



Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify)



Denmark

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18 January 2021, Berlin

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Executive summary

This report covers the technologies onshore wind, rooftop and ground-mounted solar PV, as well as offshore wind, the last of which is treated in a separate section due to the distinct licences required. The administrative barriers faced by these technologies generally depend on the size of the technology.

Large renewable energy installations face two main barriers: First of all, reluctance of responsible authorities with large discretion to allow new installations, which is primarily expressed during the spatial planning and preparation processes, and secondly, complaints from third-parties. At the heart of both barriers is a growing local opposition not only leading to numerous appeals but also pushing municipal councils to reject onshore projects, or the Minister for Climate, Energy and Utilities to reject (non-state tender) offshore projects. Especially the onshore wind sector is hard hit by both municipal reluctance to plan for onshore wind turbines and a vast number of appeals of the projects that actually make it to the planning phase. Similar issues are faced by non-state tender offshore projects, while the state-tender offshore projects “only” have to deal with the appeals. Things are looking easier for ground-mounted solar PV plants, but as these grow in number and size, this might not last.

By comparison, the wide range of other administrative authorisations that must be obtained afterwards, provide much fewer obstacles for the large renewable energy installations. These are generally more formalistic: if the specified requirements are fulfilled, the permit or licence will be granted, making the process foreseeable. The grid connection process is also generally unproblematic, albeit lengthy, and possible future cost increases give rise uncertainty.

The smaller renewable energy installations do not face the same barriers as they will usually not be subject to the processes where the authorities have large discretion, e.g. spatial planning, and do not face wide local opposition and the resulting third-party complaints. However, the problems for smaller installations may lie in e.g. the unpredictable cost and length of the building permit process, the grid connection or the net-settlement application process in itself relative to the project cost and duration of projects this size. Larger prosumers also face obstacles in obtaining net-settlement.

Table 1 contains a traffic light assessment of the relevant process steps for the installation of onshore and offshore wind, as well as rooftop and ground-mounted solar PV in Denmark.

Table 1: Traffic light assessment of the relevant process steps

Process step	Site selection	Electricity production license	Application preparation process	Administrative authorisation	Grid connection permit	Corporate legal-fiscal	Other
Onshore wind	Red	Green	White	Green	Yellow	Yellow	White
PV ground-mounted	Yellow	Green	White	Green	Yellow	White	White
PV rooftop	White	White	White	Red	Red	Red	White
Offshore wind	Yellow	Green	Yellow	Red	Green	White	White

■ No barriers identified	■ Moderate barriers identified
■ Minor barriers identified	■ Not relevant for target country
■ Severe barriers identified	■ No projects implemented

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1. National RES targets and relevant RES technologies

With the 2018 Energy Agreement the Danish Parliament agreed to set a path towards a renewable share of total energy consumption of approximately 55% in 2030. The agreement is expected to result in a renewable share in electricity above 100% of consumption by 2030 (Energy Agreement, 2018; DMOCEU, 2019).

Denmark has not at present set any targets for individual technologies in order to achieve these overall targets. The trajectories presented in the Danish National Energy and Climate Plan (NECP) are therefore based on available model simulations (DMoCEU, 2019).

According to the NECP, offshore wind is expected to account for 44% of the renewable energy share in the electricity sector in 2030 – an increase from 25% in 2021. The rapid increase owes to three new offshore wind parks of a total of minimum 2,400 MW planned to be installed towards 2030. Since then, it has been decided in the Climate Agreement for Energy and Industry from June 2020 to establish two so-called “energy islands” with a total capacity of 5 GW by 2030, which will drastically increase the share of renewable energy from offshore wind turbines. As an apparent key technology in the energy mix, offshore wind will be covered in the report (DMoCEU, 2019; Climate Agreement, 2020).

Onshore wind is expected to account for 30% of the renewable energy share in the electricity sector in 2030. This is a decrease from 42% in 2021, reflecting the increase of offshore wind but also the fact that the number of onshore wind turbines according to the Energy Agreement from June 2018 is to be gradually reduced from approx. 4,300 to a maximum of 1,850 in 2030 (later postponed to 2040). The production of renewable energy from onshore wind turbines is however still expected to increase in the coming years, with the total capacity increasing from 4,200 MW in 2017 to 4,800 MW in 2030, because smaller existing turbines will be replaced with newer and more effective ones. Considering this, and the still significant share and importance of onshore wind in 2030, onshore wind will also be covered in the report (DMoCEU, 2019; DEA, 2019).

Solar PV is expected to account for 12% of the renewable energy share in the electricity sector in 2030 – an increase from 6% in 2021. Behind these numbers is a dramatic five-fold increase in capacity from just 900 MW in 2017 to 4,900 MW in 2030 (DMoCEU, 2019; DEA, 2019). And this is just the trajectory. According to the Danish government’s Climate Partnership on Energy and Utilities, an increase in solar PV capacity up to as much as 8.8 GW by 2030 will be needed to achieve Denmark’s target to reduce greenhouse gas emissions by 70% by 2030 relative to 1990 (Climate Partnership on Energy and Utilities, 2020). Despite the lower share compared to wind, solar PV will therefore also be included in the report.

The expansion of solar PV capacity in Denmark has historically been primarily small household installations. By contrast, the expansion towards 2030 is expected by the Climate Partnership on Energy and Utilities to predominantly be utility size ground-mounted plants, why this particular technology has been chosen (ibid.).

From the conducted research it was however apparent that several stakeholders believe that especially the larger rooftop solar PV installations placed on commercial and industrial buildings offer significant growth opportunities. First of all, large roof surfaces are available on such buildings, and with costs having decreased considerably in the last years installing self-consumption installations has also become attractive for this type of owners. Secondly, these installations can be set up very fast compared to the large ground-mounted plants, and do not meet nearly as much opposition from third-parties (Solar PV representative 1, 2020; KL, 2020). The rooftop installations also face very different barriers from the large ground-mounted plants. And where the interviewed

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stakeholders seemed overall content with the administrative procedures concerning the large ground-mounted plants, this was not the case concerning rooftop installations. One stakeholder thus found that the main reason that not more rooftop solar PV installations are set up in Denmark at the moment is the administrative “hassle” involved (Solar PV representative 1, 2 and 3, 2020). On this background, rooftop solar PV has also been chosen for the report.

In contrast to the planned development of RES in the electricity sector, figure 1 displays the annual deployment of solar PV and onshore and offshore wind between 2010 and 2019. The figure underlines that a constant deployment has taken place in the recent years.

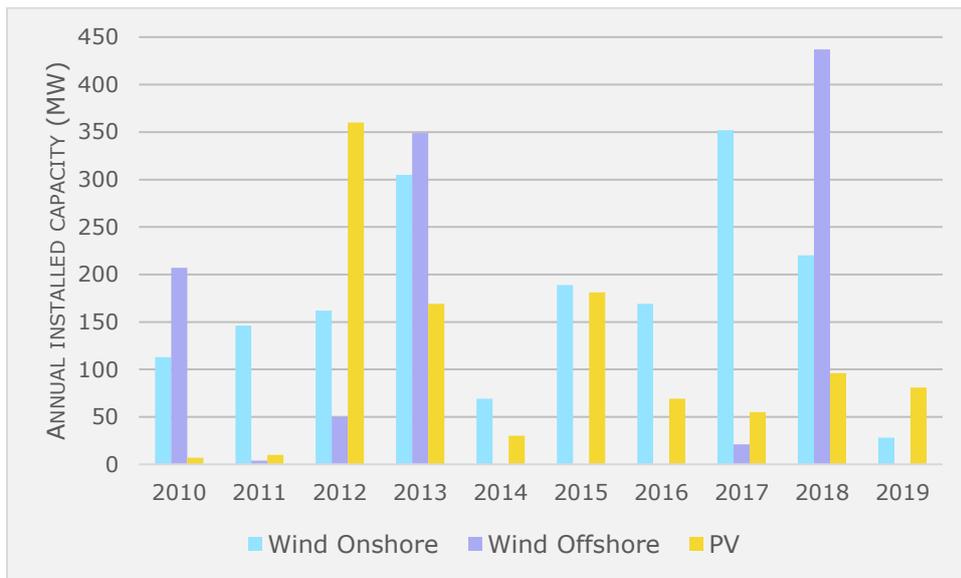


Figure 1: Annual installed capacity of PV and Wind onshore 2010-2019 (source: EurObserv'ER)

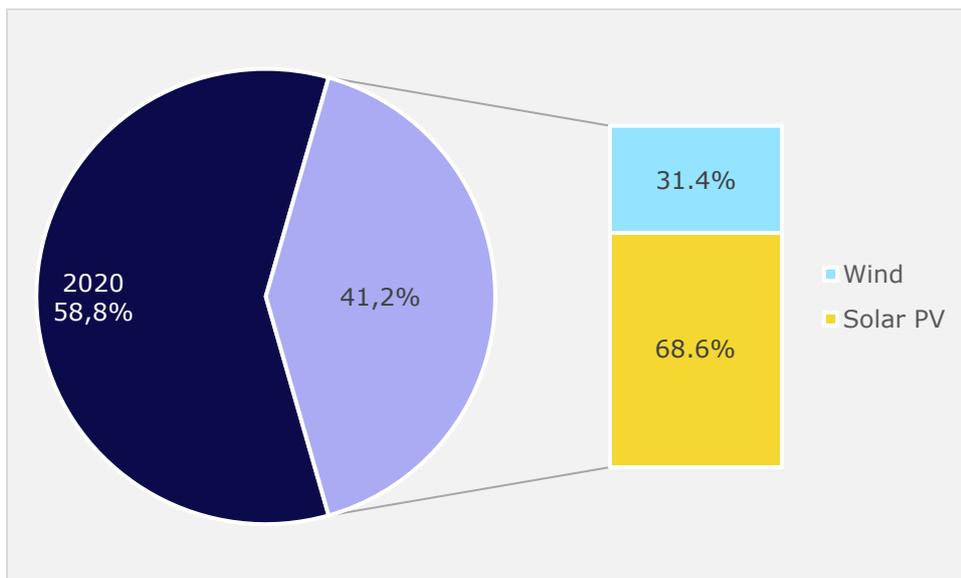


Figure 2: Planned deployment of RES-E 2020-2030 in relation to past deployment (source: NECP)

2. Administrative and grid connection procedures

2.1. Onshore wind, ground-mounted and rooftop solar PV

2.1.1. Relevant process steps

For larger wind turbines and ground-mounted solar PV plants, the first step in the process towards realisation is finding a suitable site. If no areas have been pre-designated in the municipal plan, the project developer will conduct a screening. When a suitable site has been found, the developer will notify the municipality of the project and requests for the required spatial planning processes be initiated. Simultaneously, a Strategic Environmental Assessment (SEA) of the plan proposals and an Environmental Impact Assessment (EIA) of the specific project is conducted, if required. The project developer will also host an (for some projects) obligatory public meeting on project acceptance measures.

With the planning and EIA in place, as a next process step the project developer must obtain a range of different administrative authorisations – licences and dispensations - depending on the project. Many of these will also be relevant for smaller wind turbines and solar PV installations. These authorisations may include a rural zone permit, a dispensation from the local plan, a licence to establish a powerplant, an attestation or dispensation regarding aviation marking (wind turbines only), permits and dispensations depending on site and surroundings, a noise notification (wind turbines only) a building permit and finally an electricity production licence. After the rural zone permit has been granted, all of these can in principle be processed in parallel. The building permit may however not be finally granted before all other permits and licenses are in place (DEA, 2020).

Grid connection is a separate process based on a private agreement between the developer and the distribution system operator (DSO) or transmission system operator (TSO) that runs in parallel with the above process steps.

Electricity prosumers can apply for so-called “net-settlement” to be exempted from paying certain public tariffs and electricity tax. This must be done before a project is initiated but final approval is issued only after the installation has been grid connected.

2.1.1.1. Site selection

Process flow

Spatial planning

Relevant for: New installation, repowering, lifetime extension and decommissioning.

When establishing a RES installation, the initial procedure foreseen by the Planning Act is a municipal pre-selection of areas for technical plants, including wind turbines, in the municipal plan. This designation is to be done either in connection with the ordinary review of the municipal plan, or in a special amendment to the municipal plan (Planning Act, 2020).

The process of changing the municipal plan begins with a so-called pre-public phase, where the municipality invites the public to submit ideas and proposals. Often the

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municipality will host public hearings where different options can be presented and debated, but there are no formal requirements to the activities. The municipality will then draft a plan proposal balancing all relevant interests, including i.a. the protection of landscapes and the expansion of renewable energy. The municipal council is by large free to decide which areas to designate. For wind turbines specifically, the Executive Order on Planning for Wind Turbines however contains certain limits, e.g., that wind turbines cannot be planned for closer than four times the height of the wind turbine from neighbouring residences.

Simultaneously, a Strategic Environmental Assessment (SEA) of the plan proposal will be conducted, including consultation of affected parties and authorities, e.g., the Danish Ministry of Defence Estate Agency, the Danish Transport, Construction and Housing Authority (DTCHA) and the Danish Nature Agency (DNA). Finally, the plan proposal and the SEA study are submitted for an eight-week public consultation, whereafter the plan proposal can be adopted by the municipal council (Planning Act, 2020; Executive Order on Planning for Wind Turbines, 2019; DNA, 2015).

If the designated areas are in place, project developers can find a suitable location within these areas, and then notify the municipality and, if required, request for a local planning process be initiated. As described below, this also involves a SEA, an EIA and a public consultation concerning the specific project.

However, according to interviewed stakeholders, municipalities often no longer designate areas in advance in the municipal plan. Instead, developers begin projects by doing their own screening for suitable sites relying for example on the online platform The Danish Environmental Portal, which provides access to information on all current land-use restrictions (see good practices below). Also, the nearest 50-60 kV station will be located, as this determines the price of grid connection (see section 2.1.1.4). According to an interviewed stakeholder, it is no longer difficult to find *suitable* land for ground-mounted solar PV plants as prices have become more attractive. The problem is finding land that the municipality will *allow* to be used for the purpose. Already at this point there might therefore in some cases be an informal contact with the municipality to clarify their position (Wind representative, 2020; Solar PV representative 3, 2020).

When a suitable site is found, the developer notifies the municipality of the project and requests for the required spatial planning processes to be initiated. Besides amending the municipal plan, in many cases a local plan for the area in question will be needed. A local plan is required before any major construction work can be carried out in an area. In general, establishing utility size ground-mounted solar PV plants or establishing larger wind turbines in an area where there are currently no wind turbines will require a local plan (DNA, 2013; DNA, 2015; Solar PV representative 3, 2020).

Had the notification been within an area that was already designated in the municipal plan, the municipal council would have been *obligated* to draft and publish a proposal for a local plan and promote the adoption process as soon as possible – i.e. within one year from the notification (this does however not ensure the municipal council's adoption of the plan or including the content the developer had asked for) (Planning Act, 2020; DNA, 2015).

Notifications of projects outside such areas – which, according to interviewed stakeholders, are the most common projects today, as no new areas are designated – may however wait for several years to be reviewed by the municipal council. Municipalities will often wait for more projects to be notified and then consider and compare these at the same time. The municipal council is also free to decide whether it wishes to initiate a planning process at all. If not, the municipality can immediately reject the project. Not before the municipal council has decided on which project(s) it wants to

promote will the actual planning process start (DNA, 2015; Solar PV representative 3, 2020; Wind representative, 2020).

If the municipal council decides to promote a project, the planning processes for an amendment to the municipal plan and for a local plan will be initiated and run in parallel.

Simultaneously, if required, a SEA of both plan proposals is conducted, including consultation of the authorities mentioned above. The municipality will also assess whether the specific project requires an EIA (see section 2.1.1.3). If this is the case, an EIA will be done at the same time as the SEA, and the SEA study and the EIA study will be drafted as one comprehensive report (DNA, 2015).

When the plan proposals and the SEA/EIA study are completed, they are submitted for an eight-week public consultation. After possibly incorporating changes proposed during the consultation and consulting parties and authorities affected by these changes, the municipal council may finally adopt the amendment to the municipal plan and the local plan. At the same time the EIA permission is granted (DNA, 2015).

Small-scale devices

A local plan is only required for projects that are considered to be “major” construction work – other projects may be established without (Planning Act, 2020).

Wind turbines may only be established within areas designated for such use in the municipal plan. Thus, even “non-major” wind turbine projects may still require an amendment to the municipal plan if placed outside designated areas. However, small wind turbines with a total height of up to 25 m, that are established within a distance of around 20 m from existing buildings, may also be established outside such areas – hence without any planning (Executive Order on Planning for Wind Turbines, 2019; DNA, 2012).

Repowering projects

There is no special procedure for repowering projects. It will depend on a specific assessment, whether such projects will require changes in the underlying planning following the procedures described above.

Changes that conform with the regulations set out in the existing local plan can be made without dispensation from or changes of the plan. For wind turbines specifically this would need to be changes that do not affect the exact location of the turbines, their number, minimum and maximum height or design, as these features must always be included in the provisions of a local plan for wind turbines (Executive Order on Planning for Wind Turbines, 2019; DNA, 2015). Changes that do not conform with the regulations set out in the local plan but at the same time do not contravene the main principles of the local plan may be allowed through a dispensation from the local plan granted by the municipal council (see section 2.1.1.3). Changes beyond this will require a new local plan. If this cannot be done within the limits of the municipal plan, this will also need to be amended.

If the project is considered “major construction work”, which includes demolition of structures, it will always require a new local plan to be adopted.

According to interviewed stakeholders, the planning process for renewable energy installations is very long and characterised by uncertainty of whether or not the planning will be prepared and approved. This is mainly due to the relatively large discretion of the

municipal council in the area, as affected by the local reception, and the lack of deadlines (Solar PV representative 3, 2020; Wind representative, 2020).

Lack of staff is not generally seen as problematic by the stakeholders interviewed. There are significant differences between municipalities with some having large and very experienced planning and environmental departments and others practically no staff with experience with renewable energy installations. But as (at least larger) developers will often offer the municipality to hire external help with the planning, SEA and EIA processes, this is not a crucial issue (Solar PV representative 3, 2020; Wind representative, 2020).

Interviewed stakeholders specifically mention the open and informal dialogue with the municipal project managers as a very positive aspect. Being able to discuss, for example, location options and schedules informally before and during the process is seen as an advantage (Solar PV representative 3, 2020; Wind representative, 2020).

Deadlines

There are no generally applicable rules on authority's case processing time in the Public Administration Act (Public Administration Act, 2014). It does however follow from the general principle of good administrative practice that cases must be dealt with within a reasonable time. This applies to all other process steps described in this report as well.

The few specifically applicable deadlines are integrated in the description above. An interviewed stakeholder further mentions that a schedule is often prepared in collaboration with the municipality. This is however not always complied with, as unforeseen municipal tasks often arise (Solar PV representative 3, 2020).

Detected barriers

Municipal reluctance to plan for large renewable energy installations. The municipal councils have quite large discretion in deciding if and where structures as renewable energy installations may be placed in a municipality as long as they base their decisions on the relevant and objective considerations. This is underlined by the fact that such a decision may only be appealed concerning the *legality* and not *reasonableness* of the decision (see section 4) (Planning Act, 2020; Solar PV representative 3, 2020; Wind representative, 2020).

Unlike the other licences and permits etc. needed (see sections 2.1.1.2. and 2.1.1.3.), where developers can be quite sure to be granted such a license or permit if all formal requirements are fulfilled, it is thus much more uncertain – and highly dependent on the local reception – whether or not the needed planning will be prepared and approved.

Mainly due to a generally growing local opposition, especially the onshore wind sector is hard hit by municipal reluctance. Things are looking easier for ground-mounted solar PV plants that still enjoy less local opposition and are seen by municipalities as less controversial. But as the PV plants grow in number and size this might not last. An interviewed stakeholder assessed the current approval rate to about 60% for utility size ground-mounted solar PV plants (Solar PV representative 3, 2020; Wind representative, 2020).

Even if planning is commenced, the uncertainty lasts until the final adoption of the local plan several years into the project. Stakeholders thus mention wind projects scrapped after 7-9 years during the final vote on the local plan because of late complaints from locals (Wind representative, 2020; Danish Energy, 2019).

Adding to the uncertainty are the different ways in which the municipalities handle project notifications, with some relying on guidelines on where installations can be

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placed, which differ from municipality to municipality, and others acting on a purely case by case basis.

In order to address this barrier, stakeholders propose to shorten and revise the planning process to ensure earlier and more inclusive involvement of all stakeholders to allow these to participate in setting direction. Enabling locals to participate at an earlier stage would hopefully both generally create a broader local acceptance and prevent scrapping far advanced projects due to late complaints (Wind representative, 2020; Danish Energy, 2019).

An interviewed stakeholder also calls for municipalities to designate areas for renewable energy installations in the municipal plan as intended and thus involving the public before specific projects are planned. This would also lend more certainty to developers as the sites would already have been politically debated and agreed upon (Wind representative, 2020).

Another interviewed stakeholder however, expresses understanding of the lack of designations, as these have previously created discontent among the affected landowners. Instead of pre-designations, this stakeholder calls for a set of common guidelines shared by all municipalities including objective criteria on where installations can- or cannot - be placed (Solar PV representative 3, 2020). This could provide more foreseeability by framing the municipal discretion, but would stir the sensitive issue of municipal autonomy.

Other proposals aiming to lessen local opposition to renewable energy projects focus on project acceptance measures. Four schemes are currently in place to enhance project acceptance: The so-called "RE-bonus scheme", which obligates the developer to pay neighbours an annual bonus corresponding to a specified part of the capacity of the plant; the "loss of value scheme", which requires the developer to compensate any loss of value to residential property equal to or higher than 1% of the property value; the "option-to-sell scheme", which allows some neighbours within a distance of six times the height of a wind turbine or 200 m from a ground-mounted solar PV plant to sell their property to the project developer; and finally the "green fund scheme", which obligates the developer to pay EUR 11,827 (DKK 88,000) per MW onshore wind equivalents to the relevant municipality, which can use the funds to support e.g. local green initiatives (RE Act, 2020).

Stakeholders from the energy sector such as Wind Denmark, the Danish sector organisation for wind energy, and Danish Energy, a non-commercial lobby organisation for Danish energy companies, generally support the measures, that they find fair and balanced (Wind Denmark, 2020; Danish Energy, 2019b). Danish Energy has however also stated, that the measures should be more flexible and negotiable, and that the municipalities that actively promote the expansion of renewable energy should be further rewarded (Danish Energy, 2019).

The association Neighbours of Giant Wind Turbines (Landsforeningen Naboer til Kæmpevindmøller), that organises approx. 200 local groups that work to protect neighbours of wind turbines from unreasonable nuisance, are less positive. According to the association the economic measures make no difference. Instead, the distance between wind turbines and residential property should be increased to ten times the height of the wind turbine (Jyllands-Posten, 2019). The municipalities, represented by KL - Local Government Denmark (KL), saw it as a step in the right direction when the measures in 2020 were revised to their current form, but call for much more radical measures and state funding to solve the growing location problem for especially onshore wind (KL, 2019).

Length of planning process. According to interviewed stakeholders, the planning process for utility size ground-mounted solar PV plants may take up to 3-4 years from notification of the municipality, and for wind turbines even longer. A large share of this time passes from the notification is made and until the municipality (possibly) initiates the actual planning process. This is due to the practice described above, where municipalities do not pre-designate areas in the municipal plan, but wait for specific projects to be notified (Wind representative, 2020; Solar PV representative 3, 2020; Danish Energy, 2019).

This length of the process is a severe problem in itself, especially for smaller developers that do not have several projects to work on while other projects are waiting. But the process length also presents a separate problem in that it – especially for wind turbines – often exceeds the municipal election period of four years. According to stakeholders, municipal councils are less likely to approve planning for wind turbines in election years. In the run-up to the local elections in 2017, there were several examples of wind projects that were scrapped by municipal councils even very late in the planning process (Solar PV representative 3, 2020; Wind representative, 2020; Danish Energy, 2019).

As described above, stakeholders have proposed to shorten and revise the planning process effectively addressing this barrier. Designating areas for renewable energy installations in the municipal plan could also prove helpful as this would activate the one-year deadline for the planning process to be commenced (Wind representative, 2020; Danish Energy, 2019).

Numerous third-party complaints and extensive case processing time. For developers of larger projects, especially in the wind sector, third-party complaints during the planning process and the parallel SEA and EIA processes are numerous and present a significant barrier. Appeals may be made against several decisions and to both the Planning Board of Appeals and the Environment and Food Board of Appeals depending on the decisions (see section 4). Although these boards may process the cases simultaneously it all prolongs the process (Wind representative, 2020).

A main issue besides the sheer number of complaints is the extensive case processing time at both boards (Wind representative, 2020; Solar PV representative 3, 2020). In 2019, the average case processing time for settled cases concerning renewable energy installations was 9.4 months and for unsettled cases 21.6 months (House of Boards of Appeals, 2019). The main reason for the delays is that both boards lost many employees in connection with a relocation in 2017 (Danish Parliamentary Ombudsman, 2020).

No stakeholders proposed to limit third-party appeal access to address this barrier. On the contrary, involving third-parties not only through consultations but also through access to appeal is seen as important for the general acceptance. Instead appeals should be sought prevented in the first place by revising the planning procedure to ensure earlier and more inclusive involvement of all stakeholders and by modernising the project acceptance measures as described above (Solar PV representative 3, 2020; Wind representative, 2020; Danish Energy, 2019).

Another point is shortening the case processing time at both boards. It will take time to replace the employees and restore the expertise lost in the relocation. However, it has been agreed to allocate EUR 2 million (DKK 15 million¹) annually in 2021-2024 to establish a six months case processing time limit for (new) appeals concerning renewable energy projects (Wind representative, 2020; Climate Agreement, 2020).

¹ All rates in this report are based on the exchange rate from 18 January 2021

Nature protection interests. According to interviewed stakeholders, conflicts with nature protection interest is a much more foreseeable and manageable challenge than local opposition, and the municipality will often be more willing to find a solution. These conflicts however still lead to several appeals (Solar PV representative 3, 2020; Wind representative, 2020).

According to DOF BirdLife, an independent nature conservation organization in Denmark working with bird protection and member of BirdLife International, more conflicts arise today because of the increasingly “marked based” approach to planning, where planning is often initiated based on notifications of specific projects in areas chosen by developers. The dominant site selection consideration is thus where such a project will be economically feasible to erect. This most often does not take (unprotected) important bird areas into account, which leads to conflicts.

Nature protection interests were more likely to be taken into account by municipalities when pre-designating areas. Instead of committing the municipalities to pre-designating areas, DOF BirdLife proposes that areas for renewable energy installations be designated centrally based on a nationwide analysis of suitable areas. Such long-term strategic planning could accommodate interests of both nature protection and renewable energy (DOF BirdLife, 2020).

Identified good practice

Online access to land use restrictions. The online platform The Danish Environmental Portal (Danmarks Miljøportal²) is a joint public partnership owned by the state, the municipalities and the regions. Covering the entire country, the portal includes area specific data on the environment, water, nature and land use. It enables authorities to update and access data across administrative units, sectors and geographical areas. However, private citizens and professionals can also use the portal to access data on different land use restrictions relating to e.g., nature protection, conservation, building lines and planning in specific areas. This possibility was noted as very valuable in the siting process by an interviewed stakeholder, as it gives developers full overview of all restrictions in different areas through the same databases that are used by the authorities. Thus, the only uncertainty left in this regard is possible archaeological finds (Solar PV representative 3, 2020).

2.1.1.2. Electricity production licence

Process flow

Relevant for: New installations and repowering.

According to the Electricity Supply Act, electricity production from plants with a capacity of more than 25 MW requires a licence to produce electricity from the Minister for Climate, Energy and Utilities. Applicants must prove that they have the necessary technical and financial capacity. The licence is applied for near the end of a project and is granted by the Danish Energy Agency (DEA) for at least 20 years (Electricity Supply Act, 2020).

Small-scale devices

² <https://miljoportal.dk>

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Only plants with a capacity of more than 25 MW are covered by the requirement to obtain a licence (Electricity Supply Act, 2020).

According to an interviewed stakeholder, the process to obtain the licence is unproblematic and follows almost automatically for developers with previous experience (Solar PV representative 3, 2020).

Deadlines

No deadlines apply.

Detected barriers

No barriers related to this process were identified.

Identified good practice

No good practice related to this process was identified.

2.1.1.3. Administrative authorisation

Process flow

Environmental Impact Assessment (EIA)

Relevant for: New installation, repowering, lifetime extension and decommissioning.

According to the SEA and EIA Act, wind turbine projects must undergo an EIA screening unless the project only involves a single turbine that is less than 25 meter high and is placed in the rural zone. Solar PV installations will need to be screened if they are considered to be industrial facilities producing electricity. It is the relevant municipal council that makes the screening decision upon application from the developer (SEA and EIA Act, 2020; DNA, 2015).

If the project requires an EIA, the municipality is responsible for conducting an EIA process and preparing an EIA study. In practice, the study is often drafted by, or in close cooperation with, the project developer (DEA, 2015). If the project requires planning, the EIA will be done at the same time as the SEA of the plan(s), and the SEA study and the EIA study will be drafted as one comprehensive report (DNA, 2015). When the SEA/EIA study is completed, it is submitted for public consultation for at least eight weeks. If the project requires planning, the consultation also includes the plan proposal(s).

After the consultation, the municipal council decides whether and on which conditions an EIA permission can be granted. If the project requires planning, the permission will often be granted at the same time as the planning is adopted, as an EIA permission may not be granted contrary to the existing planning (DNA, 2015). The granted permission must be used within three years (SEA and EIA Act, 2020).

Small-scale devices

Individual wind turbines with a rotor diameter of less than 5 m are not subject to the EIA procedure. Otherwise, there is no special procedure for small-scale devices and it will depend on a specific assessment whether an EIA is needed (DNA, 2015; DEA, 2020).

Rural zone permit

Relevant for: New installations, repowering, lifetime extension and decommissioning.

In the so-called rural zone new construction such as wind turbines and solar PV plants and installations will as a main rule require a rural zone permit from the municipal council (DNA, 2013; DNA, 2012).

The permit may be granted after a two-week consultation of the neighbours of the property and an assessment of the project. According to the Planning Board of Appeals, renewable energy installations may in general be treated more leniently than other types of facilities in rural areas (DNA, 2013). The granted permit must be used within five years (Planning Act, 2020).

For projects of a size that require drafting of a local plan (see section 2.1.1.1.), the local plan can replace the rural zone permit by explicit provision – the so-called “bonus effect”. A local plan with bonus effect may include conditions, that would otherwise have been included in the rural zone permit, e.g., on decommissioning of the wind turbine or solar PV plant after a certain period (Planning Act, 2020).

A rural zone permit cannot be granted before an EIA permission has been granted (if required). For wind turbines, a permit also cannot be granted before the area has been designated in the municipal plan (if required) (Planning Act, 2020; DNA, 2015).

Small-scale devices

If established in the rural zone, even small wind turbines and small solar PV installations will, as a main rule, need a rural zone permit. According to DNA however, if a rooftop solar PV system neither affects the height, distance or construction of the building it is to be placed on, it does not constitute “construction” and will therefore not require a rural zone permit. The same applies to ground-mounted solar PV installations that are so small that they are considered insignificant in relation to their surroundings. There are no fixed size limits and the decision depends on the municipal council’s assessment (Planning Act, 2020; DNA, 2013; DNA, 2012).

Dispensation from local plan

Relevant for: New installations, repowering and lifetime extension.

If a local plan covers the area where the renewable energy installation is to be established, this must conform with the regulations set out in the local plan. This is especially relevant to examine when establishing rooftop solar PV systems or small wind turbines in urban areas that will often be covered by a local plan, but could also be relevant when making changes to existing plants covered by a local plan (see section 2.1.1.1.).

If the project does not conform with the local plan, a dispensation from the plan is needed. This can be granted by application to the municipal council, but only if the project does not contravene the “main principles” of the local plan. As a main rule, regulations of the design and location of structures do not belong to the main principles of a local plan, unless this is specifically stated.

Whether a dispensation *can* and *should* be granted is decided by the municipal council following a two-week consultation of owners and users in the area covered by the plan, the neighbours of the property in question, certain associations and organizations and other stakeholders who the municipal council deems to have an interest in the case (Planning Act, 2020).

Public meeting on project acceptance measures

Relevant for: New installations and repowering.

Developers who wish to establish i.a. wind turbines that are higher than 25 m or ground-mounted solar PV plants with a capacity of more than 500 kW must host a public meeting, where the developer describes the consequences of the project for the surrounding properties, and DEA describes the different project acceptance measures (see section 2.1.1.1.). The time and date are agreed with DEA within certain deadlines that depend on the project type. It is regulated in detail how and who must be invited (RE Act, 2020).

Small-scale devices

The obligation only covers wind turbines that higher than 25 m and ground-mounted solar PV plants with a capacity of more than 500 kW (RE Act, 2020).

Licence to establish a powerplant

Relevant for: New installations, repowering, lifetime extension and decommissioning.

According to the Electricity Supply Act, establishing a new powerplant as well as making significant changes to existing plants may only be done after obtaining a licence to establish a powerplant from the Minister for Climate, Energy and Utilities. Applicants who can document that the plant fulfils the conditions specified in the Executive Order on Powerplants are entitled to receive the license, which is granted by DEA. Wind turbines that meet the requirements of the Executive Order on Certification of Wind Turbines are exempted from the requirement to obtain the licence (Electricity Supply Act, 2020; Executive Order on Powerplants, 2020; Executive Order on Certification of Wind Turbines, 2020).

The Executive Order on Powerplants contains separate rules for permission to decommission powerplants with a capacity of more than 25 MW (Executive Order on Powerplants, 2020).

Small-scale devices

RES powerplants with a capacity of less than 10 MW are exempted from the requirement to obtain a licence to establish a powerplant (Executive Order on Powerplants, 2020).

Attestation or dispensation regarding aviation marking (wind turbines only)

Relevant for: New installations, repowering and lifetime extension.

Wind turbines within an aerodrome approach area must be marked in accordance with the provisions of BL 3-11. The same applies to wind turbines outside such areas if their total height is more than 100 m. Such wind turbines may also not be established before the Danish Transport, Construction and Housing Authority (DTCHA) has approved the project including the marking by attestation or dispensation. Construction of a wind turbine that is less than 150 m high and placed outside an aerodrome approach area may however be commenced, if DTCHA has not responded to the application within six weeks. DTCHA conducts a consultation of affected aerodromes, Naviair and the Danish Ministry of Defence Estate Agency before finally issuing an attestation or dispensation (BL 3-11, 2014; DEA, 2020).

Small-scale devices

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Wind turbines that are less than 100 m and placed outside an aerodrome approach area do not need to be marked and do not need an attestation or dispensation regarding the marking (BL 3-11, 2014).

Repowering projects

There is no special procedure for repowering projects. Changes of the physical extent of the wind turbine or of the aviation marking in relation to the attestation or dispensation must be notified to DTCHA (BL 3-11, 2014).

Permits and dispensations depending on site and surroundings

Relevant for: New installations, repowering, lifetime extension and decommissioning.

Depending on the specific site chosen and its surroundings, a project may need several additional permits or dispensations. For example, if a project is to be placed in dune-protected areas or areas within 300 m from the seashore, a dispensation from the Danish Coastal Authority is required. The same is the case if a project is to be placed less than 100 m from an ancient monument, 150 m from protected lakes and streams, 300 m from forest or 300 m from a church. In these cases, the local municipal council is the relevant authority. If a project is to be placed in a nature conservation area a dispensation from the local Conservation Board of Appeals is required. The granted dispensations must be used within three years (Nature Protection Act, 2019).

Small-scale devices

It can be assumed that small-scale devices will often more easily obtain a dispensation (DNA, 2013).

Noise notification (wind turbines only)

Relevant for: New installations, repowering and lifetime extension.

Wind turbines are subject to noise limits stipulated in the Executive Order on Noise from Wind Turbines. Anyone who wishes to establish an onshore wind turbine, or to change an onshore turbine in a way that may increase the noise emission, must notify the relevant municipal council and document that the wind turbine can comply with the applicable noise limits. If the municipal council does not object within four weeks from (a complete) notification, the wind turbine may be established or changed.

Construction cannot start before the end of the four-week deadline, except in the case of a positive answer from the municipal council. The new or changed wind turbine must be in operation within two years from the deadline whereafter a new notification is required. Noise notification is therefore usually done just before construction is set to start. It cannot be made before the necessary planning is approved and a rural zone permit and an EIA permission has been granted (Executive Order on Noise from Wind Turbines, 2019).

Small-scale devices

The Executive Order on Noise from Wind Turbines defines "small wind turbines" as single wind turbines with a rotor area of less than 200 m² and less than 25 meter high. These are subject to the same noise limits and notification requirements as larger turbines but the method whereby the noise from small wind turbines is controlled is simpler (Executive Order on Noise from Wind Turbines, 2019; DEPA, 2020).

Building permit

Relevant for: New installations, repowering, lifetime extension and decommissioning.

According to The Executive Order on Building Regulations 2018 (BR18), “building work” (incl. construction of new buildings and additions to, alteration and demolition of existing buildings) must comply with certain requirements and may not be commenced without a building permit, unless covered by one of the exemptions (BR18, 2019). Wind turbines and ground-mounted solar PV plants will always need a building permit. For rooftop solar PV installations, it will depend on a specific assessment e.g., of which type of building it is placed on.

If the permit is required, the project developer must apply for it from the municipal council. The application must include information on i.a. the work that is to be carried out and documentation that the requirements of BR18 will be complied with. For wind turbines, it is required that the application includes all permissions required according to other legislation. In addition, wind turbines need to be certified pursuant to the Executive Order on Certification of Wind Turbines (ibid.).

The municipal council must examine if the building work meets the requirements of BR18 and any other legislation, before a building permit can be granted. All other permits, licences and necessary planning etc. must therefore be acquired by the time of the decision (ibid.). If construction has not begun within one year from the date the building permit is granted, a new permit is required (Building Act, 2016).

Small-scale devices

Rooftop solar PV systems are regarded as alterations or changes to existing buildings, which may be installed without a building permit on building types listed in BR18, such as garages and single-family houses. Installation on other buildings may also be done without a building permit if certain requirements are met (BR18, 2019; DEA, 2012).

If a rooftop solar PV system neither affects the height, distance or construction of the building it is to be placed on, it is not covered by the scope of BR18. The same applies to ground-mounted solar PV installations that are so small that they are considered insignificant for their surroundings. These installations need neither a building permit nor comply with the BR18 requirements (ibid.).

Interviewed stakeholders working with wind turbines and utility size ground-mounted solar PV plants were generally positive and did not mention any of the described authorisation processes as problematic, except from the numerous third-party complaints relating to the EIA process (see below). Most of these processes have a formalistic character and are transparent and foreseeable. Again, stakeholders also mention the open and unformal dialog with the municipal project managers as beneficial. In relation to municipal staffing the same remarks as in section 2.1.1.1. generally apply. Staffing at the other authorities is not mentioned as an issue (Solar PV representative 3, 2020; Wind representative, 2020).

By contrast, an interviewed stakeholder working with large rooftop solar PV installations mentioned specifically the building permit process as a severe barrier to this type of projects (see below) and was less satisfied with the municipal processing. According to this stakeholder, the municipal assessments are subjective and differ from municipality to municipality and are thus not foreseeable. It is also the view of this stakeholder, that staffing in some municipalities is insufficient (Solar PV representative 2, 2020).

Deadlines

The few applicable deadlines are integrated in the description above. Concerning building permits, the municipalities have agreed to “service targets”. These stipulate a processing

time for building permit applications of 40–60 calendar days. The targets are calculated as an average processing time for the municipality as a whole. They do not apply if a project requires an EIA or adoption of a new local plan (DEA, 2020).

Detected barriers

Length and cost of building permit process for middle size projects. An interviewed stakeholder working with utility size ground-mounted solar PV plants generally found the building permit process transparent and unproblematic, though it may occasionally involve new unexpected requirements (Solar PV representative 3, 2020).

An interviewed stakeholder working with large rooftop solar PV installations on the other hand, mentioned the uncertain length and cost of the building permit process as a severe barrier to such PV projects. Contrary to utility size projects, where a permit is clearly needed, and to small private installations, where a permit is clearly not needed, it is often uncertain if these “middle size” projects, placed e.g., on the roof of industrial buildings require a building permit. This depends on a specific assessment by the relevant municipality, which, in the opinion of the stakeholder, is subjective and differs much from municipality to municipality.

Depending on whether a building permit is needed or not, the process may take from one week to half a year. This is critical for projects of this type, where the client already has other sources of electricity and may lose interest in the project.

The costs also differ greatly from nothing to EUR 13,440 (DKK 100,000) to obtain a required permit. The high cost is among other things due to new rules requiring a certified structural technician to confirm that the roof can carry the installation. According to the interviewed stakeholder this is a heavy process and it is very expensive for projects of this size (Solar PV representative 2, 2020; BR18, 2019).

Third-party complaints concerning the EIA process. The EIA process is intertwined with the planning and SEA processes, and appeals will often target decisions concerning all processes. The barrier concerning third-party complaints described in section 2.1.1.1. experienced by developers of larger projects, especially in the wind sector, thus also applies to this process step in relation to the EIA permission part.

Identified good practice

No good practice related to this process was identified.

2.1.1.4. Grid connection permit

Process flow

Relevant for: New installations and repowering.

In Denmark, grid connection is a private agreement between the project developer and the DSO or TSO. In principle therefore grid connection is not allowed by permit but by agreement (DEA, 2020).

According to the Executive Order on Grid Connection of RES Installations, the covered installations can only be connected if they are established in accordance with the RE Act, the Electricity Supply Act, the Planning Act, the Building Act and all rules issued pursuant to these. If these conditions are fulfilled, the DSO or TSO are *obligated* to connect the plant to the public grid. This is assessed and decided by the DSO or TSO. Each DSO also

has a set of general connection conditions that must be fulfilled. An industry standard by Danish Energy exists.

The costs related to the connection from the plant until the connection point are borne by plant owner, while the costs related to reinforcing or extending the public grid are borne by the DSO or TSO (Executive Order on Grid Connection of RES Installations, 2020).

To connect a larger renewable energy plant, a project developer must first contact the local DSO. This will often be done very early during the siting process. Together with the TSO, the DSO will first of all decide, whether the plant is to be connected to the distribution or the transmission grid. When this is decided, the DSO or TSO will determine the connection point. The DSO or TSO must choose the connection point that results in the lowest total connection costs. If this is further from the plant than the nearest 50-60 kV station the DSO or TSO is obligated to reinforce or extend the existing grid to be able to assign a connection point within this distance. The process of finding a connection point can be lengthy, see below, but will usually run in parallel with the planning process (see section 2.1.1.1.) (Executive Order on Grid Connection of RES Installations, 2020; Solar PV representative 3, 2020).

When a connection point is found, the project developer will be notified. The developer will then usually wait until at least the local plan for the project is adopted. Afterwards, the developer will contact the DSO or TSO to initiate the agreement process. At this point the developer will also have to provide a bank guarantee covering the costs borne by the DSO or TSO. However, until the guarantee is provided, competing projects may take over the connection point (Executive Order on Grid Connection of RES Installations, 2020; Solar PV representative 3, 2020).

Thereafter, the grid connection agreement will be drafted and signed. The plant will be registered in the master data register, which contains information on all grid-connected electricity-producing plants and installations in Denmark, and receive an ID number, the so-called GSRN number. When this is done, construction of the plant and the necessary changes to the grid will commence.

Upon completion, the developer must obtain the operational notification following the EU RfG regulation (Executive Order on Grid Connection of RES Installations, 2020; DEA, 2019b; Energinet, 2019).

Small-scale devices

If a plant has a capacity of less than 1.5 MW, the DSO or TSO is not obligated to reinforce or extend the existing grid to enable a connection point at least as close as the nearest 50-60 kV station. For self-consumption installations, the consumption installation will often be designated as the connection point (Executive Order on Grid Connection of RES Installations, 2020; DEA, 2019b).

The typical process for connecting a small installation for self-consumption starts with sending a registration to the relevant DSO. This will usually be done by the electrical installer that handles the installation for the owner. The registration must include documentation that the technical requirements for grid connection are fulfilled. The documentation needed differs depending on the size of the installation. For installations with a capacity of less than 50 kW, Danish Energy has drawn up so-called positive lists, which include generating units and inverters that are considered to comply with the technical requirements. If included in such a list, much less documentation is needed (Danish Energy, 2020). For installations with a capacity of more than 125 kW the registration must also include certain information needed for a grid connection agreement.

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When the DSO has approved the registration, the electrical installer is informed that the installation may be connected. When the installation has been registered, a GSRN number for the installation is issued (Trefor, 2020).

An interviewed stakeholder working with utility size ground-mounted solar PV plants generally found the grid connection process transparent, though it is difficult to get a reliable time schedule and the process may drag out. Lack of staff resources can be an issue, but in general the DSOs respond timely (Solar PV representative 3, 2020).

An interviewed stakeholder working with large rooftop solar PV installations on the other hand did not find the process transparent. According to this stakeholder, the length of the process is unforeseeable and the individual requirements from the different DSOs are problematic, see below. The approval rate is however high with only occasional rejections due to surplus of production in a specific area (Solar PV representative 2, 2020).

Deadlines

The Executive Order on Grid Connection of RES Installations (2020) states that the DSO or TSO must provide the one who requests grid connection with a reasonable and accurate timetable for the receipt and processing of the request and a reasonable indicative timetable for the grid connection itself.

Detected barriers

Length of process for larger plants. According to an interviewed stakeholder working with utility size ground-mounted solar PV plants, the grid connection process for larger plants may take up to three years, with the construction of the connection taking one to two years. As the process to some degree can run in parallel with other steps, this is not a severe barrier, but may non the less be problematic. As an example, in the national technology neutral tenders solar PV plants and onshore wind turbines must be connected within only two years from the tender agreement. For the larger plants, it is especially the decision on where to place the connection point that can take very long. One reason is that the DSO does not always know the long-term plans for grid development and has to wait for answers from the TSO. Even after a connection point is found, the planning is in place and the bank guarantee has been provided, DSOs may use months to draft the grid connection agreement and postpone the construction of the connection due to lack of resources (Solar PV representative 3, 2020).

Large bank guarantee amount. An interviewed stakeholder working with utility size ground-mounted solar PV plants generally found the grid connection costs reasonable. It can however be challenging – though not a severe barrier – to provide the large bank guarantee. This might for example amount to EUR 2.7 million (DKK 20 million) for a project where the actual grid connection costs that are in the end to be borne by the developer are EUR 67,000 (DKK 500.000) (ibid.).

Future grid connection fees. In the Climate Agreement for Energy and Industry 2020 the parties agreed to terminate the scheme which currently covers the grid connection costs borne by the DSOs when connecting renewable energy installations. The current scheme is financed by all electricity consumers through the Public Service Obligation (PSO), which is being phased out towards 2022. Instead, from 2023 the costs are to be covered by geographically differentiated connection fees and feed-in fees levied on RES producers.

In the worst-case scenario, an interviewed stakeholder working with utility size ground-mounted solar PV plants feared that these new fees could amount to up to EUR 672,000-1,344,000 (DKK 5-10 million). This would effectively overrule all other aspects concerning economic attractiveness and present a severe barrier. The decision has also

been heavily criticised by Wind Denmark, arguing that it will impede the renewable energy expansion (Solar PV representative 3, 2020; Climate Agreement, 2020; Wind Denmark, 2020b).

Unforeseeable process length and requirements for smaller installations.

According to an interviewed stakeholder working with large rooftop solar PV installations, the processing time of a grid connection request is unforeseeable and may take from a couple of days to several months – in the worst cases up to a year. This is problematic for projects of this size that otherwise may be established in a few months. A special problem is the issue of the GSRN number, which is needed to apply for net-settlement (see section 2.1.1.5.). This may take months – in some cases years – according to the stakeholder, in which period the owner cannot receive payment for the excess power produced.

Adding to the problem is the fact that the different DSOs have individual technical conditions for grid connection. This makes it difficult to know precisely what is required and to comply with the many different requirements, according to the stakeholder.

In the opinion of the stakeholder, the underlying problem is that the DSOs are biased commercial operators. The stakeholder therefore proposes that grid connection should be managed by an authority instead (Solar PV representative 2, 2020).

Identified good practice

No good practice related to this process was identified.

2.1.1.5. Corporate legal fiscal

Process flow

Relevant for: New installations, repowering and lifetime extension.

Electricity prosumers can, by applying for so-called “net-settlement”, be exempted, in whole or in part, from paying certain public tariffs and electricity tax on the electricity that the prosumer produces and consumes within one hour. These tariffs and taxes amount to about half of the electricity price, which makes it quite important for the rentability of an installation.

To be eligible for net-settlement, the electricity production installation must be 100% owned by the same legal entity as the electricity consumer. Further, concerning wind turbines and solar PV installations, these must be installed in a consumption installation or located at the place of consumption.

The application for net-settlement must be sent to DEA before a project is initiated. It must include i.a. information about the installation and documentation that the project is not initiated. DEA will assess whether the conditions for net-settlement are met and notify the applicant on whether the application can be provisionally approved while issuing an approval ID.

At this point the grid connection process described in section 2.1.1.4. will be initiated by sending a registration to the relevant DSO, including the approval ID.

When the DSO has approved the registration, the installation has been connected and the GSRN number has been issued (see section 2.1.1.4.), it is possible to apply to DEA for a final approval of net-settlement. This must be done within 30 days from grid connection, and the GSRN number must be included. If the installation has not been

connected to the grid within two years from the provisional approval, a new provisional approval must be applied for (Executive Order on Net-Settlement, 2016; DEA, 2020b).

Small-scale devices

There is no special procedure for small-scale devices. Wind turbines with a capacity of less than 25 kW and solar PV installations with a capacity of less than 50 kW may however be exempted from more tariffs than larger installations (Executive Order on Net-Settlement, 2016).

Repowering projects

There is no special procedure for repowering projects. After net-settlement has been finally approved, all alterations that increase the capacity of the installation require a new application (DEA, 2020c).

According to an interviewed stakeholder, the approval rate for applications is high and rejections are very rare. The stakeholder however describes the application process as “a hassle” that is disproportionally long (see below). Whether this is due to insufficient staffing is not known (Solar PV representative 2, 2020).

Deadlines

The few applicable deadlines are integrated in the description above.

Detected barriers

Length of process. According to an interviewed stakeholder, the application process is disproportionally long. While components for a 200 kW installation can be ordered in one month and set up in two weeks, DEA will often use up to six to eight months to process an application. There are also many requirements and the review is meticulous, even if it, in the opinion of the stakeholder, in practice only serves to register the capacity of the installation (Solar PV representative 2, 2020).

Conditions for net-settlement for larger prosumers. According to interviewed stakeholders, the conditions for net-settlement described above present different obstacles for larger prosumers such as companies, housing associations, municipal institutions or district heating plants.

The requirement that the solar PV installation or wind turbine must be installed in a consumption installation or located at the place of consumption excludes transferring power between cadastres, even if these are owned by the same legal entity. Thus, net-settlement is not obtainable if, for example, a company wants to place a ground-mounted solar PV installation on a neighbouring cadastre they own, or if a housing association with buildings on several adjoining cadastres wants to supply them all with electricity from a single large rooftop solar PV installation on one of the building. Without net-settlement, the owners have to sell themselves the electricity that is transferred between cadastres including tariffs and taxes. This will often critically affect the economic feasibility of the project, and on an overall level lead to fewer and smaller installations.

In addition, the requirement that an installation must be 100% owned by the same legal entity as the electricity consumer also lessens the expansion among businesses, who prefer to lease installations instead of owning them.

All in all, net-settlement conditions present an essential barrier for a substantial expansion of rooftop solar PV installations among larger prosumers – a sector which otherwise, according to interviewed stakeholders, offers significant growth opportunities with increasing interest and large roof surfaces, see also section 1 (Solar PV representative 1 and 2, 2020).

The issue regarding transferral between cadastres was recently discussed politically in the autumn of 2020. Opening up for increased self-consumption through private household and industrial installations exempted from tariffs would mean that an ever-fewer number of consumers would have to cover the costs of maintaining the common public grid, a scenario which the Danish Minister for Climate, Energy and Utilities disagrees with (Minister for Climate, Energy and Utilities, 2020).

Corporate separation requirement for municipalities. According to the Electricity Supply Act, municipalities can only conduct electricity production activities if the activity is separated from the municipality in an independent company. This also applies to electricity production from solar PV installations mounted on municipal buildings and used by the municipal itself (Electricity Supply Act, 2020). The requirement effectively excludes municipalities from obtaining net-settlement as the electricity production installation will not be 100% owned by the same legal entity as the electricity consumer (Executive Order on Net-Settlement, 2016). This makes it much less attractive for municipalities to establish solar PV installations on their buildings. It is possible to obtain an exemption from DEA from the requirement, but in 2014 this was limited to a total of 20 MW per year (Executive Order on Municipal Corporate Separation, 2019).

According to an interviewed stakeholder this constitutes a severe barrier for expansion of rooftop solar PV systems on municipal buildings, which does have larger implications as the municipalities own almost eight of ten publicly owned buildings larger than 500 m² amounting to 16.8 million m² (Solar PV representative 2, 2020; KL, 2020).

The barrier is well known politically but changing governments, including the present, do not wish to change the regulations. Their argument is that a change would provide municipalities with large tax exceptions and that these funds would be better spent supporting wind turbines and large solar PV plants through national tenders (KL, 2020).

Identified good practice

No good practice related to this process was identified.

2.2. Offshore wind

2.2.1. Relevant process steps

There are two different procedures for establishing offshore wind turbines in Denmark. Most new offshore wind farms are established according to the tendering procedure. Here, DEA announces a politically decided site-specific tender for an offshore wind farm of a specific size. Through the so-called "open-door procedure", a project developer can submit an unsolicited application to establish an offshore wind farm at a site and of a size chosen by the developer.

The tendering procedure starts with an area screening of Danish waters based on which a site is politically decided.

Under both procedures, the project developer must thereafter obtain three licenses stipulated by the RE Act:

1. License to carry out preliminary investigations
2. License to establish offshore wind turbines
3. License to exploit wind power

These licenses are granted successively by DEA, which serves as a one-stop-shop.

Besides these licences, an EIA must be carried out before the license to establish offshore wind turbines can be granted. Under the tendering procedure, a SEA of the overall plan for the wind farm, and an EIA of the onshore installations needed are carried out before the license to carry out preliminary investigations is granted to the developer.

Further, the project developer must obtain a permission regarding maritime marking, an attestation or dispensation regarding aviation marking and an agreement with Defence Command Denmark concerning radar. These can be applied for and processed in parallel with the license to establish offshore wind turbines.

Under the open-door procedure the developer must also host a public meeting on the project acceptance measures currently in place. This must be held within eight weeks after the licence to establish offshore wind turbines has been granted.

Finally, the project developer must obtain a licence to produce electricity, which can be applied for and processed in parallel with the license to exploit wind power.

Concerning the needed onshore installations, these may require i.a. spatial planning, a rural zone permit and a building permit. These processes can run in parallel with the offshore processes and can be completed at the same time as the license to establish offshore wind turbines is granted.

Grid connection is a separate process based on a private agreement between the developer and the DSO or TSO that also runs in parallel with the above process steps (DEA, 2020).

2.2.1.1. Site selection

Process flow

Screening

Relevant for: New installations.

Tendering procedure

The site for a future offshore wind farm is approved by the parties behind the political agreement to establish a new offshore wind farm. The selection is based on an area screening of Danish waters done by or on behalf of DEA following the political agreement and on subsequent consultations with the shore municipalities and relevant authorities. Public consultations were held in connection with the screenings done in 2003, 2004 (one month each) and in 2012 (two months), which included near-shore sites, whereas this was not the case for the screenings done in 2018 and 2020 (DEA, 2020d; Wind authority, 2020).

Open-door procedure

The site for an offshore wind farm is chosen by the project developer. The project developer is limited in choice, as many of the areas identified through the previous screenings mentioned above have been reserved for public tenders and cannot be applied for under the open-door procedure. The screening reservations do not limit the possibility of establishing wind turbines in other locations. As the screenings have identified the sites considered most suitable for wind energy taking into account competing interests and current uses as well as the natural environment, the reservation of these sites however makes it more difficult for the project developer to find a suitable site, see below (Wind representative, 2020; DMoCEU, 2018; RE Act, 2020).

Spatial planning (onshore installations)

The onshore installations needed for an offshore wind farm will in most cases require spatial planning to be adopted, including a municipal plan amendment and possibly a local plan. These are drafted and adopted by the relevant municipality according to the same rules and procedures as described in section 2.1.1.1. (DEA, 2020e).

Deadlines

The few applicable deadlines are integrated in the description above. Deadlines in relation to spatial planning are described in section 2.1.1.1.

Detected barriers

Reservation of areas for public tenders. According to an interviewed stakeholder, reserving areas at sea for public tenders for offshore wind farms constitutes a significant barrier for offshore project developers under the open-door procedure as, in practice, the most suitable sites for wind energy have already been reserved (RE Act, 2020; Wind representative, 2020).

The barrier is as such “acknowledged” by the previous Minister for Climate, Energy and Utilities as the right to reserve areas is specifically meant to avoid a situation where private actors outside the tender scheme expand offshore wind uncontrollably in the light of the currently falling prices. The Minister argues that an uncontrolled expansion would both reduce the possibilities to conduct future public tenders and require reinforcements of the electricity grid paid for by the public (DMoCEU, 2018).

As the reservations only negatively affect project developers wishing to establish offshore wind farms under the open-door procedure and not the expansion of offshore wind as such, the barrier is not considered crucial.

Bird protection interests. According to an interviewed stakeholder bird protection interests are a severe barrier for offshore wind (Wind representative, 2020). As late as in November 2020 the open-door project Omø Syd (which had just received an approval of the EIA study eight years after applying for the first licence (see section 2.2.1.4.)), was put on hold until a decision is made on whether the area should be designated as an international bird protection area (Wind Denmark, 2020d).

According to DOF BirdLife, more conflicts arise as it gradually becomes profitable to establish offshore wind farms on market terms (see section 2.1.1.1. on the similar onshore situation). While the broad area screenings done before state tenders allow for bird protection and other overall interest to be taken into account, the more and more developers wishing to establish wind turbines through the open-door procedure, tend to apply where construction is cheapest. This is often areas at shallow water near the shore, which tend to be the most important bird areas. As many of these areas are not (yet) formally protected, conflicts will naturally arise (DOF BirdLife, 2020).

DOF BirdLife suggests to formally protect at least the most important third of the offshore bird areas and otherwise enact central long term strategic planning to enable accommodation of all interests (see also section 2.1.1.1.) (ibid.).

Wind Denmark on the other hand, commenting on the specific case of Omø Syd argues that ways should be found to enable coexistence between birds and wind turbines. One example would be to reduce the hunting season in the area, as the number of ducks killed through hunting, according to Wind Denmark, is more than twice as high as the estimated negative effect of the wind turbines (Wind Denmark, 2020d).

Third-party complaints. As described in section 2.2.1.4. third-party complaints constitute a severe barrier due to the number of these, the many different points during

the process that different decisions may be appealed, and the extensive processing time at the boards of appeals.

Though complaints concerning the spatial planning for the onshore installations may not be the most critical issue concerning complaints, they add to the total number of appeals and of possible appeal points during the process, and thus form a part of the overall barrier described in section 2.2.1.4.

Identified good practice

See description of “the Danish model” and the one-stop-shop concept, which also relate to this process step, in section 2.2.1.4.

2.2.1.2. Electricity production licence

Process flow

Relevant for: New installations and repowering.

The requirement to obtain a licence to produce electricity described in section 2.1.1.2. also applies to offshore wind turbines (Electricity Supply Act, 2020).

Under the offshore tendering procedure, the licence must be applied for between construction start and up until two months before grid connection of the first wind turbine according to the tender material (DEA, 2020f). The license to exploit wind power (see section 2.2.1.4.) is applied for at the same time, and DEA issues both when it has been ensured that all relevant terms in the license to establish offshore wind turbines (and under the tendering procedure also in the concession agreement) are adhered to. The developer may then connect the wind farm (DEA, 2020h; Wind authority, 2020).

For the assessment of this process step see the general assessment in section 2.2.1.4.

Deadlines

The few applicable deadlines are integrated in the description above.

Detected barriers

No barriers related to this process were identified.

Identified good practice

See description of the Danish model and the one-stop-shop concept, which also relate to this process step (see section 2.2.1.4.).

2.2.1.3. Application preparation process

Process flow

License to carry out preliminary investigations

Relevant for: New installations and repowering.

Preliminary investigations and subsequent exploitation of energy from water and wind in Danish territorial waters and in the Exclusive Economic Zone may only take place with approval from the Minister for Climate, Energy and Utilities for areas in which the Minister considers that energy exploitation may be relevant. A licence to carry out

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preliminary investigations is granted either after a tender or upon application as an exclusive right for a specified area and time period (RE Act, 2020).

Tendering procedure

A license to carry out preliminary investigations is granted by DEA to the Danish TSO Energinet once a site has been selected (RE Act, 2020). Energinet then carries out a number of environmental studies, such as bird surveys and navigation risk analysis, which provide data about the site in order to reduce risk for the tenderers (DEA, 2019c; Wind authority, 2020). In parallel, Energinet conducts a SEA of the overall plan for the wind farm and an EIA of the onshore installations (see section 2.2.1.4.). The SEA and EIA for the onshore installations are concluded by public consultations, and finally approved by DEA and the Danish Environmental Protection Agency (DEPA) respectively (DEA, 2020i; Wind authority, 2020).

At this point the tender is conducted and a concession agreement between DEA and the concession winner is signed. The concessionaire can then begin negotiations with landowners and construction of the onshore installations.

At the same time, the concessionaire also applies for a second license to carry out preliminary (offshore) investigations. The application must include information on the dimensions of the planned project, as well as the preliminary investigations the concessionaire plans to conduct, including the planned methods and time schedule and a forecast of the underwater noise. The concessionaire must also submit an assessment of the possible impacts of the preliminary investigations on the environment (DEA, 2020e).

DEA assesses whether the preliminary investigations in themselves require an EIA. If not, DEA will submit a draft licence to a four-week consultation of the public and affected authorities and based on the results decide whether a licence can be granted (DEA, 2020h).

Open-door procedure

Once a site has been selected, the developer applies for a license to carry out preliminary investigations (see requirements and process description above).

Upon receipt of the application DEA conducts consultations with affected authorities. During these consultations, municipal councils may raise an objection if the offshore wind turbines are planned to be located less than 15 km from the municipality's coastline. If such an objection is raised, the Minister for Climate, Energy and Utilities may reject to grant the license to carry out preliminary investigations unless climate, environmental or socio-economic considerations decisively speak in favour of realising the project. Based on the consultations the Minister for Climate, Energy and Utilities decides whether a licence can be granted (RE Act, 2020; DEA, 2019d; Wind authority, 2020).

For the assessment of this process step see the general assessment in section 2.2.1.4.

Deadlines

To ensure progress in the open-door projects, DEA has adopted a set of requirements that aim to avoid long term reservations of areas that lead to uncertainty for the local population. These progress requirements overall entail that milestones must be set for every step of the process and that the developer must ensure that the project progresses according to these. Correspondingly, deadlines will be set for DEA's application processing. Specifically concerning the license to carry out preliminary investigations, the progress requirements stipulate i.a. that supplementary information must be sent to DEA within four weeks (DEA, 2020j; DMoCEU, 2015).

Detected barriers

License is difficult to obtain (open-door). According to an interviewed stakeholder, it is difficult for offshore wind project developers using the open-door procedure to obtain a license to carry out preliminary investigations. As opposed to the subsequent licences and permits, the Minister for Climate, Energy and Utilities has some discretion when deciding whether to grant a license to carry out preliminary investigations, as it is up to the Minister to consider if energy exploitation is relevant in the area (see above). Further, though the affected municipal councils do not have an actual “veto”, their objection right lends them mentionable influence. If the Minister in office does not favour nearshore wind farms, obtaining a licence can prove difficult (Wind representative, 2020).

Length of process (open-door). As described in section 2.2.1.4., the overall processing time for the few open-door projects that have been processed in recent years is very long. This also pertains to the processing time of applications for licenses to carry out preliminary investigations specifically, which in the open-door projects at Jammerland Bugt and Omø Syd was almost 2.5 and 2 years respectively (Wind representative, 2020; Danish Energy Agency, 2020).

Third-party complaints. As described in section 2.2.1.4., third-party complaints constitute a severe barrier due to the number of these, the many different points during the process that different decisions may be appealed, and the extensive processing time at the boards of appeals (Wind representative, 2020; Wind Denmark, 2019).

Complaints concerning the approval of the overall plan for the wind farm and the related SEA, the EIA permission for the onshore installations and the license(s) to carry out preliminary investigations all add to the total number of appeals and of possible appeal points during the process, and thus form a part of the overall barrier described in section 2.2.1.4.

Identified good practice

See description of the Danish model and the one-stop-shop concept in section 2.2.1.4., which also relate to this process step.

2.2.1.4. Administrative authorisation

Process flow

Environmental Impact Assessment (EIA)

Relevant for: New installations, repowering, lifetime extension and decommissioning.

Tendering procedure

As described in section 2.2.1.3., the Danish TSO conducts an EIA of the onshore installations prior to the tender. The preliminary investigations may also themselves require an EIA (see section 2.2.1.3.). When the license to carry out preliminary investigations has been granted, the concessionaire must conduct an EIA of the now more clearly defined offshore installations in accordance with the SEA and EIA Act.

The concessionaire prepares the EIA study, which also constitutes the preliminary investigation report, and submits this to DEA. DEA evaluates the study and submits this to a second round of consultations with the public and affected authorities lasting at least eight weeks. This consultation also includes a draft EIA permission and a draft license to establish offshore wind turbines. Based on the results of the consultation, DEA decides whether the EIA study can be approved. If so, DEA informs the concessionaire under

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which conditions an EIA permission and a license to establish offshore wind turbines can be granted.

Within three months from the approval, the concessionaire must notify DEA on whether he wishes to proceed and establish the wind farm. If so, the concessionaire may apply for a license to establish offshore wind turbines (see below). This license substitutes the final EIA permission (RE Act, 2020; SEA and EIA Act, 2020; DEA, 2020h; Wind authority, 2020).

Open-door procedure

Also here, the preliminary investigations may themselves require an EIA (see section 2.2.1.3.). When the license to carry out preliminary investigations has been granted, the developer must conduct an EIA of the entire project in accordance with the SEA and EIA Act.

The developer prepares the EIA study, which also constitutes the preliminary investigation report, and submits this to DEA. According to the progress requirements which apply to open-door projects (see section 2.2.1.3.), this must be submitted within a year from the license to carry out preliminary investigations has been granted. DEA evaluates the study and conducts consultations with affected authorities. As opposed to the tendering procedure, the public is not consulted until after an application for a license to establish offshore wind turbines has been submitted (see below). Based on the results of the consultation, DEA decides whether the EIA study can be approved.

If so, the developer must notify DEA within three months on whether he wishes to proceed and establish the wind farm. If this is the case, the developer may apply for a license to establish offshore wind turbines (see below). This license substitutes the final EIA permission (RE Act, 2020; SEA and EIA Act, 2020; DEA, 2019d; Wind authority, 2020).

License to establish offshore wind turbines

Relevant for: New installations, repowering and lifetime extension.

Establishing or significantly changing offshore wind turbines require a license to establish offshore wind turbines from the Minister for Climate, Energy and Utilities. This can be granted to applicants that have obtained a licence to carry out preliminary investigations and that have sufficient technical and financial capacity (RE Act, 2020).

Tendering procedure

Under the tendering procedure, the concessionaire can apply for the license to establish offshore wind turbines after the EIA study has been approved. The licence, which substitutes the EIA permission, will be granted by DEA, whereafter the concessionaire can commence construction (DEA, 2020e; Wind authority, 2020).

Open-door procedure

Under the open-door procedure, the developer can also apply for the license to establish offshore wind turbines after the EIA study has been approved. According to the progress requirements which apply to open-door projects (see section 2.2.1.3.), this must be done within six months from the approval.

When the application has been received, DEA submits the EIA study to consultations with the public and affected authorities lasting eight weeks. This consultation also includes a draft EIA permission and a draft license to establish offshore wind turbines.

Based on the results of the consultation, DEA decides whether the licence, which substitutes the EIA permission, can be granted. If so, the developer may commence construction (DEA, 2019d).

Public meeting on project acceptance measures

Except for wind turbines established under the tendering procedure in areas that are reserved for large wind farms, developers of offshore wind turbines are subject to the requirement to host a public meeting on the project acceptance measures currently in place (see section 2.1.1.1.). For offshore wind turbines, the meeting must be held within eight weeks after the licence to establish offshore wind turbines has been granted (RE Act, 2020). The meeting is otherwise done according to the same rules and procedures as described in section 2.1.1.3.

Permission regarding maritime marking

Relevant for: New installations, repowering, lifetime extension and decommissioning.

According to the Maritime Safety Act, maritime markings must be established when the conditions make it necessary. This will for example be the case when offshore facilities such as wind farms are established (Maritime Safety Act, 2018).

Establishing maritime markings requires a permission from the Danish Maritime Authority (DMA). The same is the case for altering, moving or removing markings. This is granted upon application (Executive Order on Maritime Marking, 2015; DMA, 2020).

Agreement with Defence Command Denmark concerning radar

Relevant for: new installations, repowering, lifetime extension and decommissioning.

If Defence Command Denmark assesses that establishing or changing an offshore wind farm will lead to changes in the quality of existing radar monitoring and radiocommunication, the developer must enter into an agreement with Defence Command Denmark about mitigation measures. Defence Command Denmark decides which measures are necessary. The cost is covered by the developer (DEA, 2020e; DEA, 2020k).

Attestation or dispensation regarding aviation marking

An attestation or dispensation regarding aviation marking is granted by DTCHA according to the same rules and procedures as described in section 2.1.1.3.

Noise notification

Offshore wind turbines are also subject to the noise limits stipulated in the Executive Order on Noise from Wind Turbines as described in section 2.1.1.3. The developer is however not required to make a notification (Executive Order on Noise from Wind Turbines 2019).

Permits and dispensations for onshore installations

The onshore installations needed for an offshore wind farm may require the same permits and dispensations as described in section 2.1.1.3.

License to exploit wind power

Relevant for: New installations and repowering.

Powerplants that require a licence to establish offshore wind turbines may not be put into operation for energy exploitation until approval of this has been granted by the Minister for Climate, Energy and Utilities (RE Act, 2020).

Under the tendering procedure, this licence must be applied for between construction start and up until two months before grid connection of the first wind turbine according to the tender material (DEA, 2020g). The licence to produce electricity (see section 2.2.1.2.) is applied for at the same time, and DEA issues both when it has been ensured that all relevant terms in the license to establish offshore wind turbines (and under the tendering procedure also in the concession agreement) are adhered to. The developer may then connect the wind farm. The licence is granted for 25 years and may be prolonged (RE Act, 2020; DEA, 2020h; Wind authority, 2020).

According to an interviewed stakeholder, in general the entire administrative authorisation process under the tendering procedure is very efficient and transparent. Though no statutory deadlines exist, detailed timelines are drawn up both before and after the tender, that both the concessionaire and the DEA abide to (Wind representative, 2020; DEA, 2020h).

By contrast, the administrative process under the open-door procedure is often slow and not always transparent according to the same stakeholder (see barriers in section 2.2.1.3. and below) (Wind representative, 2020).

Staffing at DEA is not considered an issue by the stakeholder (see also below). Rather the process under both procedures is eased by a good dialog with DEA, often with a fixed contact person. The one-stop-shop concept is also considered efficient (ibid.).

Deadlines

The few applicable deadlines are integrated in the description above.

Detected barriers

Length of process (open door). According to an interviewed stakeholder, the overall processing time for the few open-door projects that have been processed in recent years is very long. The two open-door projects at Jammerland Bugt and Omø Syd thus applied for a licence to carry out preliminary investigations in February 2012. This was granted in June and March 2014 respectively and the EIA studies were handed in a year later. But not until May 2020 did DEA approve the EIA studies which allowed the project developer to apply for a licence to establish the projects. Wind Denmark calls the long processing time unfortunate and warns that this creates an uncertainty about future projects that may scare off potential project developers (Wind representative, 2020; DEA, 2020i; Wind Denmark, 2020c).

There is political awareness that the open-door process is too long, but focus has mostly been on the developers, where some previously applied for and “reserved” areas for a long time while waiting for prices on offshore wind to drop. The progress requirements that were adopted by DEA in 2015 (see section 2.2.1.3.) to address this do also apply to the processing at DEA. But according to an interviewed stakeholder they for example only apply from the date that an application is considered complete, and it is not clear when this must be assessed (Wind representative, 2020).

Staffing at DEA is not considered a main cause of the barrier by the interviewed stakeholder, though it is better in the tender section than in the open-door section. This also reflects the different roles of DEA in the two procedures (Wind representative, 2020).

Numerous third-party complaints and extensive case processing time. As it is the case onshore (see section 2.1.1.1.), according to an interviewed stakeholder the numerous third-party complaints constitute a significant barrier to offshore wind expansion (Wind representative, 2020). A main problem is the many different points during the process that different decisions may be appealed. This means that the project might be delayed several times. In combination with the extensive case processing time at the boards of appeals, as described in section 2.1.1.1., this can cause very severe delays and uncertainty (Wind Denmark, 2019).

As a grave example, in December 2020, the tender project Vesterhav Syd was granted a licence to establish offshore wind turbines. This licence was originally granted already in December 2016, but this was appealed to the Energy Board of Appeals. Two years later in December 2018 the board decided to repeal the licence. This meant i.a. that a new EIA process had to be initiated and in the end the appeal thus caused a four-year delay. The circumstances of this case were special, and it has led to DEA changing the offshore procedure so that the EIA is now conducted at a later stage where the project is more developed, but it non the less exemplifies the consequences (DEA, 2020m).

As opposed to onshore wind turbines, according to an interviewed stakeholder, it is not primarily the local population that opposes offshore wind farms, as they also benefit from the job creation in the often remote areas. Rather, it is owners of holiday homes that find that their view is spoiled (Wind representative, 2020).

Concerning proposed recommendations (see section 2.1.1.1.), this difference in appellants might be of significance. Shortening the case processing time at the boards of appeals will however in any case be crucial (see section 2.1.1.1.) (Wind representative, 2020).

Identified good practice

The Danish model. Denmark has been establishing offshore wind farms since 1991, and the apparently well-known “Danish model” for tenders is generally working very well according to an interviewed stakeholder (Wind representative, 2020). The recent changes introduced because of the Vesterhav Syd decision described above have brought more uncertainty to the process though. Thus, the fact that a SEA is now done initially introduces one more decision that can be appealed, and the fact that the EIA is done at a later stage after the tender presents a new uncertain aspect for potential bidders. The consequences remain to be seen, but currently stakeholders are still positive (Wind Denmark, 2019; DEA, 2020l).

One-stop-shop. DEA serving as a one-stop-shop for offshore procedures is very efficient according to an interviewed stakeholder (Wind representative, 2020). All the permitting decisions are coordinated by DEA with other authorities, which are responsible for different offshore interests. The resulting licenses are thus “comprehensive” in the sense that they are granted on behalf of several authorities and include conditions stipulated by all these. The mentioned licences do not completely preclude the need to obtain permits from other authorities as seen above. The system however eases the process for the developer greatly, and also provides more certainty that the project can be established, as all relevant authorities have cleared the project on the stated conditions (DEA, 2012b).

2.2.1.5. Grid connection permit

Process flow

Relevant for: New installations and repowering.

Grid connection is not allowed by permit but by agreement (DEA, 2020).

Tender procedure

Grid connection of offshore wind turbines under tender procedure is regulated by the Executive Order on Grid Connection of Wind Turbines. The rules of this executive order are essentially similar to the rules described in section 2.1.1.4. (Executive Order on Grid Connection of Wind Turbines, 2018).

An important difference is, that the costs related to the connection from the wind farm and up until the connection point are borne by the TSO and not by the developer (ibid.). In connection with the upcoming tender for the wind farm Thor the executive order will however be changed in this regard. Accordingly, the cable system from the wind farm to the connection point onshore will be financed, established, owned and operated by the concessionaire and not by the TSO (DEA, 2020e). This change was introduced to expose the grid connection to competition and thereby hopefully lower the related costs. The change has mainly been well received (Danish Energy, 2019c).

A draft grid connection agreement is included in the tender material. According to the draft concession agreement, this must be signed within a few months from the concession agreement. Work on the grid connection will thereafter run in parallel with the administrative procedure and later the construction of the wind farm (Energinet, 2020; DEA, 2020n; Wind authority, 2020).

Open-door procedure

Grid connection of offshore wind turbines under the open-door procedure, is done according to the same rules and procedures as described in section 2.1.1.4.

Deadlines

The deadlines for both procedures are similar to the deadlines described in section 2.1.1.4.

Detected barriers

No barriers related to this process were identified.

Identified good practice

No good practice related to this process was identified.

3. Use of IT systems

Denmark is advanced concerning digitalisation of the public sector with multi-year digitization strategies covering both the state, municipalities and regions in place since 2001. Basic digital instruments as online identification and secure digital communication with authorities are well integrated and online self-service solutions are plenty (Danish Agency for Digitisation, 2016). Besides the Danish Environmental Portal described in section 2.1.1.1., there are several online application solutions of relevance.

The online application system Byg og Miljø³ is a digital self-service solution used by both citizens and businesses for applications for building permits and environmental permits. The system is used by all municipalities thereby providing a uniform application process. The aim of the system is to contribute to better, faster, and cheaper case processing in the municipalities by supporting citizens and businesses in their application process and thereby ensuring that their application can subsequently be processed more easily. The applicant is guided through the steps in the application process. All information relevant to the application is displayed including overview maps, property information and spatial planning. Information on needed documentation is also given (KOMBIT A/S, 2020).

Borger.dk⁴ is an online portal providing an entrance to the entire public sector in Denmark. Not all online services are used by all municipalities, but in some municipalities it is currently possible to apply for a rural zone permit and a dispensation from a local plan through borger.dk. Net-settlement is also requested through borger.dk (for businesses through the corresponding portal virk.dk⁵).

In relation to grid connection, several DSOs use a common online registration form, installationsblanketten.dk⁶. Here, all relevant information can be entered, and the relevant documentation can be attached and sent to the DSO.

Finally, through the online platform Klageportalen⁷ it is possible to submit appeals to several of the boards of appeals. It is also possible to pay the fee through the platform.

The interviewed stakeholders were in general satisfied with the available digital solutions (Solar PV representative 2 and 3, 2020; Wind representative, 2020)

4. Complaint procedure

Almost all decisions by administrative authorities described above may be appealed to an administrative board of appeals:

Decisions according to the Planning Act and related executive orders may be appealed to the Planning Board of Appeals (Planning Act, 2020).

Decisions according to the SEA and EIA Act regarding projects may be appealed to the Environment and Food Board of Appeals, while decisions regarding plans and programmes may be appealed according to the rules of the legislation according to which the plan or program has been prepared (SEA and EIA Act, 2020).

Decisions according to the Nature Protection Act and related executive orders may be appealed to the Environment and Food Board of Appeals (Nature Protection Act, 2019).

Decisions by the municipal council according to the Building Act and related executive orders, including BR18, may be appealed to the House of Boards of Appeal within four weeks (Building Act, 2016).

³ <https://www.bygogmiljoe.dk>

⁴ <https://www.borger.dk>

⁵ <https://virk.dk>

⁶ <https://www.installationsblanket.dk/ediserver2/Account/LogOn>

⁷ <https://kpo.naevneneshus.dk/Public/Home/ChooseLoginProvider?returnUrl=https://kpo.naevneneshus.dk/External>

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Decisions according to the Electricity Supply Act, the RE Act and related executive orders may be appealed to the Energy Board of Appeals (Electricity Supply Act, 2020; RE Act, 2020). This is also the case for decisions according to the Executive Order on Powerplants and the Executive Order on Net-Settlement (Executive Order on Powerplants, 2020; Executive Order on Net-Settlement, 2016).

These different boards are governed by separate legislation, but as the rules in most cases are similar, they are described together in the following.

Within a deadline of usually four weeks from a decision is made, anyone who is entitled to appeal may file such an appeal to the relevant board. This can be done via the online portal Klageportalen (see section 3) or secure digital mail. Once the deadline has expired, the specific decision can no longer be appealed to the board – also not for other reasons.

The fee is modest: EUR 120 (DKK 900) for private individuals and EUR 240 (DKK 1,800) for businesses and organisations, and will be returned if the appeal is rejected based on formal requirements and if the decision is changed or repealed. As representation is not needed at the boards, this is a very accessible system.

Who is entitled to appeal a decision differs according to the legislative area – thus also within the area of a single board. As a main rule, anyone with a significant, individual interest in the decision will always be entitled to appeal. This includes the addressee but also i.a. neighbours that are significantly affected by the decision. There is some room for interpretation, and for example in relation to planning the requirement is interpreted quite liberal resulting in a right to appeal for anyone with a local affiliation. Decisions according to the Planning Act and the SEA and EIA Act may also be appealed by certain larger nationwide association or organization whose primary purpose is to protect nature and the environment or to safeguard significant user interests in the land use.

As a starting point, a decision may be appealed for any reason. Decisions made according to the Planning Act (with the exception of rural zone permits) may however only be appealed with regard to questions concerning the legality of the decision. The same is the case for EIA screening decisions. This means, that the board can only try whether it has been made in accordance with all applicable rules.

The main reactions available to the boards are to uphold, change or repeal the decision. As a starting point, an appeal does not stay the effect of a decision. This may however be requested for the board to decide. Acting on an appealed decision is in any case at own risk.

The decisions of the boards are final in that sense that they cannot be appealed to another administrative authority. The decision may be brought before the courts though within six months (see below) (Electricity Supply Act, 2020; Nature Protection Act, 2019; SEA and EIA Act, 2020; Planning Act, 2020; RE Act, 2020; House of Boards of Appeals, 2020).

Decisions according to the Executive Order on Grid Connection of RES Installations and the Executive Order on Grid Connection of Wind Turbines may be appealed to the Danish Utility Regulator (DUR). The appeal must be submitted in writing within four weeks to the DSO or TSO. Within another four weeks, the DSO or TSO must forward the appeal to DUR along with a statement and the information on which the decision was based (Executive Order on Grid Connection of RES Installations, 2020; Executive Order on Grid Connection of Wind Turbines, 2018).

Decisions by the municipal council according to the Executive Order on Noise from Wind Turbines and decisions by DTCHA according to BL 3-11 cannot be appealed to another

administrative authority (Executive Order on Noise from Wind Turbines, 2019; BL 3-11, 2014).

Besides the administrative appeal options all decisions by administrative authorities (incl. boards of appeals) may be brought before the courts (Constitutional Act, 1953). As no administrative courts exist in Denmark these cases are tried at the general courts. As a main rule, a case will start at the relevant district court with an option to appeal to a high court. A second appeal to the Supreme Court is not possible except in rare cases of questions with fundamental legal implications. To bring an administrative decision before the courts significant individual interest in the decision is required. Further, it is often required that the administrative appeal options have been used. There is no generally applicable deadline but deadlines will often be stipulated in sector legislation (see above). Filing a case at the courts does not stay the effect of a decision, but this can be decided by the court (Administration of Justice Act, 2020).

Except for the very long case processing time (see section 2.1.1.1.), none of the interviewed stakeholders had points of critique concerning the complaint procedure or proposals to limit (or expand) third-party appeal access (DOF BirdLife, 2020; Solar PV representative 2 and 3, 2020; Wind representative, 2020).

5. Specific features to ease administrative procedure

Table 2 below provides information on the existing specific features to ease administrative procedures in Denmark.

Table 2. Specific features to ease administrative procedures

Specific feature	Existing	Short description
Simultaneous procedures	yes	There are currently no rules requiring procedures to be conducted simultaneously (DEA, 2020). As described in section 2.1.1. and 2.2.1. this is however possible, and also done in practice (DEA, 2020; Solar PV representative 2 and 3, 2020; Wind authority, 2020).
National contact points and one-stop-shops	yes	As described in section 2.2.1.4., DEA serves as a one-stop-shop for offshore wind procedures. The scheme does not cover grid connection and there is no manual of procedures (Wind authority, 2020).
Application of 2+1 and 1+1 rules	no	There are currently no rules on deadlines for the permit-granting process. A draft proposal for an amendment act implementing i.a. the time limits in RED-II, art. 16, has however been in public consultation in 2020 and, if adopted, will enter into force on 30 June 2021. According to the draft proposal the planning process (see section 2.1.1.1.), the grid connection process (see section 2.1.1.4. and 2.2.1.5.) and the process to obtain the license to carry out preliminary investigations (see section 2.2.1.3.) will not be subject to the future time limits as RED-II art. 16 only applies to the "permit-granting" process which these procedures are not a part of according to DEA (DEA, 2020).
Simple notification procedure	yes	According to DEA, the standard grid connection procedures described in section 2.1.1.4. and 2.2.1.5. fulfil the requirements of RED-II art. 16, section 8, concerning a simple-notification

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		procedure for grid connection of repowering projects (DEA, 2020; DEA, 2019b).
Pre-planning	yes	For onshore installations, municipalities must designate areas for technical plants, including renewable energy installations, in the municipal plan. This is however often no longer done (see section 2.1.1.1.). For offshore wind turbines, area screenings of Danish waters are done by or on behalf of DEA (see section 2.2.1.1.). These provide the basis for the political decision on where to locate national tenders, but by contrast limit other project developers' choice of location, as the located areas will often be reserved for state tenders.
Pre-application consultation	no	
Project acceptance measures	yes	Four schemes are currently in place to enhance project acceptance (see section 2.1.1.1.). The public is informed about these measures at public meetings hosted by the project developer (see section 2.1.1.3.).
Measures to streamline litigation by third parties	yes	As described in section 4, a deadline of four weeks, restrictions on who is entitled to appeal a decision, limitation (in some areas) to questions concerning legality and the fact that the decisions of the boards of appeals are final, generally limit third-party appeals. These rules are however general and do not relate specifically to decisions concerning renewable energy installations.
Other	no	

6. Indicators to measure the performance of the overall process

Table 3 below provides information on the indicators to measure the performance of the overall administrative and grid connection process in Denmark.

Table 3. Performance indicators to assess administrative and grid connection processes

Performance indicator	Description
Average response time by the competent authorities and TSO/DSO for grid connection procedures	N.A.
Process duration	<p>Rooftop solar PV (for a 200 kW installation)</p> <ul style="list-style-type: none"> • Building permit: from 1 week up to 6 months. • Installation and procurement: 1.5 months. • Grid connection: from a few days to several months. Worst case 1 year. • Net-settlement: 1 week up to 6-8 months. <p>(Solar PV representative 2, 2020)</p> <p>Ground-mounted solar PV (for a utility size plant)</p>

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	<ul style="list-style-type: none"> • Spatial planning and EIA: 1 year or more (3-4 years if counting waiting for process to start). • Other permits: a few months. • Grid Connection: up to 3 years (of which 1-2 years construction). • In total from first application to commissioning: 4 years. (Solar PV representative 3, 2020) <p>Onshore wind turbines In total from first application to commissioning: up to 5-7 years (Danish Energy, 2019).</p> <p>Offshore wind turbines <i>Tendering procedure</i> Duration will of course depend on the size and location. The timeframe for the upcoming wind farm Thor (1GW) is as follows:</p> <ul style="list-style-type: none"> • Preliminary investigations by DEA/TSO: 1.5 -2 years. • Preliminary investigations and EIA: 1.5 -2 years. • Project design and procurement: 1-1.5 years. • Construction and grid connections: 2 years. • In total: 7-8 years. • In total from tender: 5 years. <p>(Wind authority, 2020; DEA, 2020h)</p> <p><i>Open-door procedure</i> Should in principle be as above, except that the preliminary investigations by DEA/TSO are not relevant, thus 5 years (Wind authority, 2020).</p> <p>No open-door projects have been finalised the last ten years to validate this. The last one installed, the small 21 MW wind farm Sprogø in 2009, was granted a licence to carry out preliminary investigations in July 2008, a licence to establish offshore wind turbines in December 2008 and was fully commissioned in December 2009 (DEA, 2020I).</p> <p>As described in section 2.2.1.4., for two of the ongoing open-door projects, Jammerland Bugt and Omø Syd, it has by contrast taken eight years from the application for a licence to carry out preliminary investigations until the EIA studies were approved.</p> <p>Case processing time As described in section 2.1.1.1., the average case processing time concerning larger wind turbine and solar PV projects at the three relevant boards has been between 6.8 and 17.7 months for cases settled over the last five years. For unsettled cases, the average case processing time in 2019 was 21.6 months.</p> <p>In 2021-2024 a six months case processing time limit will be established for appeals concerning renewable energy projects.</p>
Project approval rates	<p>Rooftop solar PV Rejections of approvals are rare (Solar PV representative 2, 2020).</p> <p>Ground-mounted solar PV 60% (Solar PV representative 3, 2020).</p>

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	<p>Onshore and offshore wind turbines</p> <p>N.A.</p>
Costs of administrative processes	<p>Rooftop solar PV</p> <ul style="list-style-type: none"> • If building permit is not required: 2-4% of total project costs. • If building permit is required: 15% of total project costs. • Building permit: up to EUR 13,440 (DKK 100,000). <p>(Solar PV representative 2, 2020)</p> <p>Ground-mounted solar PV (for a utility size plant)</p> <ul style="list-style-type: none"> • Administrative process: EUR 20,160-26,880 (DKK 150,00–200,000). • Grid connection: EUR 13,440-67,200 (DKK 100,000-500,000). <p>(Solar PV representative 3, 2020)</p> <p>Onshore and offshore wind turbines: N.A.</p>
Share of permits that are legally challenged	N.A.
Share of legal challenges that are overruled	N.A.
Stakeholder interests	<p>Stakeholder engagement is the responsibility of the authority. As described in section 2.1.1.1. and other sections above, engagement primarily consists of public consultations, but may also include invitations to submit general ideas and proposals and public hearings prior to municipal pre-selection of areas for renewable energy installations. The developer is in some cases obligated to host a public meeting on the available project acceptance measures (see section 2.1.1.3.).</p> <p>According to DOF BirdLife, the practice described in section 2.1.1.1. where the planning process is initiated by project developers and not by municipal pre-designation, is problematic for stakeholder engagement. Often when a municipality has already taken interest in a specific project – that might bring jobs to the municipality etc. – it is very difficult to influence the process. By contrast, when the municipalities pre-designated areas in the municipal plan, they were more likely to take nature protection interests into account and also listen to advocates of such (DOF BirdLife, 2020).</p>

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