The Law of Renewable Energies in Denmark

Helle Tegner Anker and Bent Ole Gram Mortensen

A. Introduction – Targets and Results

Renewable energy (RE), and in particular wind energy, has been, and still is, a strong element in the fulfilment of climate-related policy targets in Denmark. The Danish 2020 Climate Act[1] stipulates an overall target of climate neutrality in 2050, as well as a 70 % reduction of greenhouse gas emissions by 2030, and 50–54 % by 2025, compared to 1990 levels.

More specifically, a broad political agreement was reached in June 2022 to quadruple onshore wind and solar power by 2030, and to significantly expand offshore wind from 2.3 to 12.9 GW in 2030, and potentially 35 GW in 2050.[2]

The 2022 agreement was a follow-up to several comprehensive energy agreements and initiatives adopted since 2008.[3] The 2008 agreement[4] set a target of 20 % renewable energy for total energy consumption in 2011, including also the establishment of 400 MW[5] offshore capacity by 2012. The 2008 agreement also led to the adoption of the Renewable Energy Act.[6] In

1 Act no 965 of 26 June 2020 on Climate. Latest consolidated version: Consolidated Act no 2580 of 13 December 2021 as changed by Act no 2387 of 14 December 2021.

2 Klima-, Energi og Forsyningsministeriet [Danish Ministry of Climate, Energy and Utilities], 'Klimaaftale om grøn strøm og varme 2022' (Climate Agreement regarding Green Power and Heat 2022) (25 June 2022). <https://kefm.dk/Media/637920977082432693/Klimaaftale%20om%20gr%C3%B8n%20str%C3%B8m%20og%20varme%202022.pdf> accessed 26 May 2025.

3 For a general overview *see* e.g. Jon B Skjærseth et al., *Wind Power Policies and Diffusion in the Nordic Countries. Comparative Patterns* (Palgrave Macmillan 2023) 27–34.

4 Klima-, Energi- og Forsyningsministeriet [Danish Ministry of Climate, Energy and Utilities], 'Aftale mellem regeringen (Venstre og Det Konservative Folkeparti), Socialdemokraterne, Dansk Folkeparti, Socialistisk Folkeparti, Det Radikale Venstre og Ny Alliance om den danske energipolitik i årene 2008–2011' (Political Agreement on Danish energy policy in the years 2008–2011) < https://skm.dk/aktuelt/publikationer/ovrige-publikationer/aftale-om-den-danske-energipolitik-i-2008-2011> accessed 26 May 2025.

5 Later reduced to 350 MW.

2012, a new political energy agreement[7] set a target of increasing onshore capacity by 1800 MW (net 500 MW), offshore by 1000 MW and nearshore by 500 MW by 2020. The objective was to reach a 50 % wind energy share of electricity consumption by 2020. A 2018 agreement[8] established a target of 55 % renewables in total energy consumption by 2030, and targets for increasing offshore wind to a total capacity of 2400 MW. However, at the same time, the 2018 agreement aimed to reduce the number of onshore turbines by more than 50 % in 2030, setting a ceiling of 1850 onshore turbines. The deployment of new onshore wind turbines should thus be dependent upon the removal of older turbines. In the 2020 agreement, the ceiling for onshore turbines was postponed until 2040, but it has not been completely abolished yet, despite the 2022 targets to quadruple onshore wind. The 2020 energy agreement[9] also included the objective of establishing two offshore energy islands (5 GW) by 2030. Whether the ceiling in fact limits the development of onshore wind is doubtful, as there is no ceiling on the size of wind turbines. Thus, repowering can take place with fewer and larger wind turbines. Likewise, the agreement does not contain a restriction on field-based solar installations.

Apart from setting specific targets for wind (and solar) energy, the energy agreements have also laid out initiatives regarding the economic conditions for the deployment of RE. After the liberalization of the electricity market in the late 1990s, the State offered different types of subsidies such as price supplements to the market price to ensure the desired expansion. Operating aid was used rather than establishment aid. As the efficiency of wind turbines increased, the State reduced the value of the price supplements several times. Over time, a cap on the subsidies was introduced as well.

6 Act no 1392 of 27 December 2008 on Expansion of Renewable Energy. Latest consolidated version: Consolidated Act no 1031 of 6 September 2024.

7 Klima-, Energi- og Forsyningsministeriet [Danish Ministry of Climate, Energy and Utilities], 'Aftale af 22. marts 2022 mellem regeringen (Socialdemokraterne, Det Radikale Venstre, Socialistisk Folkeparti) og Venstre, Dansk Folkeparti, Enhedslisten og Det Konservative Folkeparti om den danske energipolitik 2012–2020' (Political Agreement of 22 March 2012 regarding the Danish Energy Policy 2012–2020).

8 *See* also Birgitte E Olsen/Bent OG Mortensen, 'Offshore wind licensing in Denmark' in Ignacio H Anchustegui/Tina S Hunter (eds), *Offshore Wind Licensing* (Edward Elgar Publishing 2024) 87–88.

9 Klima-, Energi- og Forsyningsministeriet, [Danish Ministry of Climate, Energy and Utilities], 'Klimaaftale for energi og industri mv. 2020' (Climate Agreement regarding Energy and Industry etc. 2020) (22 June 2020) <https://www.kefm.dk/Media/4/2/aftaletekst-klimaaftale-energi-og-industri.22.06.2020pdf.pdf> accessed 26 May 2025.

However, the State only changed the system of subsidies for future wind turbines. Existing wind turbines were granted permission to remain regulated by the level of subsidies from when they were established. Currently, it is no longer necessary for the state to grant subsidies for the establishment of onshore wind turbines or solar parks. Subsidies are still provided for a number of older wind turbines onshore. However, these support schemes have been phased out, so support does not apply to new wind turbines.

In contrast to onshore wind turbines, offshore wind turbines have been promoted through tenders where there has been competition for the lowest subsidy. With a tender with a deadline of 2021 (offshore wind farm Thor), it turned out that there was no need for subsidies. Instead, the State could collect a 'concession fee'. The German energy developer RWE was awarded the rights to develop the farm based on a contract for differences (CfD) of 0.01 ore/kWh (€0.0013). It entails that all revenue which RWE generates from energy production will have to be passed on to the Danish state until a ceiling of 2.8 billion DKK (€375,646) is reached. This amount corresponds to a payment of an average of just over 2 ore/kWh (€0.0027) over the park's 30-year lifespan. It was until recently uncertain whether this could be seen as an expression of a general shift from subsidies to concession fees in the case of offshore wind. Increasing establishment costs, including interest rates, may stand in the way of this.

On 22 April 2024, the Danish Energy Agency published a tender for 6 GW of offshore wind, to be completed in 2030, half of which in the Danish part of the North Sea. However, no bids had been received by the bidding deadline of 5 December 2024 for the North Sea capacity. The market situation for offshore wind both internationally and nationally had changed, and the starting point that the state could receive concession fees instead of having to provide state aid was no longer present. On 19 May 2025, a new political agreement was reached on a re-tender in the autumn and bidding deadlines in 2026 and 2027. This opens up the possibility of state aid, and other burdensome conditions have been changed as well.

Energy agreements have also focused on reducing obstacles to the RE transition. This is particularly the case as regards local opposition to RE installations. The 2008 Energy Agreement and the subsequent Renewable Energy Act introduced different compensation schemes. The schemes have been subject to amendments and adjustments over the years, see further below. Furthermore, the 2022 agreement also addresses perceived obstacles that are linked to planning and permit procedures. Initiatives include state involvement in the designation of sites for 'energy parks' and the potential

easing of restrictions regarding nature, landscape, and cultural heritage, as well as additional guidance for the local authorities.

In general, the RE targets and the specific targets for wind energy have gradually been met. It must be kept in mind that other energy sources than wind and solar, including in particular biomass and biogas, have an important position as regards the share of the total energy consumption. RE is partly domestic energy and thus contributes to reducing dependence on imported energy. This applies in particular to wind and solar, while some biomass for energy purposes is imported. Renewable energy accounted for 47.6 % of total energy consumption in Denmark in 2024 (334 PJ).[10] Biomass made up the majority of renewable energy with 68 %. The remaining part came from solar, wind, water, geothermal energy, and heat pumps. Wind energy covered 53.2 % of electricity consumption in 2022. Solar power has increased from 3.6 % in 2021 to 6.2 % in 2022.[11] Further production increases appeared in 2023 and 2024. This higher production may, however, also be due to weather conditions and not necessarily increased installed capacity. The capacity of solar power has grown in the last few years, whereas the rate of new onshore wind energy projects has dropped to a very low level. There may be different reasons for this development, but some obstacles have been identified, including delays in decision-making procedures and appeals, biodiversity concerns, grid connection, etc. Thus, the 2022 targets of quadrupling onshore wind and solar capacity before 2030 appear very ambitious. Yet, in December 2023 a political agreement between 8 political parties representing the majority of the members of the Danish Parliament was reached on new framework conditions for onshore expansion of RE, including designation of energy parks (solar and wind), relaxing the rules for nature protection, and increasing compensation for municipalities and neighbours.[12]

10 Energystyrelsen [Danish Energy Agency] Foreløbig energistatistik 2024 [Preliminary energy statistics 2024] < https://ens.dk/analyser-og-statistik/maanedlig-og-aarlig-energistatistik > accessed7 June2025.

11 Energinet, '2022 sætter dansk rekord i vind og sol' (Press announcement, 29 December 2022) <https://via.ritzau.dk/pressemeddelelse/13667585/2022-saetter-dansk-rekord-i-vind-og-sol?publisherId=10304728&lang=da> accessed 26 May 2025.

12 Klima-, Energi- og Forsyningsministeriet [Danish Ministry of Climate, Energy and Utilities], 'Klimaaftale om mere grøn energi fra sol og vind på land 2023' (Climate agreement on more green energy from solar and wind on land 2023) <https://kefm.dk/Media/638379734168312589/Klimaaftale%20om%20mere%20gr%C3%B8n%20energi%20fra%20sol%20og%20vind%20p%C3%A5%20land%202023.pdf> accessed 26 May 2025.

In the following, we will introduce the legal framework for wind and solar power in Denmark, focusing on planning and permit procedures for the siting and establishment of wind and solar farms as well as tender procedures and grid connection. Furthermore, we will briefly explain the specific compensation schemes that have been adopted in Denmark with the aim of increasing local acceptance of wind and solar farms. Lastly, we will discuss some of the main obstacles to the further deployment of renewables. The chapter focuses on commercial wind and solar farms, whereas the special arrangements for household installations are not included. These do no longer contribute significantly to electricity production in Denmark.

B. Legal Framework – Onshore vs Offshore

1. Introduction

The legal framework for RE, and in particular wind and solar power, can be divided into different sets of rules. One set of rules governs the siting of wind and solar power installations, including in particular planning, permit, and (environmental) assessment requirements. Another set of rules governs the economic aspects of the establishment of wind and solar power, namely the use of tariffs and tender procedures. The rules on grid access etc. are also relevant in this respect. Lastly, a third set of rules establishes different compensation schemes that are aimed at promoting local acceptance of wind and solar power installations.

2. Siting and Establishment – Planning and Permits

In Denmark, the siting of onshore and offshore RE installations such as wind and solar power are subject to different procedures. While planning and permit procedures for onshore wind and solar power in general rest with the local authorities, planning, and permit procedures for offshore wind rest with the state authorities in accordance with the Renewable Energy Act, in particular the Energy Agency. Offshore wind turbines are not defined in the Renewable Energy Act, even though the term is used in several of its provisions. However, offshore wind turbines (in Danish ''havvindmølle'') were defined in section 1(3)(2) of the former Wind Tur-

bine Executive Order[13] as 'a wind turbine that is established in the territorial waters or the exclusive economic zone, and where the wind turbine's foundation is not visible at regular sea level'. Installations established on land, for example on a dyke made for that purpose, are not considered to be offshore wind turbines. The current Wind Turbine Executive Order[14] contains no such definition.

(a) Onshore

Onshore wind and solar power are subject to planning and permit procedures, including environmental assessment requirements. Onshore wind installations have been subject to specific planning rules since 1994 in the form of a so-called national planning directive.[15] The national planning directive establishes certain requirements that the municipalities must comply with when they adopt municipal or local plans for wind energy projects. This includes requirements that wind turbines can only be established in areas designated as wind energy sites in the municipal plan, and that they cannot be established closer than four times the total height to neighbouring dwellings. There are also specific requirements that turbines should be established in an easily comprehensible geometric pattern, and that it must be ensured that the cumulative landscape effects with other turbines within 28 times the total height are insignificant. In May 2024, a national planning directive for solar power installations was issued.[16] The planning directive establishes that municipal planning guidelines should observe a 150 m distance to urban areas, summer cottage areas, and villages, and a requirement of 150 to 750 m to dwellings depending upon whether the solar power installation will be on one, two, or three sides of the dwelling. Due consideration should also be taken as regards agricultural, nature, and landscape interests.

For wind turbines, the municipal plans should designate potential wind turbine areas and include provisions as regards the expected number and maximum height of the turbines. For solar power, it is not clear whether there is an option only to lay down principles for the establishment of solar power in the municipal plan. Most wind and solar energy projects will also

13 Executive Order no 1296 of 14 June 2021 on grid connection of wind turbines.
14 Executive Order no 1343 of 29 November 2024 on grid connection of wind turbines.
15 Now Executive Order no 923/2019 on planning for and permits to wind turbines.
16 Executive Order no 440 of 3 May 2024 on planning for solar power installations.

require the adoption of a local plan that must include detailed provisions, e.g., regarding the exact position and number of turbines, as well as the minimum and maximum height. A building permit may also be required.

Furthermore, an EIA permit is needed in most cases if the project may have a significant effect on the environment, cf. the Environmental Assessment Act.[17] A strategic environmental assessment (SEA) will normally also be required both as regards municipal plans and local plans. Furthermore, the assessment of potential effects on Natura 2000 sites and Annex IV species must be complied in accordance with the rules laid down in two executive orders.[18] The general protection of birds is governed by separate rules.[19]

The municipalities are the competent authorities both as regards municipal and local plans, and the EIA permit. A former limitation of the municipal planning powers to turbines up to 150 m was abolished in 2019. However, as part of the 2022 energy agreement and the 2023 follow-up, state agencies (the Energy Agency, the Plan and Rural District Agency, and the Environmental Protection Agency) initiated a national designation of potential 'energy parks'. This has also led to the adoption of new legislation in June 2024 for 'energy parks'[20] which means electricity production from renewable energy sources on land (wind turbines and solar panels) as well as any associated PtX plants.[21] The new Act sets a procedure for state designation of energy parks with an annual production of min. 100 GWh/year based upon an open call for proposals. The relevant municipality must as a main rule accept the designation. The minister will in specific cases, or upon request from the municipality, have the power to call in the subsequent planning powers of the municipality. Furthermore, it might be an option that a project could be adopted by an Act of Parliament. Within the energy parks, the municipalities or other relevant authorities will have the option

17 Consolidated Act no 4 of 3 January 2023 on environmental assessment of plans and programs and of concrete projects (EIA).

18 Executive Order no 1383 of 26 November 2016 on the administration of the Planning Act in relation to international nature protection areas and protection of certain species, and Executive Order no 1098 of 21 August 2023 on the designation and administration of international nature protection areas and protection of certain species.

19 *See* further Helle T Anker/Birgitte E Olsen, 'EU species protection law and wind energy: Current challenges and Danish experiences' (2023) 32(1) European Energy and Environmental Law Review 36–46.

20 Act no 614/2024 on state designated energy parks.

21 Act no 614 of 11 June 2024 on state designated energy parks.

to grant derogations from national nature protection rules. Nevertheless, at least an EIA, including relevant assessments regarding Natura 2000 sites, Annex IV species and birds, will be necessary for the individual projects. The designation of energy parks is not coordinated with the implementation of the revised EU RE Directive[22] or the Emergency Regulation.[23] In this respect, a separate set of rules is being developed under the Renewable Energy Act headed by the Energy Agency.[24]

(b) Offshore

Offshore wind turbines have so far not been subject to ordinary planning and construction legislation. The interests protected by such legislation on land have instead been provided for in the licensing arrangements of the Renewable Energy Act, seeking also to incorporate environmental assessment requirements. Nevertheless, a certain element of state planning is linked to offshore turbines established according to tender procedures as the tender is made for one (or more) specific sites. These tenders have in general been based on political plans regarding the siting of offshore wind farms. The first specific plan for offshore wind turbines was published in 1997. The plan identified a number of marine areas where there was potential for establishing offshore wind turbines. Subsequently, other potential offshore sites have been identified by the Energy Agency. However, the designation of potential offshore sites must now be part of the maritime spatial plan.[25] This also applies to offshore projects under the so-called open-door procedure. The open-door procedure has been aimed at facilitating small-scale 'local' offshore projects without prior designation of potential sites. However, the open-door procedure was put on hold in 2022/2023 following

22 European Parliament and Council Directive 2023/2413 amending Directive 2018/2001, Regulation 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652 [2023] OJ L 2023/2413.

23 Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy, OJ L 335/36, as amended by Council Regulation (EU) 2024/223 [2022] OJ L 2024/223.

24 Act no 673/2024 on amendment of the Renewable Energy Act.

25 Danish Maritime Authority, 'Denmark's maritime spatial plan' <https://havplan.dk/en/page/info> accessed 26 May 2025.

a significant increase in the number of applications.[26] In December 2023 the Government decided to close the open-door procedure. Most of the remaining open-door projects have been refused by the Energy Agency primarily on the grounds that they are not in accordance with the maritime spatial plan. Several of the refusals were brought before the Energy Board of Appeal, which has returned them to the Energy Agency due to deficiencies in the reasoning. Subsequently, the Danish Energy Agency has indicated in a consultation letter to the rejected open door projects that the Danish Energy Agency finds the allocation of a sea area following the open door procedure to be in breach of EU state aid rules. However, this is a dubious argument, especially after no bids were received for 3 GW of offshore wind, where the precondition was precisely the payment of concession fees.

A licence is granted by either a procurement procedure (tender)[27] or the open-door procedure;[28] see section 22(2) of the Renewable Energy Act. Tendering takes place in accordance with the Procurement Directive's provisions on concession contracts, see further below.

The licensing arrangements of the Renewable Energy Act for offshore wind turbines are strongly influenced by the regulations in the area of hydrocarbons (oil and natural gas). In general, under the Renewable Energy Act, the establishment of an offshore wind farm requires permits at three stages: (1) a preliminary investigation licence, (2) an establishment licence, and (3) an exploitation licence; see Chapter 3 of the Renewable Energy Act. Licences are issued by the Energy Agency, to which the Minister has delegated this task.[29] The Renewable Energy Act does not prevent the licences being granted simultaneously. For offshore wind turbines, the provisions of the Renewable Energy Act replace the general requirements for permits

26 *See* about the open door and the hold in Birgitte E Olsen/Bent OG Mortensen, 'Offshore wind licensing in Denmark' 92–94 (n 8).

27 *See* sec. 23(1) of the Renewables Act, which provides that the research permit is to be given to the successful party in a procurement procedure. The Act does not give details about what criteria should be considered important in connection with tenders. It is thus up to the Minister to lay down the criteria, as long as they are lawful. It is explicitly assumed in the *travaux préparatoires* to Bill L 108/2008 that the procurement shall otherwise be in accordance with the EU procurement rules.

28 The Minister has wide discretion to refuse an investigation licence under the open-door procedure, and sec 23(4) of the Renewables Act provides for a relevance requirement.

29 Executive Order no 259 of 6 March 2025 on the tasks and powers of the Danish Energy Agency.

in the Electricity Supply Act (Elforsyningsloven)[30] for establishing new electricity-generating plants or making significant alterations to existing plants.[31] Under sec. 22(7) of the Renewable Energy Act, a preliminary investigation licence gives an exclusive right to a specified area for a specified period. The assignment of a licence requires the approval of the Minister. But it appears from the special comments on Bill L 108/2008 (paragraph 15) that such approval is intended to ensure that preliminary licences are only assigned to projects that will be able to obtain establishment and exploitation licences. The starting point is that the licence-holder must pay for the preliminary investigation. However, sec. 23(3) of the Renewable Energy Act provides for the possibility of a preliminary investigation, or part of it, being carried out by the state Transmission System Operator (TSO), Energinet.[32]

3. Tender Procedures and Grid Connection

(a) Onshore

Tenders have so far not been used onshore. In principle, the state could use tenders for land that the state already owned or acquired for the purpose of establishing renewable energy plants. However, it is normal for a developer to contact landowners in order to buy or rent land for setting up either wind turbines and/or solar cells. It is then up to the developer to obtain the necessary permits, including planning permits.

Furthermore, the renewable energy plant must be connected to the collective electricity grid either at distribution level or transmission level. Following the grid connection order,[33] the developer must pay for grid connection up to the relevant voltage level of at least 50–60 kV. Any necessary network reinforcement must be financed by the network company.

30 Consolidated Act no 1248 of 24 October 2023 on Electricity Supply.

31 *See* sec 1(2)(2) of Executive Order no 548 of 29 May 2024 on permits to establish or alter an electricity-generating Installation (the *Power Station Executive Order*).

32 Energinet is a state-owned undertaking responsible for the electricity transmission and distribution system in Denmark.

33 Executive Order no 1343 of 29 November on grid connection of power plants.

(b) Offshore

The offshore tender procedure has historically been initiated on the basis of a political agreement. Thus, the tenders have not come continuously but have been dependent on a political majority deciding upon one or more offshore wind farms.

Prior to the tender process, the Danish Energy Agency carries out preparatory work, including planning and feasibility studies of the site(s). Initially, the tender is announced to the market via an 'advance notice'. This notice sets out the overall framework for the upcoming tender. Next, a pre-qualification round is carried out with a view to appointing suitable candidates. The pre-qualified companies will then be invited to submit offers in accordance with the established tender conditions. Typically, there will also be individual negotiations prior to submitting a final offer. Based on the final offers, the award decision is made.

Tendering of areas for offshore wind will in the future take place within areas designated as development zones for renewable energy in the maritime spatial plan. However, it is possible to implement an offshore wind project outside a designated renewable energy development zone. Simply, a change to the maritime spatial plan is required with consultation of other governmental and possibly municipal authorities, preparation of planning supplements, impact assessments, and public consultation.

Whoever wins the tender will according to the Renewable Energy Act be granted a preliminary investigation permit. The concessionaire must prepare an environmental impact assessment that describes the specific project's impact on the environment, including, for example, the project's visual impact on the area and its impact on the population, flora, fauna, seabed, marine mammals, fish, etc.

The actual establishment of the offshore wind farm requires an establishment permit according to the Renewable Energy Act. The permit is issued on the basis of the environmental impact report and consultation responses received in connection with the 2nd publicity phase. The permit gives the concessionaire the right to start construction work.

In order for the offshore wind farm to be allowed to produce electricity, the concessionaire must obtain an electricity production permit according to the Renewable Energy Act.

If the wind farm has a capacity of more than 25 MW, an electricity production permit is also required according to the Electricity Supply Act. An application for an electricity production permit must contain documen-

tation that the conditions of the establishment permit have been or will be met, and that the concessionaire has the technical and financial capacity to operate the park. Electricity production permits for tender parks are granted for 30 years, while electricity production permits are granted for at least 20 years.

After the end of use, the developer is obliged to re-establish the previous condition in the area, including carrying out cleaning as well as decommissioning and disposing of the facility. The Danish Energy Agency must approve the decommissioning plan. A detailed assessment of the plan's possible environmental impacts must be submitted together with the plan. By 2025, only one offshore wind farm had been decommissioned. An extension of the electricity production permit for one farm has been granted, subject to a positive outcome of a technical investigation of the safety of the turbines. Several older offshore wind farms are expected to apply for an extension of the electricity production permit. Actual repowering (including technical changes to the offshore wind turbine installation) is possible, but a permit has not yet been granted.

4. Compensation Schemes

The Renewable Energy Act since 2008 contains a number of schemes with the specific aim to promote the local population's acceptance of the expansion of wind turbines and solar cells.[34] The schemes are administered by the Danish Energy Agency.

The loss of value scheme was established by the 2008 Renewable Energy Act. According to the scheme, the developer must compensate for any loss of value above 1 % that owners of residential properties may suffer as a re-

34 For a general introduction to the original schemes, *see* Birgitte E Olsen/Helle T Anker, 'Local acceptance and the legal framework: the Danish wind energy case' in L Squintani/H Vedder/M Reese/B Vanheusden (eds), *Sustainable energy united in diversity: challenges and approaches in energy transition in the EU* (European Environmental Law Forum Book Series 2014) 137–156. *See* also Frederik Waage, 'Compensating neighbors to windmills, solar energy panels and other sources of renewable energy in Denmark' in Carina R Hamer/Hans VG Pedersen/Nis J Clausen (eds), *Festskrift til Bent Ole Gram Mortensen [Liber Amicorum to Bent Ole Gram Mortensen]* (DJØF Publishing 2022); Marie L Jørgensen/Helle T Anker/Jesper Lassen, 'Distributive fairness and local acceptance of wind turbines: The role of compensation schemes' (2020) 138 Energy Policy 11294; Marie L Jørgensen, 'Low-carbon but corrupt? Bribery, inappropriateness and unfairness concerns in Danish energy policy' (2020) 71 Energy Research & Social Science 101663.

sult of the establishment of a nearby wind or solar farm. The scheme is lex specialis to the ordinary, unwritten nuisance law. The scheme is based on losses in the sale value of the property and only covers the residence itself and nearby living areas. The loss in value is based both on the dominant character of the facilities (e.g. wind turbines of 180 meters or a solar park of 340 hectares as new examples), noise, and shadow cast. The loss in value is determined by a special valuation authority after an inspection of the property.

The sales option scheme was introduced in 2020 as an integral part of the loss of value scheme. If a property within six times the total height of a wind farm or 200 m from a solar farm is affected by a loss of value, the valuation authority sets a price for which the developer is obliged to buy the property. However, the obligation to purchase only covers the area within the same cadastral number on which the residential property is located. It can be problematic, as it is often somewhat random how a property is divided into cadastral numbers.

As an alternative, the developer and the property owner can also enter into a voluntary agreement for either compensation or the purchase of the nearby property. If the developer buys the property, he can choose to either resell or rent the property after the wind or solar park is established. If necessary, the developer can choose to demolish the property and install solar cells on it. In certain places, the developer buys up large parts of smaller villages and then leaves the remaining inhabitants of the village with a somewhat smaller village.

The renewable energy bonus scheme in 2020 replaced the former right to buy shares scheme. The bonus scheme entitles the residents within 8 times the total height of wind turbines and 200 m from solar farms to receive an annual bonus based on the plant's production. The bonus is paid by the renewable energy plant owner. The scheme aims to give the neighbours a gain in addition to any value loss. The size of the bonus will vary over the lifetime of the plant, as it depends on the plant's production and the electricity price. The estimated bonus is currently around 6500 DKK (€872) for wind farms and 2500 DKK (€335) for solar farms. A 2023 Government

initiative aims to increase the bonus by 50 %.[35] It is now implemented in the Renewable Energy Act.[36]

A so-called green pool in 2020 replaced the former green scheme that was state financed via consumer charges. The new scheme requires the developer to pay an amount per installed MW to the municipality, in which renewable energy installations are installed, or the municipality or municipalities that have the right to object to open-door offshore wind turbines. The municipality administers the green pool funds, and the funds can be used widely for municipal initiatives. However, it is intended that the funds should primarily support projects applied for by close neighbours for the renewable energy plant as well as green measures in the municipality. A purpose of the scheme is to motivate municipalities to grant the necessary permits for the project. Following a 2023 Government initiative increasing green pool funds by 150 %, the payment obligation is 313,000 DKK/MW (€42,013) wind and 125,000 (€16,769) DKK/MW solar energy.

In addition, the Guarantee Fund offers the possibility of a guarantee for the financing of local cooperatives' feasibility studies, etc., in connection with the installation of wind turbines or solar cells. The scheme aims to help smaller local initiatives to be able to complete a project. The vast majority of the installed wind and solar parks are, however, established by large commercial companies.

C. Main Obstacles and Policy Initiatives

Despite a high share of renewables in Denmark, in particular wind energy, several obstacles to further deployment of wind and solar power have been identified and to some extent also addressed in different policy initiatives. Local opposition has since 2008 mainly been addressed through the compensation schemes referred to above. However, the compensation schemes may not necessarily have succeeded in promoting local acceptance. In particular, the value loss scheme has been criticized for increasing rather

35 Regeringen, Klimahandling [Climate Action] (Danish Government, 2023) <https://kefm.dk/Media/638324394100598678/Udspil%20-%20Mere%20gr%C3%B8n%20energi%20fra%20sol%20og%20vind%20p%C3%A5%20land.pdf> accessed 26 May 2025.

36 See Act no 670 of 11 June 2024.

than reducing conflicts.[37] On the other hand, the new bonus scheme and also the green pool scheme may have more positive effects. However, the schemes may also increase costs -particularly those of wind farms – significantly.[38] Consequently, there is a delicate balance and a need for thorough considerations in the use of such schemes. Furthermore, other perceived obstacles have been addressed more recently, including decision-making procedures and appeals, nature protection and biodiversity concerns as well as grid connection and capacity.

In accordance with the 2023 political agreement, new legislation has been adopted aimed to address such obstacles. Apart from the new Act on Energy Parks relaxing certain (national) nature protection rules, an amendment of the rules regarding appeals of RE-decisions to the Planning Appeals Board, the Environment and Food Appeals Board, and the Energy Appeals Board has also been adopted in June 2024.[39]

1. Decision-Making Procedures and Appeals

(a) Onshore

The planning and permit procedures for onshore wind and solar projects are, on the face of it, relatively simple. Nevertheless, municipal and local planning may be fraught with difficulties. It can be questioned whether the planning system works as intended. Often the local authorities have been reluctant to designate potential wind (or solar) sites in the municipal plan, i.e. at the strategic planning level.[40] In such cases, it may be the developers rather than the municipalities that steer the development, doing so by ad-hoc planning for individual project applications rather than strategic planning based on considerations of the variety of different land use inter-

37 Marie L Jørgensen/Helle T Anker/Jesper Lassen, 'Distributive fairness and local acceptance of wind turbines: The role of compensation schemes' (2020) 138 Energy Policy 111294.

38 Helle T Anker/Lars B Andersen/Birgitte E Olsen, Sol og vind – det samme sind? [Sun and wind – the same mind?] in Carina R Hamer/Hans VG Pedersen/Nis J Clausen (eds), *Festskrift til Bent Ole Gram Mortensen [Liber Amicorum to Bent Ole Gram Mortensen]* (DJØF Forlag, 2022) 31–61.

39 Act no 640 of 11 June 2024.

40 Helle Anker, 'Notat om kommunal planlægning for vindmøller' (IFRO Report No 2016/26, 2016) < https://researchprofiles.ku.dk/en/publications/notat-om-kommunal-planl%C3%A6gning-for-vindm%C3%B8ller > accessed 26 May 2025.

ests. Furthermore, the physical or spatial planning character of municipal planning may not always be capable of also taking infrastructure/grid and consumption patterns into consideration. As regards the new national designation of energy parks an initial screening in 2023 of potential sites was based on site proposals from municipalities and developers. The proposed sites were screened based on different criteria, in particular neighbouring dwellings, nature and environmental concerns, and cultural heritage. It does not appear that there was any reference to e.g. agricultural interests or any attempts to locate energy parks close to other technical installations, e.g. highways. Nonetheless, access to the grid and critical infrastructure was taken into account. In general, however, there appears to be a lack of strategic planning and identification of relevant principles for the siting of wind and solar farms. Particularly, there are no principles or incentives to plan for wind and solar power close to other technical installations, or even to use existing structures such as roofs. The 2022 energy plan, however, suggests a new subsidy scheme for such projects.

Public participation procedures are fairly basic in the Danish Planning Act. There is a simple requirement of public consultation for a period of 8 weeks in most cases. There are no requirements for public hearings or meetings in the Planning Act. However, there is wide access to appealing a planning decision (and strategic environmental assessment) to the Planning Appeals Board (PKN). Similarly, an EIA permit can be appealed to the Environment and Food Appeals Board (MFKN). The two appeals boards share the same secretariat. Following a period of relatively long delays, since 2021, a deadline of 6 months has been set for a decision in the appeals boards for wind and solar projects. Nevertheless, in some cases, the appeals boards have declared the plans null and void primarily due to inadequate information regarding the potential effects on Natura 2000 sites, Annex IV species, birds, or other environmental concerns. In such cases, the local authorities must make new assessments and also adopt new plans, which may cause significant delays. It is possible to challenge an appeals board decision in court, although this happens very rarely.[41]

41 Four RE court cases have been concluded since 2012 (publish in the Danish journal 'Miljøretlige Afgørelser og Domme' [Environmental Legal Decisions and Judgments] often abbreviated as MAD. See MAD2012.394Ø, MAD2012.1947H, MAD2017.250B, MAD2019.244V).

The Government has established an 'energy crisis group'[42] with the task of removing obstacles and reducing time for decision-making procedures. No specific time-limits have been set, though, apart from those that may apply according to the EU Emergency Regulation. New rules adopted in June 2024, however, aim to facilitate a more expeditious appeal process, to some extent also limiting the scope of review of the Appeals Boards.[43] The Government has also indicated that the State may offer to designate and potentially adopt Acts of Parliament for energy park sites. In particular, the use of Acts of Parliament may have the consequence that there will be no access to administrative appeals and thus reduce administrative procedures and delays. This option has been applied regarding the energy island in the North Sea.[44] However, this may contradict the Aarhus Convention as the administrative appeals system provides an easily accessible and affordable option for appeals as opposed to the general courts.

(b) Offshore

The offshore decision-making processes are quite complex. The combination of a three-layered licence system with the tender procedure has caused significant obstacles and delays for some offshore projects, e.g. the Vesterhav Syd project (see below). Furthermore, the apparent lack of a formal planning procedure for the designation of offshore sites has also created some uncertainties in relation to environmental assessment procedures and public participation. It has even been possible to establish projects under the so-called open-door procedure characterized by no prior planning or designation of sites. Following the adoption of the Danish maritime spatial plan in 2023, offshore RE projects now need to be within designated development zones for renewables.

The traditional decision-making procedures at the national level for offshore activities have faced some difficulties in accommodating requirements for environmental assessment, at both strategic and project levels, as well as public participation and access to justice requirements.[45] Despite a lack of formal planning procedures for offshore activities prior to the

42 Please see <https://www.en.kefm.dk/> accessed 2 June 2025.

43 Act no 640 of 11 June 2024.

44 Act no 2379 of 14 December 2021 on design and construction of an energy island in the North Sea.

45 Helle T Anker/Birgitte E Olsen, 'Blæst på havet: om beslutningsprocesser for havvindmøller i Danmark' in Jan Darpö, Maria Forsberg, Maria Pettersson/Charlotta

maritime spatial plan, procedures for strategic environmental assessment and the associated public participation were applied according to the Environmental Assessment Act. Even though there is now a formal maritime spatial plan where potential offshore sites for wind (or solar) farms should be designated, it must be kept in mind that amendments to the maritime spatial plan, including new offshore sites, must still be subject to strategic environmental assessment. Issues regarding strategic environmental assessment can be appealed to the Environment and Food Appeals Board as there is no administrative appeal option for the maritime spatial plan as such.

Furthermore, the environmental impact assessment procedure has in practice been linked to the preliminary investigations, and it has previously been carried out by the state authorities (Energinet) prior to the tender procedure. Nevertheless, access to justice on environmental matters in the form of administrative appeals to the Energy Appeals Board is linked to the licence for establishment granted to the developer after the tender procedure. These complexities were illustrated in the Vesterhav Syd case.

The Vesterhav Syd project was originally envisaged as one of six potential coastal-near offshore projects in 2012. In 2013–14, preliminary investigations and an EIA were carried out by the Danish TSO, Energinet, while a tender procedure was initiated, and in 2016, Vattenfall won the tender and was granted a permit for establishment. The permit for establishment was appealed to the Energy Appeals Board by local landowner associations, primarily on the grounds that the EIA procedure had not been adequate. The Energy Appeals Board[46] decided to repeal the licence for establishment as the EIA was inadequate since the details of the project would only be determined after the granting of the licence for the establishment. Thus, a supplementary EIA would be required.

The case illustrates the complex interplay between the EIA and permit procedures on the one side, and the tender procedure on the other, as the details of a project could only be elaborated after the identification of the developer in the tender procedure.[47] In the current system the responsibili-

Zetterberg (eds), *Miljörätten och den förhandlingsovilliga naturen: Vänbok till Gabriel Michanek* (Iustus Förlag 2019) 13–34.

46 Vesterhav Syd, Energy Appeals Board decision of 20 December 2018, no 18/00219, 18/00222, 18/00225 (MAD2018.419).

47 Helle T Anker/Birgitte E Olsen, 'Blæst på havet: om beslutningsprocesser for havvindmøller i Danmark' in Jan Darpö, Maria Forsberg, Maria Pettersson/Charlotta Zetterberg (eds), *Miljörätten och den förhandlingsovilliga naturen: Vänbok till Gabriel Michanek* (Iustus Förlag 2019) 13–34.

ty of carrying out an EIA is more clearly placed on the developer being granted a preliminary investigation permit *after* winning the tender. However, Energinet still conducts site-investigations, including a wide range of geophysical, geotechnical and environmental surveys, prior to the tender with the purpose to reduce bid risk and minimize the need for additional site-investigations and environmental surveys later in the project development process and during EIA of the individual projects.[48]

2. Nature Protection and Biodiversity

As mentioned above, a major perceived obstacle to wind energy projects in particular is conflicting nature protection interests. It is mainly EU-protected habitats and species under the Habitats and Birds Directives that set the strictest requirements.[49] However, Danish nature protection legislation may also create obstacles.

There are several examples that failure to provide adequate assessment regarding the potential effects on Natura 2000 sites has led to decisions in the appeals boards – both the Planning Appeals Board, the Environment and Food Appeals Board, and the Energy Appeals Board – to declare plans and EIA permits null and void. This reflects the strict interpretation by the CJEU and the requirement for a high degree of certainty in an appropriate assessment demonstrating that there must be 'no reasonable scientific doubt remaining as to the absence of adverse effects on the integrity of the area in question.'[50] Furthermore, the assessment 'may not have lacunae and must contain complete, precise and definitive findings and conclusions

48 Danish Energy Agency, Notes on environmental assessment for offshore wind farm tenders, <https://ens.dk/en/energy-sources/offshore-procedures-permits> accessed 11 June 2025.

49 For a more detailed analysis in the Danish context, *see* Helle T Anker/Birgitte E Olsen, 'EU species protection law and wind energy: Current challenges and Danish experiences' (2023) 32(1) European Energy and Environmental Law Review 36–46. *See* also Sanne Akerboomand et al., 'Wind Energy Projects and Species Protection Law: A Comparative Analysis of the Application of EU Law in Five Member States' (2019) 28 European Energy and Environmental Law Review 144–158 and more generally Hendrik Schoukens/Kees Bastmeijer, 'Species protection in the European Union. How strict is strict?' in CH Born et al. (eds), *The Habitats Directive in its EU Environmental Law Context* (Routledge 2014) 121–142.

50 E.g. C-164/17 *Grace and Sweetman v An Bord Pleanala*, ECLI:EU:C:2018:593 para 41, and C-441/17 Commission v Poland, para 113, ECLI:EU:C:2018:255.

capable of removing all reasonable scientific doubt as to the effects of the proposed works on the protected area concerned'.[51] In one case (Thorup Sletten) concerning 18 new wind turbines (150 m) replacing 10 existing, smaller turbines next to a Natura 2000 site designated for the protection of several bird species, the appeals boards found that for two designated bird species (marsh harrier and hen harrier), the assessment of the effects, especially regarding collision risks, was insufficient.[52] In addition, displacement effects had not been examined with regards to species-specific displacement zones. The appeals boards found that the appropriate assessment was not sufficiently detailed and substantiated to demonstrate the absence of adverse effects, and the plans and permits were declared null and void. The municipality made a new assessment and adopted plans and permits in 2023. Following new appeals the Planning Appeals Board and the Environment and Food Appeals Board in February 2024 confirmed the municipal plans and permit.[53] In another case (Bogø Inddæmningen)[54] concerning eight wind turbines on farmland 80 m from a Natura 2000 site designated for the protection of i.a. sea eagles and barnacle geese, the appeals boards did not accept a general presumption that collision risks in the order of 1–2 % would not affect any bird species at the population level. The plans and EIA permit were also declared null and void in this case. There are, however, also examples that wind energy projects close to Natura 2000 sites have been accepted. This includes a project for two new wind turbines (80 m) replacing two existing turbines (Tåsinge II) in a coastal area 150–200 m from a Natura 2000 site designated for the protection of several birds, including sea eagles.[55] The appeals boards accepted the conclusions in the appropriate assessment that the project would not have adverse effects on the local population of sea eagles. There are so far no examples in Denmark of the derogation clause in Art. 6(4) of the Habitats Directive being used for wind energy projects.

51 E.g. C-164/17 para 39.

52 Thorup Sletten, MAD2021.172 PKN and Cases no NMK-18–09916, NMK-19–00745 & NMK-19–00746 MFKN. NMK is an abbreviation for 'Natur- og Miljøklagenævnet' [Nature and Environment Appeals Board].

53 Thorup Sletten II, Planning Appeals Board Case No 23/12886 and Environment and Food Appeals Board Case no 23/10651.

54 Bogø Inddæmningen, Cases no 21/11970PKN, 21/13196, 21/11976, and 21/11973MFKN.

55 Tåsinge II, Cases no 21/00253, 20/12346, 21/02402 & 21/02411 PKN and Case no 20/12345 & 21/00280 MFKN.

Annex IV species such as bats may be particularly vulnerable to wind turbines, especially at low wind speeds where insects and consequently bats are attracted to the turbine towers. While certain (rare) bat species may also be subject to the Natura 2000 protection, the decisive criterion for Natura 2000 species is the population status. Yet for Annex IV species, the CJEU has indicated that the direct protection against deliberate killing or disturbance in Article 12 is at individual specimen level, and that 'deliberate' includes not only intentional capture or killing of a specimen but also, at the very least, the possibility of such capture or killing being accepted.[56] Such strict protection can be difficult to comply with which has also been reflected in the amendment of the Renewable Energy Directive[57] as well as in the so-called Emergency Regulation.[58] According to these rules, killing or disturbance will not be considered deliberate if appropriate mitigation measures have been taken (RED III) or if species conservation measures at the population level are a prerequisite for the presumption of and priority for RE as an overriding public interest (Emergency Regulation). In Denmark, the protection of bats has led to the adoption of project-specific measures in the form of periodic shutdowns from dusk to dawn during the summer and early fall at low wind speeds.[59]

The protection of birds that are not subject to protection through the designation of Natura 2000 sites must also be considered. Again, the CJEU has interpreted Art. 5 on deliberate killing or disturbance strictly to include not only intentional killing but also unintentional killing or disturbance where the mere possibility of killing or disturbance has been accepted. Furthermore, the CJEU has clearly rejected that the prohibition can be made dependent upon whether the species is at some level of risk or suffering a long-term decline in population.[60] So far, the Danish appeals boards have mainly examined whether an EIA/SEA provides an adequate assessment of such effects, e.g., by local observations and registrations of bird species.

56 Joined cases C-473/19 and C-474/19, para 51.

57 European Parliament and Council Directive (EU) 2023/2413 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652 [2023] OJ L 2023/2413.

58 Council Regulation (EU) 2022/2577 of 22 December 2022 laying down a framework to accelerate the deployment of renewable energy [2022] OJ L 335/36.

59 E.g. Marsvinslund, MAD2021.244 PKN.

60 Joined cases C-473/19 and C-474/19 *Skydda Skogen* para 82, ECLI:EU:C:2021:166 para 36.

For relevant species, it may be necessary to estimate specific collision risks or mortality rates considering the local conditions. In an onshore case (Rendbæk Øst), the Environment and Food Appeals Board emphasized that the EIA included information on collision risk and minimum distances between wind turbines and golden eagles from various scientific studies.[61] In this case, the EIA permit and plans were upheld by the appeals boards. However, the appeals board decisions were appealed to the courts but have been discontinued due to a settlement. In another recent decision by the Energy Appeals Board regarding an offshore project (Aflandshage), the permits granted by the Energy Agency were declared null and void primarily due to inadequate assessment of the potential effects on affected bird populations and on bats.[62]

Other environmental issues may also create obstacles to wind energy projects in particular, e.g. potential effects on the aquatic environment due to the lowering of groundwater tables. More generally, the EIA requirements have caused particular obstacles in relation to the decision-making procedure for offshore turbines which led to the repeal of a permit for one offshore installation, Vesterhav Syd, see above.

3. Grid connection and capacity

Grid connection of especially large projects on agricultural land has been a challenge for the distribution and transmission network as discussed above. Delays in being able to connect the RE plant to the electricity grid are a common obstacle. This is because solar parks and wind turbines are often located in sparsely populated areas where the electricity grid has not been designed to be able to transport electricity from a local electricity production plant. As the capacity of wind turbines and solar farms has grown, the need for reinforcements of the power grid's capacity arises more frequently. Expansion of the transmission network often takes 5 years or more, while new RE plants can be established within 1–2 years. The Danish TSO (Energinet) has drawn up capacity maps to guide developers in where they can find the shortest connection times. Nevertheless, the consulting firm Rambøll expects the Danish electricity grid to be expanded

61 Environment and Food Appeals Board decision of 10 December 2021 in Case no 21/06969 and 21/06968 (Rendbæk Øst).

62 Aflandshage, Energy Appeals Board decision of 4 July 2023 in Case no 22/16705.

at a cost of 110 billion DKK. Furthermore, developers are also dependent on finding places with available land, good space, and a suitable distance from neighbours.[63]

A major expansion of the Danish electricity grid will be required in order to be able to handle an increased amount of electricity production. The speed of expansion may become a temporary barrier to the growth of RE capacity. Often, however, it will be an advantage to combine wind turbines and solar cells in an area, as the two different production technologies rarely produce at maximum capacity at the same time.

The planned expansion of renewable energy capacity will also mean that Denmark cannot itself consume the electricity produced in the traditional way. It is possible that a direct export can take place from the future Danish energy islands planned for. However, many developers plan to use the electricity produced to form electrofuels (in Denmark often referred to as Power-to-X or simply PtX). An example is the 340-hectare solar park at Kassø in South Jutland. A methanol factory has been there and went operative in 2025.

With the Government foundation Responsibility for Denmark from December 2022, the Government established the National Energy Crisis Staff (NEKST), which is to ensure faster action on acute green challenges. Based on recommendations from this, an agreement was concluded on 20 December 2024 on faster and more efficient expansion of the electricity grid,[64] and a number of so-called acceleration areas were identified with a view to expanding the electricity transmission grid. The agreement includes, among other things, faster options for expropriation, including expropriation with the purpose to enable compensatory nature.

D. Conclusion

While Denmark has been a frontrunner, especially regarding wind energy, there is an increasing number of perceived obstacles to further deployment of renewables. Still, ambitious climate and RE targets have been set, and national initiatives to 'clear the way' for more wind and solar energy are

63 See ArcGIS, 'Capacity map' <https://storymaps.arcgis.com/stories/eb5b387e376f49b8996d5e7c47fbdd37> accessed 7 June 2025.

64 Klima-, Energi og Forsyningsministeriet, <https://www.kefm.dk/Media/638745300510439819/Aftale%20om%20hurtigere%20og%20mere%20effektiv%20udbygning%20af%20elnettet.pdf> accessed 7 June 2025.

put in place. Furthermore, PtX is seen as an important component in the Danish energy transition, although it creates huge energy demands in itself.

Nevertheless, there appears to be a lack of proper strategic planning for new RE projects, both onshore and offshore. Onshore, the designation of new sites – including the national energy parks – is to a large extent based on proposals from the developers, and it can be questioned to what extent the authorities are actually steering the development through proper planning processes. Offshore, there has been a lack of formal planning procedures, but the designation of potential RE sites are now part of the maritime spatial plan. Furthermore, decision-making procedures, including administrative appeals, are regarded as an obstacle to the deployment of wind and solar power and new legislation aims to limit the scope of review. More specifically, environmental assessment requirements and EU protection of Natura 2000 sites, Annex IV species, and birds are highly complex and have been identified as a major obstacle both as regards offshore and onshore wind projects. In most cases, however, it is inadequate assessments of the potential effects on e.g. birds or bats that lead to plans and permits being declared null and void. It is not necessarily so that nature protection law prevents the projects from being adopted, and so far, there have been no examples of using the derogation options for renewables. Nevertheless, legislation that will make it possible to relax Danish nature protection legislation has been adopted, while the implementation of the EU legislation to accelerate RE runs on a separate track.

It is uncertain whether such legislation will actually promote renewable energy projects, or perhaps rather lead to more opposition. Local opposition has since 2008 mainly been addressed through the compensation schemes referred to above. Nevertheless, the compensation schemes may not necessarily have succeeded in promoting local acceptance. Furthermore, the schemes may also increase costs significantly, particularly in the case of wind farms. Thus, there is a delicate balance and a need for thorough considerations in the use of such schemes.

Finally, it must be noted that grid connection and capacity is- at least temporarily – an obstacle to the growth of RE. A major expansion of the Danish electricity grid is required in order to be able to handle an increased amount of electricity production. At the same time, today, the deployment of renewables is to a large extent market driven as subsidies and price supplements have gradually been abolished. This also means that the energy transition is sensitive to economic conditions and financial markets.

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