030.³

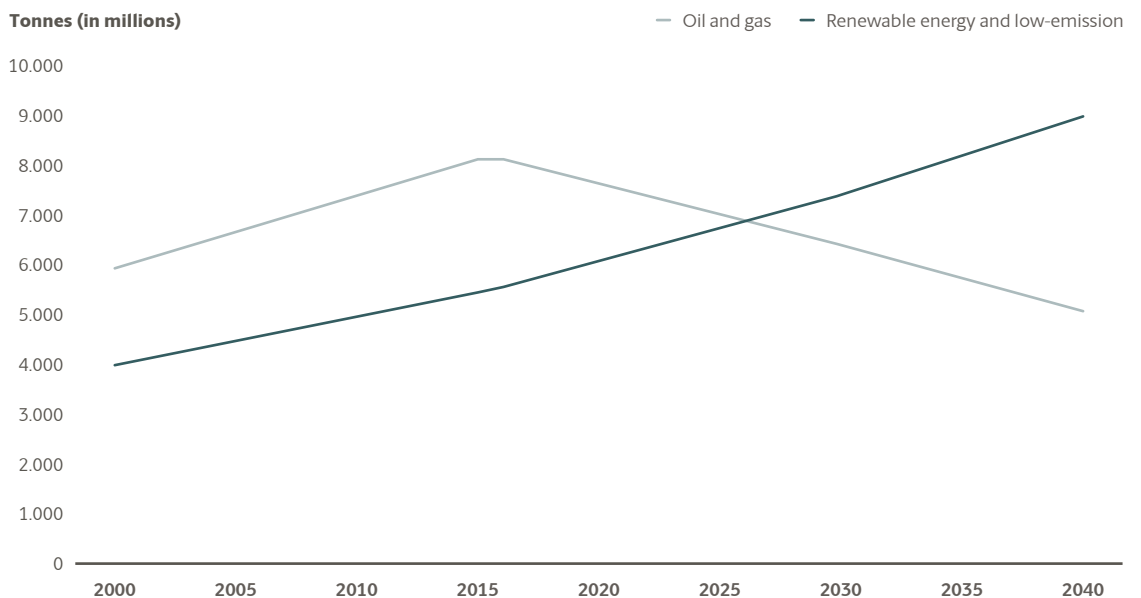
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³ Growth Plan DK (http://efkm.dk/media/8247/eksportstrategi-en-enkeltidet_21_03_2017.pdf)



Figure 6

Energy demand (Mtoe) between now and 2040



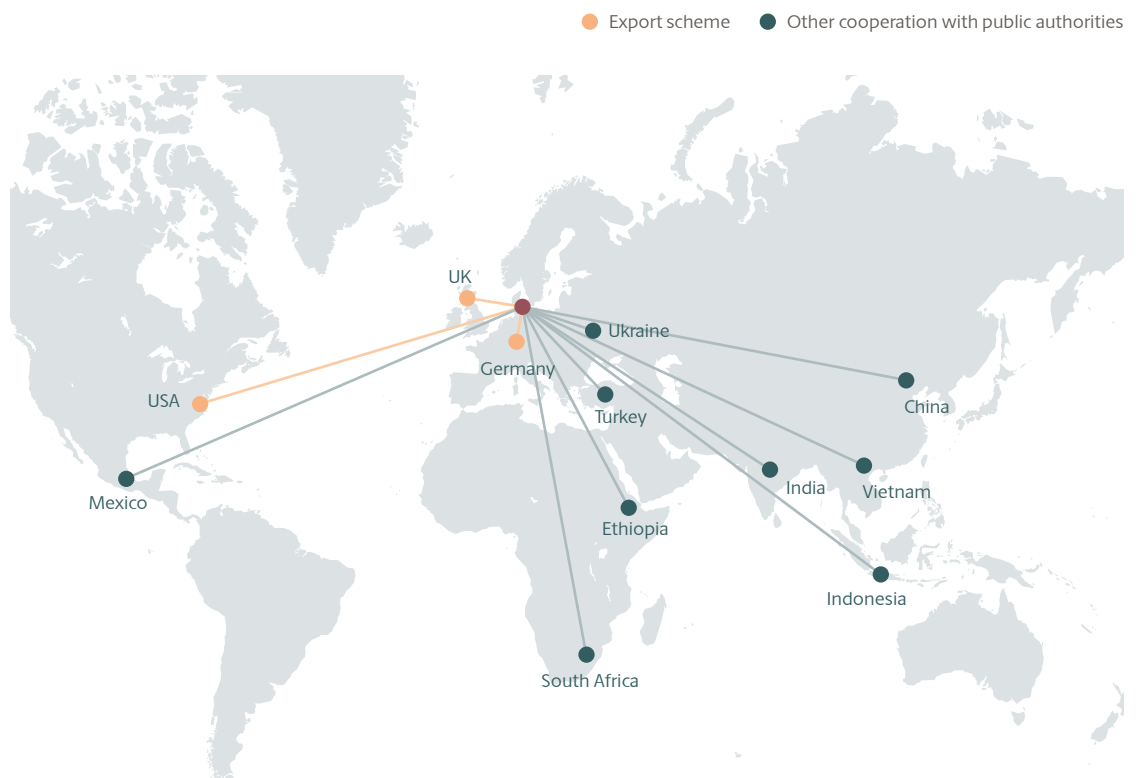
The graph depicts energy demand in this period if the goals of the Paris Agreement are to be realised. As shown, investments in renewable energy technologies will continue to increase, while investments in fossil-based energy will decline. Therefore, a growing market is anticipated within Denmark's green positions of strength.

Source Data: IEA WEO2017 – Sustainable Development Scenario.



Figure 7

Denmark's bilateral cooperation with public authorities on transformation of the energy sector



The government proposes

- Increasing state funding for research, development and demonstration of energy technology to DKK 580m in 2020. This amount is divided into DKK 500m for the Energy Technology, Development, and Demonstration Program (EUDP) and DKK 80m to Innovation Fund Denmark.
- Further increasing state funding for research, development and demonstration of energy technology. These efforts will promote research and development of cost-efficient energy technologies for the benefit of growth, employment and exports.
- Earmarking DKK 60m for new testing facilities for smart energy.
- National strategy for research, development and demonstration in the energy sector.
- Extension of the export scheme to 2024 and a massive expansion of the scheme, including two new partner countries and the four new energy advisors posted abroad.
- Expansion of cooperation with public authorities in other countries through public-private partnerships, with a focus on promoting Danish exports, market development and investments.
- Launching initiatives rooted in new political and commercial opportunities in countries where Denmark has not established cooperation with the public authorities.

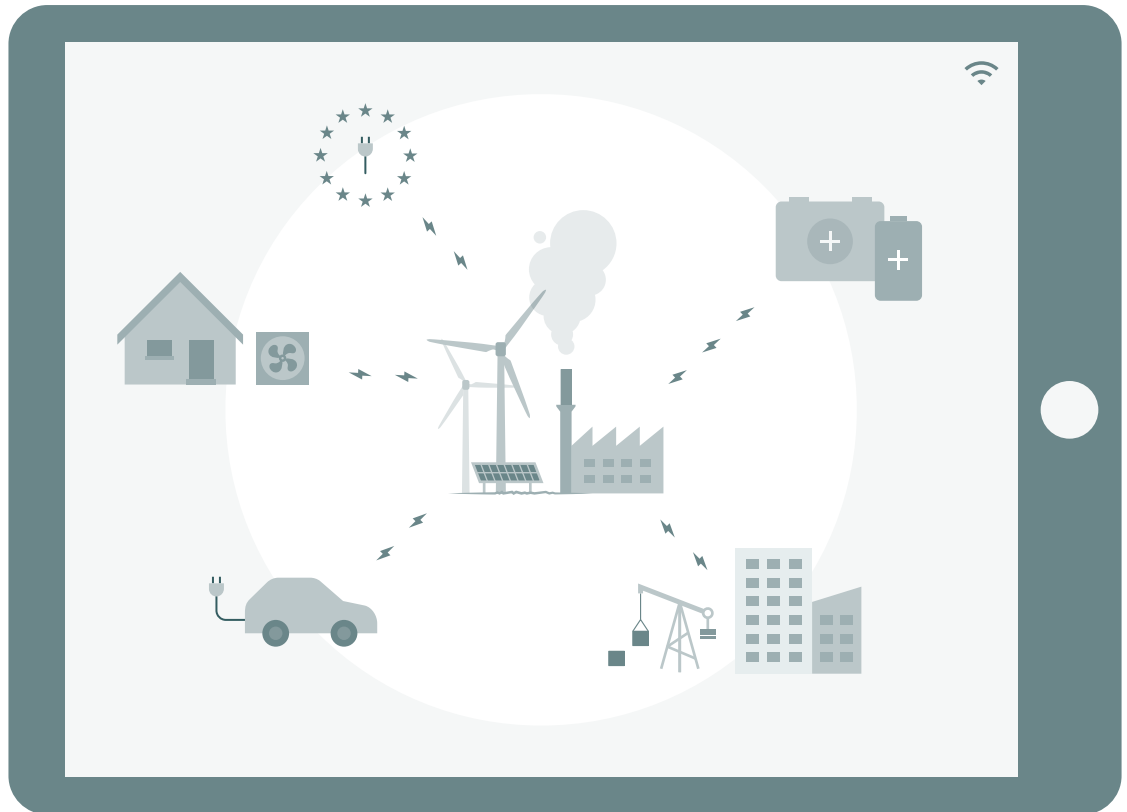


Figure 8

Illustration of the energy system of the future

Note Denmark works to promote the most integrated, market-based and flexible energy system in Denmark – a system that can handle the rapid developments in today's energy system, with increased electrification throughout Danish society and the introduction of additional and new technologies, players and solutions, including storage and data/digitisation solutions.

Source Danish Ministry of Energy, Utilities and Climate



3.7. An integrated and flexible world-class energy system

Denmark is among the world leaders in security of supply, as Danes have power in their outlets 99.996% of the time. However, rising volumes of fluctuating green energy in the coming years may challenge the energy system.

Thus, the ambition of the government is to ensure that Denmark has the most integrated, market-based and flexible energy system in Europe, with efficient energy utilisation across sectors and with a continued strong security of supply.

The government intends to prepare an action plan for smart energy, which will map out a path to realising the above ambition through the best possible means, including a focus on data and digitisation solutions and efficient energy storage.

The electricity market has seen a longstanding focus on promoting competition and thereby fair prices for consumers. A range of initiatives have been launched – such as flexible billing,

a wholesale model, data hub, etc. – but their full potential has not yet been realised. The government wants a retail market for electricity, based on the principles of consumer participation and competition. However, there is a need to assess existing initiatives before launching new initiatives. Therefore, the government recommends an assessment of developments in the retail market.

The market must drive developments, making it crucial that regulation does not stand in the way of innovation across energy forms, consumers and producers. Therefore, one of the government's proposals is the testing of “regulatory free zones”. The government also intends to appoint a task force that will simplify and consolidate regulations across the utilities sector, making it digitisation-ready and less burdensome on businesses.

Strong electricity connections with other countries are also crucial for a small nation like Denmark. Not only is it a good business for Denmark, but it also promotes the green transition with fewer costs and contributes to maintaining a strong



The ambition of the government is to ensure that Denmark has the most integrated, market-based and flexible energy system in Europe, with efficient energy utilisation across sectors and with a continued strong security of supply.

security of supply. The government's efforts include working proactively in the EU for further liberalisation of the electricity market, as fewer trade barriers will allow energy to flow freely. Lastly, the government proposes the preparation of a gas strategy that will establish a direction

for incorporating gas and the gas infrastructure into the energy system of future, thus ensuring optimum utilisation. It is wise and cost-efficient policy to utilise the existing infrastructure in the transition to a green energy system.

The government proposes

- Improving the electricity market model, focusing on marketisation of critical aspects of the electricity system, promoting flexibility, and adaptation of new technologies on market conditions. The model will be finalised by the end of 2020.
- Implementation of Electricity Market Model 3.0 in the period 2020-2025, with ongoing monitoring and a stronger methodology for analysing the security of supply.
- Analysis and assessment of launched initiatives, including the wholesale model, remote meter reading and flexible billing, all of which are designed to promote competition and consumer involvement in the electricity market, as well as analysis of the future role of Danish grid owner companies.
- Preparation of an action plan for smart energy, to be presented in 2020, with focus areas including the use of data and digitisation.
- Testing of regulatory free zones in smart energy, which will promote, improve and develop the framework conditions for companies in the market.
- Implementation of a series of initiatives that digitise governmental administration in the utilities sector, including a common website for the companies' reporting forms.
- Appointment of a task force for digitisation-ready legislation and smart regulation, which will also simplify and standardise of utilities legislation.
- Preparation of a gas strategy focusing on a cost-effective role for gas in the green transition from now until 2050.



4. Continued utilisation of Danish oil and gas resources

Alongside its high green ambitions, the government wants to see continued utilisation of Denmark's oil and gas resources in the North Sea for maximum benefit to Danish society. With the March 2017 agreements on development of the North Sea, billions will be invested in the coming years in the reconstruction of the Tyra field, which is essential infrastructure for the future extraction of oil and gas from the North Sea. The government has also allocated DKK 100m for research into more environmentally-friendly and energy-efficient production of oil and gas.

Based on the government's oil and gas strategy from 2017, the eighth bidding round will

commence in the spring of 2018, thereby ensuring new investments in exploration of the North Sea. Going forward, the government has an ambition to conduct North Sea bidding rounds at fixed intervals of two to three years.

In February 2018, the government resolved to stop issuing permits for oil and gas exploration on land and in Denmark's internal waters.

Continued oil and gas extraction is conducive with the government's green ambitions. Like the rest of the world, Denmark will remain dependent on oil and gas for some years to come.



Box 6

The oil and gas sector makes significant contributions to Danish society⁴

The oil and gas sector continues to make positive contributions to Danish society through significant tax payments – amounting to approximately 415 billion DKK as of

year-end 2015 – and the industry estimates that around 15,000 people are employed in the industry.

NOTES

⁴ The oil and gas sector of the future, July 2017.

5. Financing and effects



The proposal is fully financed within the framework of the mediumterm financial planning, which runs until 2025. The proposal is funded in part by a contribution from the government’s fiscal surplus. Additional funds are derived from the energy sector, including available funds from the energy efficiency contribution, released funds as a result of overcompensation in subsidies for biomass and biogas, and the allocated reserve in the national budget for energy purposes.

Decisive steps towards more renewable energy in 2030

The ambition that at least 50% of Denmark’s energy consumption must be supplied by renewable energy sources is an ambitious but realistic goal. However, it will also entail some costs, so we must pursue this goal wisely. In its energy proposal, the government proposes a series of concrete measures to increase the share of renewable energy from about 40% to about 44% in 2030. The government also proposes the establishment of a renewable energy reserve with DKK 500m annually beginning in 2025, which will

enable future initiatives later in the 2020s. Overall, this means that we expect to successfully meet the goal of at least 50% renewable energy in 2030, see figure 9.

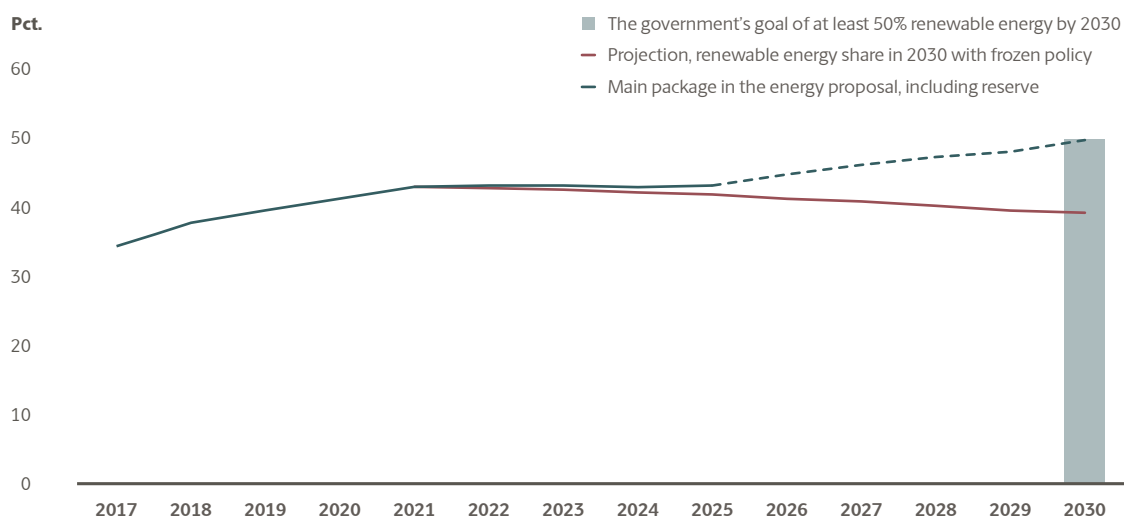
As 2030 is a long time from now, we lack detailed knowledge about developments in technology and prices. Therefore, we must not plan the precise details of energy policy too far into the future, nor commit to a single path of expansion, which may ultimately prove economically inexpedient or out of step with developments in the world around us.

The policy contains vital building blocks in the future energy system, the majority of which will be realised in the period 2020-2024. The initiatives will contribute to ensuring more renewable energy in our energy system in 2030. Understanding that this effort requires ongoing assessment, the government will convene negotiations well in advance of the expiry of this agreement to establish an energy agreement for the period after 2024.



Figure 9
Implementation of at least 50% renewable energy goal by 2030 under the government’s energy proposal

Source Danish Ministry of Energy, Utilities and Climate



Note The figure provides a rough illustration of implementation of the government’s goal of at least 50% renewable energy in 2030 based on the energy proposal. The profile shown is indicative, and the exact implementation profile may deviate from that displayed, depending on when specific initiatives are initiated and connected to the grid. The implementation will also depend on developments in technology and prices, both of which are difficult to predict. The projection is based on figures from the Basic Project 2018. By "frozen policy" the development in the the share of renewable energy is depicted in a scenario without any now policy initiatives.

The proposal contributes to Denmark's climate efforts

With the proposal, we not only adapt our energy system, but also eliminate 1.1-1.5 million tonnes of carbon emissions outside of the quota sector.

The ambition of the government is to enable the transformation of our energy system without forcing us to pay more for energy tomorrow than we do today. Life in Denmark must not become more expensive.

However, there are still costs associated with the expansion of renewable energy – costs paid by energy consumers through electricity taxes, which

comprise a significant share of the bill for Danish electricity consumers. In its efforts to keep these costs well-managed, the government will establish a framework for Energinet's investments arising from political decisions in the energy proposal, thereby providing a temporary solution until a new economic regulation of Energinet is implemented.

The framework establishes immediate transparency regarding the costs of investments, and will prevent additional political decisions from causing higher energy bills for Danes – instead, these expenses will be subject to prioritisation on the same terms as initiatives funded through the national budget.



