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Guidance to Member States on good practices to speed up permit-granting procedures for renewable energy projects and on facilitating Power Purchase Agreements

Accompanying the document

Commission Recommendation

on speeding up permit-granting procedures for renewable energy projects and facilitating Power Purchase Agreements

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I. GUIDANCE TO THE MEMBER STATES ON GOOD PRACTICES TO SPEED UP PERMIT-GRANTING PROCEDURES FOR RENEWABLE ENERGY PROJECTS[1]

1. Introduction

Renewable energy is at the heart of the clean energy transition necessary to achieve the objectives of the Paris Agreement and the European Green Deal. With this in mind, the proposal for a revision of the Renewable Energy Directive ("REDII") put forward by the Commission in July 2021 as part of the package delivering on the European Green Deal proposed to double the share of renewable energy in the energy mix in 2030 compared to 2020, to reach at least 40%.[2]

Russia's invasion of Ukraine turned the quickest possible deployment of renewables into a strategic priority of the EU as it will cut down our dependence on – primarily imported - fossil fuels and help make energy affordable again.

Together with the measures to ensure sufficient gas supply and energy savings plan in preparation for next winter, adding new renewable capacities as rapidly as possible will further contribute to the longer-term crisis mitigation measures. The REPowerEU Communication[3], following up on the October 2021 Toolbox Communication[4], outlined a plan to make Europe independent from Russian fossil fuels, starting with gas, well before the end of this decade. The Communication also suggested that the co-legislators consider higher or earlier targets for renewable energy and referred to front-loading of wind and solar energy as well as heat pumps, increasing the average deployment rate by 20%, and additional capacities of 80 GW by 2030 to accommodate for higher production of renewable hydrogen.

This means that the current pace of deployment of renewable energy projects will need to accelerate significantly to meet the needed capacity increase on time.

High energy prices, driven mostly by high fossil gas prices, constitute an additional reason to speed up the deployment of renewable energy projects, and to reduce negative impacts on our citizens and businesses. Renewable power projects are increasingly offering electricity costs that are well below those of fossil fuel-based power plants in the wholesale market. Accelerated permit-granting is needed to bring them to the market rapidly. The use of renewable energy purchase agreements enables European industry and businesses direct access to cheap renewable power, while providing renewable project developers with stability

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1 This document is without prejudice to Member States' and undertakings' duty to fulfil their obligations under relevant EU law. Examples used are based on studies and stakeholder consultations and are for illustration only. The study "*Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify)*" is being carried out for the purpose of identifying barriers and best practices across Member States and its interim report supported the drafting of this guidance. It is available at: https://data.europa.eu/doi/10.2833/239077. Some of the good practices that are presented have only recently been implemented, and, as a consequence, have not yet yielded results in all cases.

2 Reaching this target implies a 2.5-3-fold increase in solar and onshore wind capacities by 2030 (from 118 GW and 167 GW today, respectively), and a five-fold increase in offshore capacity (from 16 GW today). This means that the additional renewables generation capacity installed annually needs to increase from around 30-35 GW per year to around 45-65 GW per year in the period from 2020 to 2030.

3 REPowerEU: Joint European Action for more affordable, secure and sustainable energy, COM(2022) 108 final

4 Tackling rising energy prices: a toolbox for action and support, COM(2021) 660 final

without the need to wait for financial support of the Member States, thereby increasing the availability of affordable, secure and sustainable energy in the EU.

Whether renewable energy projects are developed through public tenders or corporate renewable energy purchase agreements or on a merchant basis, barriers related to permit-granting[5] and other administrative procedures[6] hold back the projects, increase uncertainty and costs and discourage investors, thus putting the achievement of the EU decarbonisation targets and the proposed renewable energy target for 2030 at risk[7]. These barriers, mostly at the national, regional or even local level, include the complexity of the applicable rules for site selection and administrative authorisations for projects, grid connection issues, constraints on adapting technology specifications during the permit-granting procedure, or staffing issues of the permit-granting authorities or grid operators. As a result, the lead time for renewable energy projects can take up to ten years. The case for bringing down these barriers is now stronger than ever.

REDII introduced in 2018 rules on the organisation and maximum duration of the administrative part of the permit-granting process for renewable energy projects, covering all relevant permits to build, repower and operate plants, and for their grid connection. Member States were obliged to transpose REDII, including these new provisions, into their national legislation by 30 June 2021, but no Member State declared complete transposition of REDII within this deadline. As a result, the Commission initiated infringement procedures against all Member States for lack of transposition of REDII in July 2021 in order to make them comply with their obligations, including those related to administrative procedures. In the meantime, the majority of Member States have notified the Commission national measures adopted to transpose REDII, either fully or partially. At the moment of publication of this guidance, 10 Member States had not notified any national measures transposing the rules introduced by REDII on the organisation and duration of the permit-grating process (i.e. Article 16), while the remaining ones notified at least some of the required measures.

The Commission observes that significant variations in the national or regional permit-granting rules currently exist between the Member States in terms of the length and complexity of their administrative procedures. This suggests significant potential for improvements and learning from each other. Stakeholders have requested the Commission to clarify the REDII provisions on administrative procedures as well as to disseminate best practices, in order to guide permit-granting authorities in their application.

This guidance presents good practices that exist in the Member States aimed at reducing the administrative burden and increasing planning certainty for renewable energy projects[8]. It

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5 In this guidance, the term "permit-granting process" is used to refer to all required authorisation, certification and licensing procedures that are applied to plants and associated transmission and distribution networks for the production of electricity, heating and cooling from renewable energy sources.

6 The term "administrative procedures" is wider than permit-granting processes and refers to e.g. spatial planning, building regulations and codes, certification and licensing procedures, or corporate-legal-fiscal procedures.

7 Furthermore, the Commission is currently examining the comparable administrative barriers for swift development of hydrogen system infrastructure. See also: 'European Clean Hydrogen Alliance: reports of the alliance roundtables on barriers and mitigation measures', October 2021.

8 For the purposes of the present guidance, renewable energy projects are understood to encompass production plants for the generation of renewable energy as defined in the Renewable Energy Directive (including in the form of hydrogen), the assets needed for their grid connection and for storage of the energy produced.

accompanies a Commission Recommendation on speeding up permitting-granting procedures and facilitating Power Purchase Agreements, adopted alongside a proposal for a targeted amendment of REDII on permitting. These initiatives form a part of a wider package of measures within the framework of the REPowerEU plan and the European Semester which support accelerated deployment of renewables.

Tackling existing and identifying new barriers to permitting should be treated as a continuous process. In this context, the Commission is also working with Member State authorities since March 2022 on removing process-related barriers in the framework of the Single Market Enforcement Taskforce[9]. Full and rapid implementation of the Recommendation based on concrete ideas for simplification and shortening included in this guidance will allow cutting down the lead time for renewable projects and their quicker massive deployment.

This guidance identifies the following main areas for improving permitting of renewable energy projects: reducing the length and complexity of administrative authorisation procedures, sufficient staffing and skilling of permit-granting entities and authorities responsible for environmental assessments, site selection procedures and grid connection issues. Additionally, barriers related to the lack of support to certain projects by the public or relevant local stakeholders also exist in many Member States. The following chapters will provide a short explanation of the barriers, possible solutions as well as identified good practices among national measures to transpose REDII or measures going beyond the scope of REDII.

2. Faster and shorter administrative authorisation procedures

The duration of the permit-granting procedures greatly varies between the different renewable energy technologies and between Member States. For offshore wind projects, the lead time can be up to 10 years[10], even though recently completed Dutch offshore wind farms, such as Borssele III and IV, have become operational 4-5 years after the tender award. For onshore wind, the reported duration of the permit-granting process varies between 3 and 9 years, and significant variation exists not only between Member States but at times also between the different regions of one country. For ground-mounted solar projects, the reported duration varies between around 1 year and over 4.5 years.[11]
However, these averages are based on samples that are not fully representative, as there is a lack of comparable data across the EU on the total length of permit-granting procedures for renewable energy projects, including the preparation and finalisation of the environmental impact assessment[12], granting the grid connection permit and addressing any potential legal challenges. Moreover, the length of the permit-granting procedures for renewable energy projects also depends on the availability, and expedited deployment or reinforcement, of grids

9 https://ec.europa.eu/growth/single-market/single-market-enforcement-taskforce_en

10 EU Offshore Strategy, available at https://energy.ec.europa.eu/topics/renewable-energy/eu-strategy-offshore-renewable-energy_en

11 European Commission, Directorate-General for Energy, Tallat-Kelpšaitė, J., Brückmann, R., Banasiak, J. et al., Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify). Interim report., 2021, https://data.europa.eu/doi/10.2833/239077

12 According to the impact assessment of the EIA Directive revision, the environmental impact assessment process takes between 5-27 months.

to connect such projects and integrate the energy produced. What also needs to be taken into account is that in certain Member States procedures can be faster, however, not necessarily more effective. Various types of barriers can lead to fewer projects being approved, despite speedier procedures. This points to the need to pro-actively focus and tackle barriers hampering permit-granting procedures across all Member States. Under the Technical Support Instrument, the Commission is providing assistance to 17 Member States for phasing out their reliance on Russian fossil fuels[13], in line with the REPowerEU plan, including on faster permit-granting for renewable energy projects and enhancing the roll-out of rooftop solar. Specifically, under the 2023 TSI call, the Commission is offering support to Member States with a flagship technical support on "Accelerating permitting for renewable energy"[14].

Regional cooperation between Member States in the implementation of similar large-scale energy infrastructure projects has proven to act as a catalyst for accelerating permit-granting and the delivery of these projects[15]. The Commission chairs four high-level groups in different regions of the European Union[16]. The high level of political support these groups receive enables a common regional vision and allows for drawing up regional priorities and providing strategic guidance in the implementation of projects of common interest in energy infrastructure (PCIs), which require strong consensus. With offshore wind development being recognised as a pan-European priority in all High-Level Groups[17], major renewable energy projects can be identified as priorities in the workstreams of these groups and benefit from close monitoring and strengthened cooperation at different political levels between Member States belonging to a certain region.

a. REDII provisions and a comparison of good practices in their transposition

REDII specifies that the administrative procedures for permit granting shall not exceed two years for renewable electricity production plants and the related grid infrastructure, including all relevant authorisation, certification and licensing procedures by competent authorities. A similar provision on the simplification of authorisation procedures for hydrogen infrastructure is included in the proposed hydrogen and gas markets decarbonisation package[18]. For projects below 150 kW and the repowering of existing renewable energy plants the administrative process shall not exceed one year. These deadlines do not include the time it takes to comply with Union environmental legislation, which can take a long time to complete, or the duration of any court proceedings, and may be extended by one year in extraordinary circumstances[19].

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13 https://ec.europa.eu/info/news/commissions-technical-support-instrument-help-17-member-states-curb-their-reliance-russian-fossil-fuels-2022-apr-06_en

14 Accelerating permitting for renewable energy (europa.eu)

15 European Commission, Directorate-General for Energy, Akkermans, F., Le Den, X., Heidecke, L., et al., *Support to the evaluation of Regulation (EU) No 347/2013 on guidelines for trans-European energy infrastructure : final report*, Publications Office, 2021, https://data.europa.eu/doi/10.2833/154438

16 The North Seas Energy Cooperation, Baltic Energy Market Interconnection Plan, Interconnections for South-West Europe, Central and South Eastern Europe Energy Connectivity

17 More information on the areas of cooperation covered by the four High-Level Groups: High level groups (europa.eu)

18 Article 7 (3) on the proposal for a Directive on common rules for the internal markets in renewable and natural gases and in hydrogen.

19 Article 16(4), (5) and (6) of REDII.

In addition to transposing the required provisions into national legislation, some Member States have introduced complementary clarifications which specify the conditions allowing for the extension of the deadline, or have tasked the relevant authorities with cooperating closely to ensure the agreed timelines are adhered to. When it comes to the extension of the deadline by up to one additional year, **Sweden** specifies that the deadline may be extended in case there is a need for time-consuming additions due to new regulations, information or guidelines, or if the delay is due to external circumstances which could not have been foreseen from the outset. **Slovenia** introduces a provision specifying that before the expiry of the defined deadline, the project developer needs to receive a reasoned decision by which, in exceptional circumstances explained in the decision, the procedure is extended by a maximum of one year.

When it comes to ensuring that the authorisation procedure does not exceed the agreed timelines in cases where several authorities are involved, **Finland**'s transposing measures include a requirement that if more than one authorisation or administrative approval procedure is necessary for the construction, upgrading, connection to the grid and operation of a renewable energy power plant, the responsible competent authorities need to cooperate to comply with the time limits. The single contact point for project promoters[20] is tasked with assisting the competent authorities in agreeing on processing timelines for their procedures, where appropriate. Additionally, the transposing legislation specifies the points at which the calculation of the time limit begins and ends, and the single contact point is tasked with monitoring the implementation of the deadlines.

When it comes to the monitoring and reporting on the national provisions, in the integrated national energy and climate progress reports, which shall be submitted to the Commission by 15 March 2023, and every two years thereafter, Member States are required to report on the specific measures to fulfil the requirements set in Articles 15 to 17 of REDII to simplify, shorten and make more transparent the permit-granting procedures[21]. Beyond this, coherent EU-wide monitoring and assessment of administrative authorisation procedures for renewable energy projects would give the Commission, the Member States and project promoters insight into the duration of the various phases of project authorisation, their scope, requirements and the involved authorities, as well as the potential common features of the delays and other bottlenecks across the renewable energy technologies or authorisation stages.

b. Other good practices to reduce the length of permit-granting procedures beyond REDII

The duration of court proceedings are outside the scope of the time limit set in REDII, but Member States can take measures to reduce prolonged procedures due to challenges in courts. While the right of access to justice has to be ensured, Member States can organise their national jurisdictional system in such a way as to ensure faster processing of litigation cases, such as one-instance procedures for certain projects of national importance, setting up deadlines for certain steps of the litigation procedure depending on national circumstances to avoid unnecessary prolongation of appeal procedures, or introducing provisions aimed at limiting abusive litigation. Several Member States have already taken measures to streamline the duration of court proceedings related to permits.

[20] See the following chapter on the single contact point

[21] Article 20(b)(5) of the Governance Regulation

France has reduced the number of possible appeals against environmental authorisations for onshore wind projects from three to only two. As of 1 December 2018 appeals can be lodged directly to the Administrative Courts of Appeal and they no longer need to go before the Administrative Tribunals first (this was already the case for offshore wind since the adoption of a Decree in January 2016).

The Netherlands has decided that permits for onshore wind projects over 100MW and solar PV projects over 50MW can only be appealed to the high court.

In addition to streamlining the framework related to court proceedings, some Member States have also introduced other measures that allow prioritisation and thereby acceleration of permit-granting procedures, such as setting categories of strategic projects. Some projects of national importance may be adopted via a legislative procedure by a specific act in accordance with Article 2(5) of the Environmental Impact Assessment (EIA) Directive. This allows Member States to exempt that project from the provisions relating to public consultation.[22]

The regional government of Andalusia in **Spain** has created an "accelerator unit" for projects considered strategic under the remit of the regional Department of Public Administration and Interior. The recognition of a strategic importance implies the selected projects receive preferential treatment when it comes to the administrative processing of the permits and authorisations needed to develop them.

Another good way to accelerate permit-granting is to allow for multiple applications to be made in parallel instead of in a sequential manner, including for related grid projects.

In **Austria**, for example, developers can apply for multiple permits (electricity production license, approval under the nature conservation law procedure, aviation law procedure, forestry law permit, water law permit, occupational health and safety law permit, building permit) in parallel. Site selection and the grid connection application can also be done in parallel. In **France** and **Belgium** (Flanders and Wallonia), "single permit" procedures have been introduced. In the case of Flanders and Wallonia, these single permits combine the procedures for the environmental and urban permits, combined with exemptions for small-scale projects. In France, the procedure allows for a single examination of several permits for wind projects, including environmental authorisations, air navigation and military rights of way and the electricity production licence.

When it comes **to small-scale renewables by households and energy communities**, the lack of resources aggravates even more the barriers already encountered by professional market participants. In **Greece**, energy communities receive priority treatment in applications for connection to the grid, approval of environmental conditions and production licensing compared to other applications in the same territory for the same application cycle. In **Portugal**, renewable energy communities benefit from exemptions from prior control/communication, registration and operating requirements, depending on the installed capacity or the use of the public network for injection of electricity in case of self-

[22] However, all the other stages of the EIA procedure (in particular access to justice) shall not be omitted.

consumption. Similarly in **Ireland,** energy communities do not need to have a planning permission before their grid application and undergo simplified authorization procedure[23].

Early public consultation and having certain studies conducted earlier in the process can also accelerate permit-granting. For example, in the case of PCIs, having a mandatory public consultation performed at the beginning of the permit-granting process for establishing the location of the project has helped to identify and address public acceptance issues.

Finally, the assessments by the permit-granting authorities in the framework of environmental procedures can be accelerated by setting specific deadlines. When an environmental assessment is required, Member States should cap the length of various steps of the Environmental Impact Assessment procedure[24] by introducing binding maximum timeframes, in particular for:

- the issuance of a scoping opinion by the competent authority – not more than one month
- the conclusion of the environmental impact assessment and issuance of reasoned conclusion – not more than three months with a possibility for extension for additional three months,
- the conclusion of public consultations on the environmental impact assessment report –not more than two months,
- the issuance of development consent – not more than six months.

About half of the Member States have already established specific timelines for the competent authorities to give the green light to projects after receiving the environmental impact assessment submitted by the developer. In many cases these do not exceed one or two months (**Bulgaria, France, Italy, Malta, Greece, Latvia and Romania**).

Another possible simplification is conditional exemption from building permits coupled to notification requirements for small scale PV systems. In the **Belgian region of Flanders**, solar PV is exempted from a building permit under certain conditions.[25]

c. Increasing flexibility in adapting technology specifications in the timeframe between permit application and construction of projects

The length of permit-granting procedures or delays in permit granting can lead to sub-optimal technology installation in cases where project developers are obliged to implement the exact

[23] Planning and Development (Solar Panels for Public Buildings, Schools, Homes and Other Premises) (Amendment) Bill 2021 (https://www.oireachtas.ie/en/debates/debate/seanad/2021-06-28/18/).

[24] The EIA Directive introduces two fixed time-frames concerning EIA – maximum 90 days for taking a screening decision for Annex II projects and minimum 30 days for public consultations of the EIA report for projects subject to EIA; other timeframes are for the Member States to establish.

[25] On a flat roof provided that the installation does not exceed 1 meter above the eaves; on a sloping roof provided that the panels are integrated into the sloping roof surface.

technological specifications[26] of their initial permit application. In cases where the granting of a permit takes so long that the approved technological solution has become obsolete, the project promoter would need to apply for a new permit or conduct a new environmental impact assessment in order to be able to use the latest available technology. More flexibility, i.e. allowing developers to apply for a range of technological parameters, helps in deploying the most efficient technologies in a faster manner, without necessarily entailing a greater environmental impact.

In order to address this issue, some Member States use the so-called "box model" for permits, which allows developers to set out a range of technology parameters in their permit application (e.g. regarding wind turbine tip height), giving them flexibility to deploy state of the art technology and maximise efficiency and renewable energy production. For instance, **Sweden** already allows this permit model to be applied for certain wind projects. Project developers must indicate the project area, the maximum number of turbines, the maximum tip height, restricted areas within the project area and the maximum footprint of the infrastructure. They have the flexibility to optimise the layout and increase or decrease the rotor size and hub height. Developers are also allowed to use the latest turbine technology to optimise the layout and maximise the capacity in the permit[27]. **Romania** authorises changes to the wind turbine type after the final building permit is issued, as long as key parameters (tip height and rotor) are met. Developers only have to notify such changes to the competent authorities.

3. Internal coordination and clear and digitalised procedures to reduce the complexity of the administrative authorisation processes

Depending on the Member State, project promoters have to interact with administrations at national, regional and municipal level and/or different departments or ministries. Several layers of sometimes conflicting national and regional legislation and procedures, as well as a lack of a clear division of competences between national, regional and/or local authorities add unnecessary complexities and can result in delays in the permit-granting process. According to stakeholders, it is not always clear if the involvement of certain authorities in the administrative authorisation process is mandatory and if their opinion is binding. Moreover, when several public bodies are involved in the granting of a permit, there is often a lack of transparency regarding the status of a project application and the stage at which a bottleneck exists. Furthermore, the roll-out of digital tools and solutions is uneven across administrations.

a. *REDII provisions on the one stop shop and a comparison of good practices in their transposition*

REDII requires Member States to designate a single contact point ("one-stop-shop") for permit granting for building, repowering and operating renewables generation assets and

[26] Such as the exact wind turbine model or the PV panel wattage

[27] Speeding up renewable deployment, RES - Global Renewable Energy Company (res-group.com), available at: https://www.res-group.com/en/cop/speeding-up-renewable-deployment/

related grid infrastructure[28], similar to the provisions of the TEN-E Regulation[29] and as proposed under the hydrogen and gas markets decarbonisation package[30]. Examples also exist in other sectors where the introduction of one-stop-shops has reduced time and cost invested in seeking information, especially in relation to licensing and permitting requirements[31]. In line with the subsidiarity principle, REDII gives Member States the flexibility to choose the most appropriate implementation rules, provided that applicants are not required to contact more than one contact point for the entire permit-granting process.

Various options exist for designing the one-stop-shop. A purely administrative one-stop shop channels the communication between the renewables project promoter and the relevant authorities involved in the granting of the various permits necessary for building a power plant and connecting it to the grid. An extension of the mandate of the administrative contact point can also be envisaged, and the contact point can be entrusted with issuing all the necessary permits itself. Multiple one-stop-shops can be set up to deal with different project sizes, renewables technologies or administrative divisions in a Member State, as long as each applicant has one single contact point to rely on for a particular project.

One-stop shops have also been set up by entities responsible for grid infrastructure, such as the "national competent authorities" for projects of common interest under the TEN-E Regulation, or National Regulatory Authorities, Transmission System Operators, and national, regional or local authorities for other types of grids. Close coordination and alignment of processes between the REDII one-stop shops, the "national competent authorities" is advisable in the case of projects of common interest. Existing regional cooperation structures dealing with energy policy, such as the above-mentioned political high-level groups, could be appropriate to explore and expand this close coordination.

When it comes to national provisions transposing REDII, in most cases, Member States have designated an existing national energy agency or another implementing agency as the single contact point, with the task of streamlining the administrative permit application and granting process. Listing all the authorities with which the single contact point ensures communication and coordination increases certainty and transparency for project promoters, as does referring to the specific legislation on which the contact point can provide advice.

In the case of **Denmark**, the Danish Energy Agency (DEA) has been designated as the contact point, and provides overall guidance on the administrative process, including the steps that need to be taken to establish and operate renewable energy facilities. In the case of offshore wind, DEA itself issues permits for projects within Denmark's territorial waters and its Exclusive Economic Zone. DEA prepares and issues the licenses through an iterative process with the relevant authorities and conveys project-specific information to the authorities to mitigate conflicting interests[32].

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[28] Article 16(1) REDII.

[29] Article 8 of Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure

[30] Article 7(6) on the proposal for a Directive on common rules for the internal markets in renewable and natural gases and in hydrogen.

[31] From Red Tape to Smart Tape : Administrative Simplification in OECD Countries | Cutting Red Tape | OECD iLibrary https://www.oecd-ilibrary.org/governance/from-red-tape-to-smart-tape_9789264100688-en

[32] Global Offshore Wind Report 2021, Global Wind Energy Council, https://gwec.net/global-offshore-wind-report-2021/

In the case of **Sweden**, the Swedish Energy Agency is tasked with establishing and being responsible for a digital contact point. Direct links to the authorities handling a case have to be provided through the contact point. The national provisions transposing REDII also include a list of authorities, which shall assist the contact point, including authorities and agencies responsible for maritime issues, environmental protection, the national heritage and agriculture, as well as the municipalities.

Finland's single contact point is tasked with providing procedural advice on authorisation and other administrative procedures for renewable energy production plants. The national provisions include a list of elements to which the contact point's duty of advice applies, which includes the opinion of the Defence Forces on the acceptability of wind power construction.

b. *Other good practice examples to reduce complexity of administrative procedures beyond REDII*

In instances where different administrations need to coordinate and give their approval, the lack of a reply from one administration which holds up the next steps could be mitigated by means of the introduction of positive administrative silence under clearly defined conditions and unless a reply is required by EU or national law. **Spain** has recently introduced positive administrative silence for specific administrative steps in a 2020 decree for self-consumption installations and solar parks. Whenever several administrations involved need to give a reply to each other and they do not do so within 30 days, the specific administrative step is considered as approved.

When it comes to the use of digital tools and solutions more broadly during the permit-granting procedures, REDII requires that applicants are allowed to submit relevant documents also in digital form[33] . Furthermore, the use of e-communication to replace the use of paper forms and digital communication platforms unifying the different application processes could also help staff in the permit-granting authorities in the handling of the applications, as well as forming the basis for monitoring and improving the procedures. This would also increase transparency to project promoters as to the current status of their application, as well as allow all the various authorities involved to access the same centralised project entry.

In this regard, **Cyprus** has included in its Recovery and Resilience Plan (RRP) a reform setting up a digital one-stop shop to streamline permit-granting for renewable energy projects. According to the RRP, Cyprus has also requested technical assistance from DG REFORM to help designing the methodology needed for the development of the one stop shop. The **German** State of Lower Saxony has introduced an electronic authorisation application form for immission protection applications (ELiA)[34], which is being used by eight German federal states and offers an encrypted submission of application documents. In the **Netherlands**, there is an online platform for "All in One Permit for Physical Aspects" for onshore wind and ground-mounted PV. Regardless of whether the responsible authority in the permit-granting procedure is the municipality, the province or the national government, the online platform is accessible, both for the responsible authority and the project developer. In addition, the online platform is used by some provinces to apply for a Nature Permit as well.

[33] Article 16(2) REDII

[34] Elektronisches Genehmigungsverfahren - Version 2.7 | Nds. Gewerbeaufsicht (niedersachsen.de)

Single information points are also relevant for capacity building information, advice and training for citizen and renewable energy communities. Information, involving both national and local authorities, could include i.a. information on procedural requirements to obtain licenses and permits. Support can also be given to networks of energy communities to develop such information points.

4. Sufficient human resources and skilling of permit-granting entities

Processing an increasing number of project permits will require a sufficient number of adequately skilled staff in permit-granting authorities and grid operators, as well as staff responsible for environmental assessments and national courts dealing with appeal procedures. As explained in the RES Simplify interim report and confirmed by the consultations carried out by the Commission for this initiative, the lack of staff in permit-granting authorities currently constitutes an important barrier to project deployment in many Member States – either there is not enough staff, and/or the staff lack the necessary expertise or skills to process the project applications. According to the findings of the report, the shortage of staff is reportedly more prevalent in large Member States, where the problem is larger at national level than at regional level, while a lack of expertise is more common in markets with less familiarity with a particular technology and fewer completed projects. The lack of expertise often occurs at the local level, where staff have less opportunity to specialise, and/or is related to complex technical and legal questions. This is particularly common in rural areas, with small administrative capacities, but where large renewable energy projects are designed. Staffing issues have an impact on other barriers since authorities do not have the capacity to coordinate their work with each other, allowing for smoother execution of administrative processes. This includes the implementation of a single contact point, where a lack of staff or relevant expertise can create additional bottlenecks in the administrative procedures.[35] It is hence key to ensure appropriate skills and attractive jobs in the sectors concerned, across the various administrative levels, including but not limited to permit-granting authorities.

A targeted and anticipative approach is needed to address staff shortages on the one hand, and the skills gap on the other hand. As part of this approach and in line with the European Commission's gender mainstreaming approach in all areas[36], including the green and digital transition, specific attention should be paid to increasing women's participation and equal opportunities for all at all levels.

In their National Energy and Climate Plans (NECPs), Member States were asked to provide information on the total planned installed renewable energy generation capacity from 2021 to 2030, divided by new capacity and repowering, per technology and sector in MW. Member States were also required to identify specific measures to provide information and training. This planned installed capacity, along with an assessment of capacity additions delivered with

[35] European Commission, Directorate-General for Energy, Tallat-Kelpšaitė, J., Brückmann, R., Banasiak, J. et al., *Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify). Interim report., 2021,* https://data.europa.eu/doi/10.2833/239077

[36] A Union of Equality: Gender Equality Strategy 2020-2025, COM/2020/152 final, available at: https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/gender-equality-strategy_en

existing staff levels should guide Member States in estimating the staffing and budgeting needs of permit-granting authorities.

While limited employment data exist for permit-granting authorities, in **Spain** the Region of Aragón awarded 1,100 MW of new onshore wind farm permits in 2018, with 30 staff fully dedicated to processing wind and PV permit applications[37]. **Finland** has allocated EUR 6 million from its Recovery and Resilience Plan to hire temporarily human resources for environmental permits and procedures and project processing in 2021-2023, and to support new energy technologies, including offshore wind, large-scale solar power and geothermal energy. The financial support will be used for personnel costs related to assessing environmental impact assessments, the processing of appeals against environmental permit decisions and to support municipalities and counties in ensuring land use planning and the granting of construction permits. **Italy** has set up a 40-member task force, overseen by the Ministry of Ecological Transition, dedicated to the implementation of its National Energy and Climate Plan and its Recovery and Resilience Plan. It is tasked with speeding up the processing of Environmental Impact Assessments. Each of the task force members has at least five years of professional experience and the necessary skills to assess technical, environmental and landscape-related aspects of renewables projects. The **German** 18-point simplification plan for permit-granting for onshore wind projects foresees that the federal states need to ensure that planning and approval authorities have sufficient staff allocated and the necessary technical equipment to process the permit applications. Furthermore, the German coalition agreement includes a reference to external project teams to alleviate the burden on the permit-granting authorities.

When it comes to ensuring that staff at authorities responsible for assessing renewable energy project permits are equipped with the appropriate expertise in legal and technical issues, one possible first step for addressing the current skills gaps could be setting up an Erasmus+ Alliance for sectoral cooperation on skills between the public authorities, industry, social partners and education and training institutions. In 2021, a high-level roundtable of the EU Pact for Skills took place, gathering stakeholders from the renewable energy industry[38], as part of a series of roundtables with industrial ecosystems to mobilise stakeholder involvement in the Pact for Skills. The Pact for Skills is a new engagement model for addressing skills challenges needed for the economic recovery and delivering on the EU Industrial Strategy, and the green and digital transitions. It aims to address skills gaps throughout industrial ecosystems by mobilising companies, workers, national, regional and local authorities, social partners, industry organisations, vocational education and training providers, chambers of commerce and employment services to invest in upskilling and reskilling actions. As a follow up to the roundtable the Commission stands ready to facilitate the preparation of a large-scale skills partnership for onshore renewable energy. Additionally, relevant EU funding opportunities are available (e.g. LIFE, cohesion policy funds, Technical Assistance Instruments). In this context, mutual recognition of diplomas, skills and qualifications across the EU is also key, particularly important in EU border regions[39].

Particular attention needs to be placed on the need for training and skills related initiatives to be targeted also specifically at the staff of the regional and local permit-granting authorities,

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37 Source: WindEurope

38 https://ec.europa.eu/social/BlobServlet?docId=25042&langId=en

39 Report from the Commission "EU Border Regions: Living labs of European integration", COM/2021/393 final.

and to take into account the specificities of their roles. In this respect, Member States are encouraged to take action and provide sufficient training opportunities.

A maritime technology Blueprint for Sectoral Cooperation on Skills is already ongoing, which is working on an offshore renewables skilling strategy, as well as exploring the potential of the sector to be a driver for the digital and green transitions. Administrative twinning could be particularly relevant in the offshore sector, as some Member States are about to permit offshore renewable projects for the first time, while others have gained more experience.

With a view to facilitating the exchange of information, reducing complexity in the implementation of large-scale renewable energy projects and mitigating the pressing need for capacity building, Member States could also envisage setting up voluntary platforms for permit granting authorities. Such platforms could act as knowledge-sharing repositories providing best practices, aiming to increase efficiency or identify synergies in the different processes in Member States. In addition, as experienced also for infrastructure projects, project promoters could benefit from capacity building initiatives aimed at eliminating delays due to the low quality of the documents and studies submitted to the permit-granting authorities.

5. Better identification and planning of locations for renewable energy projects

A decarbonised energy system largely based on renewable energy sources will generally require more space than the traditional energy system, characterised by larger, centralised energy production plants. Being in large parts a densely populated continent, land use conflicts and the need to balance different public goods and interests are frequent in Europe. Renewable energy projects are facing competition for access to suitable areas and land/sea use constraints resulting in particular from agriculture/fisheries, maritime transport routes, cultural heritage and defence-related activities. In order to accelerate the deployment of renewables in the medium to long term, well-designed spatial planning and analytical feasibility studies are therefore key instruments. They intervene in an early phase, having the potential to reduce environmental impacts, land/sea use conflicts and point project developers to suitable sites, which in turn may accelerate permit-granting procedures.

a. Land/sea use constraints and good practices to facilitate the identification of suitable areas

A more strategic approach to designate sites for renewables deployment through spatial planning will be instrumental in making available sufficient space to host the additional renewable energy capacities which are required to meet the EU targets. This concerns both offshore and onshore technologies for renewable power generation as well as the renewable heat sector. The relevant administrative level for such plans may be different per technology – for instance, suitable sites for wind installations would need to be identified at a more regional level, while small solar PV sites can be designated at the municipal level. Maritime Spatial Plans are developed at the national level, more and more in cooperation with neighbouring countries within the same sea basin. The Offshore Strategy[40] clarified that Maritime Spatial

[40] An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future, COM (2020) 741 final

Planning was a key pillar of the deployment of these technologies. The revised TEN-E Regulation requires Member States to cooperate in setting their deployment targets for offshore renewable energy in 2050, with intermediate steps in 2030 and 2040. The REPowerEU Communication called on Member States to swiftly identify suitable land and sea areas for renewable energy projects, commensurate with their National Energy and Climate Plans and their contribution towards the revised 2030 renewable energy target. As part of this mapping process, limited and clearly defined areas should be designated as particularly suitable for the development of renewables ('go-to' areas), while avoiding as much as possible environmentally valuable areas and prioritising *inter alia* degraded land not usable for agriculture.

In this regard, it would be beneficial to explore the possibility of using degraded areas, such as old quarries, closed mines, landfills or old industrial areas, parking lots and areas along transport corridors, such as highways and train tracks. In some cases developing brownfields for renewable energy can offer additional benefits, such as proximity to urban areas and road networks, and grid connections. On the other hand, this would require addressing associated challenges such as contamination, unsolved ownership issues or a lack of incentives for brownfield redevelopment.

Importantly, in the context of the just transition, coal mines located in the coal regions in transition could become attractive locations for conversion into wind and solar PV sites, or even geothermal or hydrogen production, depending on the location and surrounding industrial ecosystem. More generally, coal regions hold an important potential for renewables deployment – estimated to be at about 1.4 GW of wind power and 2.7 GW of solar.[41] An additional advantage of former fossil fuel exploitation sites is that they often enjoy good grid connection, and an available workforce on-site. Examples exist in **Spain, Greece** or **Hungary,** and **Germany** explores ways to use floating PV on lakes that are the result of reclamation measures in former lignite mining areas.

REDII up to now does not contain specific requirements on site selection or defining priority areas for the development of renewables. Nevertheless, in the national legislation transposing Article 15 REDII, **Italy** has set out the applicable regulations for the identification of suitable areas for the installation of renewable energy. The total capacity that can be installed in the identified areas needs to be at least equal to the capacity identified in the National Energy and Climate Plan as necessary for reaching the objectives when it comes to the development of renewables. These regulations also specify that when identifying areas suitable for renewables, the impact on the environment, cultural heritage, the landscape, as well as other relevant considerations such as the availability of resources and grid infrastructure, needs to be taken into account.

Coordination across different levels of government is crucial in particular in federal states or countries with autonomous regions. In **Germany**, the federal states are required to report to the federal government on the status of renewables, including on permitted renewables installations, the progress of repowering, and the area of land which is available for further wind energy deployment according to regional and urban land-use plans. The coalition agreement foresees that two percent of the land area is to be designated for onshore wind energy. In the federal states of Hessen and Schleswig-Holstein, this has already been implemented successfully.

[41] Clean energy technologies in coal regions, Kapetaki, Z. editor(s), Luxembourg, 2020, doi:10.2760/384605

In addition to a supportive spatial planning framework, digital tools such as geographic information system (GIS) online databases and cadastres may also ease identification of suitable land (e.g. showing potential per technology[42], restricted areas, degraded land not usable for agriculture, grid availability, existing projects and data/studies, environmental pre-assessments). At the Union level, the Energy and Industry Geography Lab (EIGL) is visualising some of these data.[43] The Commission has just finalised the inclusion of data sets in the EIGL that can help the Member States identify suitable areas for wind and solar energy projects. While relevant datasets depend on the renewable energy source under assessment, the following have been already included in EIGL: Natura 2000 sites, nationally designated areas, key biodiversity and important bird areas, and soil data.[44]

While the inclusion of such data sets in the mapping tool does not introduce any constraints or limitations in the deployment of renewable infrastructures in line with the relevant legislation, it facilitates their deployment while minimising conflicts. The mapping tool is thus intended as an enabling and empowering instrument to support planning choices by national and regional authorities who may not otherwise have immediate access to the full range of available data, with particular benefits for projects likely to have cross-border impacts. This in turn should guide and support investment decisions by economic actors on the basis of predictability and clarity. The Commission intends to develop this mapping tool further by incorporating additional data sets and links with Member States' digital spatial planning tools.

In **Denmark**, the online platform The Danish Environmental Portal[45] 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. 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.[46] In **Croatia**, the Open Data Portal of the Republic of Croatia is a data platform used for the collection, categorisation and distribution of open data created by the public sector, including geolocation, meteorological and environmental data. In **Poland**, the Commission is supporting the development of a database of former and current coal mining sites coupled to a GIS, which aims at identifying possible reuse of sites, including for the deployment of clean energy solutions. A similar project was also supported by the Commission in **Greece**. In the region of Brussels in **Belgium**, citizens can check the potential of their roofs in terms of PV generation.[47] To simplify licensing and permitting for small scale geothermal heat pump installations, some regions in **Austria, France, Germany** and **Italy** already operate tri-zonal 'traffic light' systems based on geological surveys, indicating zones where a simple notification is required, zones where a permit is required and zones where drilling is prohibited.

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42 See for example the REZoning tool available at https://rezoning.energydata.info/

43 https://ec.europa.eu/energy-industry-geography-lab

44 An explanatory note on data limitations, knowledge gaps as well as on how to use the different layers (e.g. clarifying that wind and solar energy projects can be located in Natura 2000 sites provided that the provisions of the Habitats Directive are respected) is also available.

45 https://miljoeportal.dk

46 Thus, the only uncertainty left in this regard is possible archaeological finds.

47 https://geodata.environnement.brussels/client/solar/?_ga=2.96364508.1780876011.1647281973-1886784996.1647281973

b. Multiple use of space

Another way to address land/sea use constraints is by facilitating multiple use of space. This approach in maritime spatial planning can support the coexistence of energy infrastructure and shipping routes, and contribute to the protection of marine ecosystems. Other approaches, such as Agri-PV or floating solar can optimise the space available for renewable energy projects. Lifting restrictions in national legislation banning the multiple use of space or creating a dedicated framework for multiple use could enable more projects. Innovation in the field of permit-granting, that is commonly a very sectoral process, will also be needed to support new multi-use projects.

The above-mentioned EIGL mapping tool now also includes a data set on existing wastewater treatment plants, which could host renewable energy projects and will be further developed to facilitate multiple use of space.

Several Member States (including **Germany, Italy, France, Spain and Poland**) are looking into guidelines for Agri-PV initiatives, a practice of combining agriculture and solar PV production which has started to become more widespread over the past few years. Dual use via Agri-PV can help gain public acceptance and directly benefit farmers and rural communities. Scientific research shows that these approaches can also bring co-benefits, like better water retention in arid areas and overall better productivity.[48] Consensus on definitions and impact criteria would be beneficial at national and regional levels. This would pave the way for allowing Agri-PV more systematically in land use plans and help avoiding negative effects for farmers.

A similar practice has emerged in the maritime space, where **Belgium** has designated sites in its maritime spatial plan for simultaneous development of activities, i.e. food production (fisheries, aquaculture) and offshore renewable energy, thereby promoting synergies and multi-use by design. Multi-use can also develop through adding new activities to existing ones.[49] Combining a marine economic activity with nature protection (e.g. in Natura 2000 sites) or restoration is also possible.

c. *Community acceptance and involvement*

Centrally defined deployment or space use targets can be important depending on the national context, since municipalities often tend to see the development of renewable energy from the local perspective and do not always take into account the national renewable energy targets. On the other hand, renewables development should be embraced locally and not seen as imposed on local communities to their detriment. Therefore, early public involvement in

[48] Barron-Gafford, G.A., Pavao-Zuckerman, M.A., Minor, R.L. et al. Agrivoltaics provide mutual benefits across the food–energy–water nexus in drylands. Nat Sustain 2, 848–855 (2019). https://doi.org/10.1038/s41893-019-0364-5; Hassanpour Adeh E, Selker JS, Higgins CW (2018) Remarkable agrivoltaic influence on soil moisture, micrometeorology and water-use efficiency. PLoS ONE 13(11): e0203256. https://doi.org/10.1371/journal.pone.0203256

[49] For example, as developed under the EDULIS project (2017-2019), offshore wind farm infrastructure can be used to develop aquaculture such as mussels farming. More details on can be found in then "Best Practice Guidance in Multi-Use Issues and Licensing Procedures", June 2021, https://maritime-spatial-planning.ec.europa.eu/msp-resources/ec-msp-studies

defining regional or local spatial plans is crucial[50], and so are measures to allow local communities to benefit from renewable energy installations in their vicinity, also in the broader perspective of a socially just green transition. This can be achieved via energy communities[51], reduced costs of electricity or financial participation schemes ("co-ownership" or "co-benefits") or industrial development plans for a region.

Such schemes can be organised in different forms, e.g. funding from national or regional sources being allocated to the local authorities for the provision of areas and resources, plant operators directly paying a specific fee or tax to the local authorities, or plant operators voluntarily making payments to a regional association with the purpose of improving the local situation. Such payments should be bound to specific purposes in order to increase social benefits of citizens, such as social services (e.g. kindergarten, health services) or infrastructure (e.g. streets or public transportation). A clear regulatory framework avoids case by case negotiations, which could lead to uneven results and present a higher risk for public misconduct.

Examples of schemes introduced at national level include the „green funds scheme" for municipalities hosting wind projects in **Denmark,** a subsidy scheme for municipalities in **Luxembourg** or minimal participation rates of local inhabitants foreseen in various regional energy strategies in **The Netherlands**. The Climate Change Act of the Balearic Islands, **Spain**, has a special provision that all renewables projects above 5MW must open at least 20% of the investment to the local population. Another possibility for enhanced local economic participation are options for investing in shares of renewable energy projects, as promoted for example by the "Green growth crowdfunding label" in **France**[52]. These crowdfunding approaches, as well as certain other financial participation schemes, however only create benefits for the citizens who are able to invest in the projects ("co-ownership", with or without participation in the governance).

Renewable energy communities are very powerful tools to enhance the active participation and benefits of the local population in the energy transition. They can also help address energy poverty. In **Greece**, the definition of energy communities provides that they actively participate in the reduction of energy poverty and the promotion of production, storage and self-sufficiency on the islands. To this end, vulnerable consumers and citizens living below the poverty line are also entitled to virtual net-metering and can benefit from the energy produced by the community without being part of it (if they are geographically close). In **Belgium**, social housing companies developed an innovative business model where they invest in solar panels settled on the roofs of the social housings, and the cost of the use of PVs and the generated electricity is included in the rents. The rental cost is cheaper than current electricity prices, thanks to the important scale of the project.[53]

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50 Public participation at project level, if designed well, can also increase acceptability, but it is more effective when combined with public participation at an earlier planning stage.

51 Renewable energy communities as defined in the Renewable Energy Directive, citizen energy communities as defined in the Electricity Market Directive, or other types of community energy.

52 https://www.ecologie.gouv.fr/label-financement-participatif

53 https://aster.vlaanderen/nl/english-summary

Cross-border energy communities can play a significant role in EU border regions[54]. The project "SEREH – The Smart Energy Region of Emmen-Haren"[55], under the Interreg cross-border cooperation programme between **Germany** and the **Netherlands**, is already leading the way. It is developing a decentralised cross-border electricity and energy market, and other border regions will be able to build on its findings and recommendations.

When it comes to the involvement of communities in the energy transition, in 2021 the **Irish** Transmission System Operator EirGrid, Friends of the Earth and the Renewables Grid Initiative have launched a joint 3-year project[56] to engage communities in a dialogue on the challenges and opportunities associated with Ireland's energy transition.

Proximity of wind turbines to housing also in some cases constitute grounds for public opposition to projects. In these cases citizens raise concerns related to the nuisances they suffer, such as noise and visual impacts.

Regulations on distance between wind turbines and housing vary across the Member States[57] – in some cases the setback distance depends on region or municipality, or on the population density of the area where the turbines are located. In other cases, the turbine's tip height and rotor diameter determine the setback distance.

Very high setback distances may only result in marginal additional benefits from the noise reduction perspective while at the same time increasing costs associated with service roads and support infrastructure, and locating electricity generation further away from demand[58]. Restrictive regulations in this regard can also make large shares of land unavailable for projects and/or reduce the possibility to repower existing wind farms with the most up to date technology. As a consequence, developers sometimes need to install outdated equipment in the form of smaller and less efficient wind turbines to fulfil the distance requirements. Project developers may also opt for lifetime extension rather than repowering of the existing sites.

The rules regarding distance to housing should be factually grounded and evidence-based, i.e. in relation to noise and visual disturbances and set at the minimum necessary[59]. When setting the rules, Member States need to balance the need to minimise the negative effects of wind turbines and maximise the availability of land for the development of projects, also taking into account other spatial planning constraints. Furthermore, clear and transparent information on restrictions related to distance to housing is needed to ensure investment certainty for project developers.

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54 Both the Electricity Market Directive and the Renewable Energy Directive set the conditions for Member States to include options for cross-border implementation of energy communities in their national transpositions.

55 https://sereh.eu/en/sereh/

56 https://renewables-grid.eu/activities/ird/our-energy-future.html

57 JRC Publications Repository - Wind potentials for EU and neighbouring countries: Input datasets for the JRC-EU-TIMES Model (europa.eu)

58 Is setback distance the best criteria for siting wind turbines under crowded conditions? An empirical analysis, Energy Policy 155 (2021) 112346. https://doi.org/10.1016/j.enpol.2021.112346

59 In most Member States minimum distance rules of 500-1000 m are in place.

d. *Environmental considerations*

Some of the most common issues related to site selection faced by renewables project developers are the length and complexity of procedures to comply with environmental legislation as well as conflicts with environmental interest groups or citizens. Permits and associated impact assessments are a tool to balance different societal interests, but this also makes them prone to the introduction of high levels of complexity and challenges in administration and courts of justice. Where different societal interests need to be assessed and balanced, the reflection and decision-making process necessarily takes time. Therefore it is necessary to integrate environmental considerations in the renewable energy planning processes from the start. This allows identifying the likely significant effects on the environment and the measures envisaged to prevent, reduce and offset them as much as possible. Furthermore, there are options which would allow Member States to streamline the procedures to ensure compliance with environmental legislation and to facilitate selection of suitable sites by promoters. This will also help in reducing conflicts that can arise with environmental groups and individual actors but also with public authorities at different levels. Such conflicts affect in particular wind power, geothermal power and hydropower, but also large-scale solar PV installations.[60] While access to justice is a fundamental right, alternative dispute resolution mechanisms and mediation can lead to faster resolution of such conflicts.

i. Requirements stemming from EU environmental legislation and ways to streamline compliance

EU law can lead to the requirement of several **environmental assessments** for a single project. Specific additional requirements in permit processes are often introduced at the national level (e.g. related to property issues, land-use planning or cultural heritage). Multiple legal requirements and parallel assessments for a single project can lead to administrative and implementation costs and delays, discrepancies and administrative uncertainty in their application. Article 2 of the EIA Directive[61] explicitly provides that EIA may be integrated with other procedures. This offers a significant potential for simplifying environmental permit-granting when several environmental assessments stemming from a number of Directives (the EIA Directive, the SEA Directive, the Habitats and Birds Directives, the Industrial Emissions Directives, the Water Framework Directives, the Seveso Directives, etc.) are required and several authorities are involved. Under the **"one-stop shop"** approach, the above assessments and their approval can be prepared separately but be coordinated; they can also be joined together as part of a single process.[62]

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60 European Commission, Directorate-General for Energy, Tallat-Kelpšaitė, J., Brückmann, R., Banasiak, J. et al., *Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify). Interim report., 2021,* https://data.europa.eu/doi/10.2833/239077

61 Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, OJ L 26, 28.1.2012, p. 1–21, as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014, OJ L 124, 25.4.2014, p. 1

62 As regards the EIA and the nature protection Directives, the one-stop shop approach is required under the EIA Directive (with a margin of discretion for Member States).

Seamless roll-out of renewable energy projects could also be supported by transparent and strategic planning[63]. Concerning environmental permits, Member States could increase legal certainty and transparency by systematically applying the Strategic Environmental Assessment (SEA)[64] Directive to planning documents, relevant for renewable projects permitting. The SEA allows to plan strategically the development of renewable energy projects with more certainty, while factoring in the environmental obligations. Where applicable, the national authorities and project developers can rely on the outcomes of the SEA and take these into account in the subsequent project development, in particular for identifying reasonable alternatives in the context of the nature conservation and preservation objectives. This allows Member States to harness the energy potential from different renewable energy sources while mitigating the negative environmental impacts from energy projects. It encourages a more integrated and efficient approach to territorial planning where environmental considerations are taken into account in early phases of the planning process and at a much more strategic level. It also translates into fewer conflicts at the individual project level, both in substance and in terms of public acceptance.

The Commission has recently adopted revised methodological guidance on Article 6(3) and (4) of the Habitats Directive, i.e. on appropriate assessment of plans and projects located in Natura 2000 sites.[65] These guidelines, together with sectoral guidelines on wind energy[66], energy transmission[67] and hydropower[68], provide many practical examples of how project approval can be facilitated, without compromising nature protection needs, among others via strategic (spatial) planning, use of solid environmental data and suitable mitigation measures. Guidance[69] has also been developed under the Water Framework Directive, clarifying in particular options to streamline procedures for assessing environmental impacts, identifying better environmental alternative measures, justifying the existence of an overriding public interest and identifying appropriate mitigation measures.

Renewable energy projects are not automatically subject to an obligatory EIA and Member States should establish clear thresholds in this regard, within the flexibilities allowed by the EIA Directive. In **Slovakia**, for instance, the provisions of the EIA Act apply solely for PV plants over 5 MW. In the case of plants in the power range between 5 and 50 MW, an investigation process (i.e. screening) follows. For PV plants with the installed capacity of 50 MW and higher, the mandatory assessment applies.

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63 Also underlined in the Communication from the Commission "An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future" (COM/2020/741 final).

64 Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, OJ L 197, 21.7.2001, p. 30

65 https://ec.europa.eu/environment/nature/natura2000/management/pdf/methodological-guidance_2021-10/EN.pdf

66 https://ec.europa.eu/environment/nature/natura2000/management/docs/wind_farms_en.pdf

67 https://ec.europa.eu/environment/nature/natura2000/management/pdf/guidance_on_energy_transmission_infrastructure_and_eu_nature_legislation_en.pdf

68 https://ec.europa.eu/environment/nature/natura2000/management/docs/hydro_final_june_2018_en.pdf

69 Common Implementation Strategy for the Water Framework Directive and the Floods Directive, Guidance Document No. 36: Exemptions to the Environmental Objectives according to Article 4(7) https://circabc.europa.eu/sd/a/e0352ec3-9f3b-4d91-bdbb-939185be3e89/CIS_Guidance_Article_4_7_FINAL.PDF

Clear and transparent criteria for environmental assessments communicated to the project developer at the start of the process are another avenue for accelerating procedures. Under the EIA Directive, the developer may request a scoping opinion from the competent authority which identifies the content and the extent of the assessment and specifies the information to be included in the EIA report. In a number of Member States, such scoping is mandatory (**Bulgaria, Czech Republic, Denmark, Estonia, Finland, Luxembourg, Romania**). Practical experience shows that clarifying the scope and level of detail of the environmental information at an early stage avoids multiple exchanges and new requests between the developer and the competent authorities at a later stage and speeds up the project approval.

In order to facilitate the use of existing flexibilities in EU environmental legislation, Member States should clarify in their national legislation that the planning, construction and operation of plants for the production of energy from renewable sources, their connection to the grid and the related grid itself are presumed as being in the **overriding public interest** and in the interest of public safety, in view of the legislative proposal amending and strengthening the provisions of Directive (EU) 2018/2001 related to administrative procedures. As such, they should qualify for the most favourable procedure available in their planning and permit-granting procedures.

The concept of 'imperative reason of overriding public interest' is referred to in several pieces of environmental legislation.

Under Article 6(4) of the Habitats Directive this concept implies that the competent national authorities have to make their approval of the plans and projects in question subject to the condition that the balance of interests between the conservation objectives of the Natura 2000 site affected by those initiatives and the imperative reasons weighs in favour of the latter. This requires a case by case assessment.

Member States should establish clear and simple procedures to screen renewable energy projects in view of assessing whether they are likely to have a significant negative impacts on Natura 2000 sites on their own or in combination with other plans or projects. Whenever significant impacts cannot be excluded by the competent authorities, an appropriate assessment should be carried out under Article 6(3) of the Habitats Directive.

Both screening and appropriate assessment should be carried out in view of the site-specific conservation objectives. To this end Member States should establish site-specific conservation objectives for all Natura 2000 sites without further delays. This will allow to properly and promptly assess the likelihood of impacts on the Natura 2000 sites and the impacts themselves during screening phase and appropriate assessment, respectively. Clarity about the likelihood of impacts and the impacts themselves on the Natura 2000 sites is in the interest of project promoters and Member States authorities, as this determines a swift conclusion of the authorisation procedure with the required legal certainty.

Member States should swiftly conclude the authorisation process by authorising all the projects not likely to have significant impacts on Natura 2000 sites in view of their site-specific conservation objectives, on their own or in combination with other plans or projects.

Member States should also swiftly conclude the authorisation process by authorising all the projects assessed as not affecting the integrity of the Natura 2000 sites in view of their site-specific conservation objectives, on their own or in combination with other plans or projects. Member States should therefore ensure that renewable energy projects integrate mitigation

measures to effectively prevent or reduce negative impacts on the protected habitats and species in the Natura 2000 sites.

A renewable energy project affecting the integrity of a Natura 2000 site can be authorised if there are no alternative solutions and if the balance of interests between the conservation objectives of the site affected and the public interests of the project weighs in favour of the latter, provided all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected are taken. It is for the competent authorities to take such decision, on the basis of the interests at stake in each specific case. Member States should establish clear guidance for competent authorities to take such decisions in the case of renewable energy projects, that could be justified in relation to different public interests, e.g. for their contribution to energy security (energy independence from imports) or public safety (ensuring heating and electricity needs) or as having beneficial consequences of primary importance for the environment (mitigation of climate change).

The notion of overriding public interest is also relevant for the species protection provisions of the Habitats Directive.[70] These provisions, in particular Article 12, aim at protecting species by prohibiting *inter alia* their deliberate disturbance or killing wherever they are present and not just in Natura 2000 sites. Article 16(1) contains a derogation clause which allows, *inter alia*, the deliberate killing or disturbance of a specimen of a protected species in the absence of a satisfactory alternative and if the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range. Article 16(1) lists the grounds that may be invoked to justify such derogation. Renewable energy projects could be justified under one or more of the above mentioned grounds. It is important to stress reliance on derogations may not be needed in the first place. The incidental killing or disturbance of individual specimens is not an obstacle to the development of renewable energy projects whenever such projects integrate mitigation measures to effectively prevent as much as possible killing or disturbance. Therefore, in these cases the incidental killing or disturbance of individual specimens of protected species should not be considered deliberate and hence would not fall under Article 12(1) of the Habitats Directive nor Article 5 of the Birds Directive. Member States should establish a system to monitor the incidental killing or disturbance of the species concerned and, in the light of the information gathered, take further measures as required to ensure that incidental killing or disturbance does not have a significant negative impact on the species concerned. Member States should also promote research and innovation and allow renewable energy projects integrating innovative mitigation measures to monitor their effectiveness on preventing killing and disturbance of birds and other protected species and, in light of the monitoring results, to adapt those measures as needed to ensure no significant negative impact on the population of the species concerned.

The concept of overriding public interest and of the need to weigh up the advantages for sustainable development against potential negative impact on the environment also applies in the context of the Water Framework Directive. Article 4(7) of that directive requires a prior authorisation of all new modifciations or projects which may deteriorate the status of water bodies, in accordance with the case law of the Court of Justice of the EU[71]. This requires in

[70] https://ec.europa.eu/environment/nature/conservation/species/guidance/index_en.htm

[71] C-346/14, European Commission v Republic of Austria, ECLI:EU:C:2016:322.

the first place an assessment of the potential impact on all potentially affected water bodies. Should deterioration be likely, it requires to assess:

1) Whether the advantages for sustainable development can be considered to override the potential negative impact on water status;
2) Whether there are no better environmental alternative solutions for achieving the benefits for sustainable development, which are not disproportionately costly;
3) Whether all practical measures are being taken to mitigate the impact as much as possible.

These procedural steps can benefit from information obtained under assessments to be carried out under various other pieces of environmental legislation (including SEA, EIA, Habitats Directives), as explained in recent guidance[72] developed by the Commission in cooperation with Member States and stakeholders. In turn, the latter would benefit from information obtained under the WFD assessments. Coordinated or, preferably, joint procedures may importantly simplify and shorten the authorisation of renewable energy projects.

ii. National approaches which facilitate selection of suitable sites or adapting projects from the environmental point of view

Central provision of available environmental studies and regularly updated data relating to a given region and technology, or even active conduct of environmental assessments by authorities relating to the relevant aspects for renewables commissioning, is a highly relevant tool to facilitate the site selection process for project developers or to allow them to design projects accordingly.

In **Spain**, the government has created a tool to help in strategic decision-making on the location of large solar and wind installations. The tool maps the environmental sensitivity of the national territory and identifies the areas that present the greatest environmental conditioning factors for the implementation of renewable energy projects. Although these tools do not exempt projects from the relevant EIA process, they are a useful guidance to ascertain the environmental conditioning factors associated with the locations of an installation from the early stage. In **Germany**, the Association of Nature Conservation (NABU) and the German solar energy association (BSW-Solar) have developed a joint paper[73] containing criteria for environmentally sound planning of ground-mounted solar projects. In **Belgium**, the region of Flanders maintains an online wind farm sensitivity map[74] for birds and bats aimed at identifying areas where siting wind turbines may pose a risk to birds or bats, informing and guiding more site-level assessments and strategic planning.

Good practice examples exist in the **Netherlands** and **Germany** on environmental pre-assessment of offshore wind sites. The site development plan of the German Federal Maritime and Hydrographic Agency includes extensive consultation processes, early site adaptability investigations and strategic environmental assessments. Thanks to the field analyses on general suitability criteria such as environmental aspects or shipping safety conducted by the agency, the risk associated with an authorisation application is considerably lowered for

[72] See footnotes 65 to 69 above.

[73] https://www.nabu.de/imperia/md/content/nabude/energie/solarenergie/210505-nabu-bsw-kritereien_fuer_naturvertraegliche_solarparks.pdf

[74] https://geo.inbo.be/windturbines/

project promoters in the region. The Dutch Ministry of Economic Affairs and Climate Policy is conducting an offshore wind ecological programme[75], which was established to expand the knowledge base about how wind farms affect protected species. Its findings are included in the determination of future locations for offshore wind in the Netherlands. Developing similar practices on land would be particularly beneficial for smaller project developers and in the renewables heating sector.

e. *Defence and aviation-related considerations*

Conflicts with aviation and military use of space have been identified among the most common barriers to wind farms, in particular in the North-East of Europe. If an assessment done by the national defence forces reveals that the planned wind farms could interfere with military radar and radio communication systems, they could prevent the project from going ahead or request lower turbines to be installed.

An effective solution to address this barrier is investment in additional radar equipment. In this regard, the **Estonian** government has decided to invest in additional radars, which will become operational in 2024 and help address the height restrictions for wind turbines in the north-eastern part of the country. The Estonian military have recently agreed to restrict the number of zones where no wind energy installations can be built. As a consequence 60% of the Estonian territory now has no height restrictions. Similarly, **Lithuania** has purchased radars that will be used to cover the blind spots that wind turbines create for military radars.

An additional barrier relates to the ability of military and defence authorities to raise objections to wind power projects, including at a late stage of the project development when the permits for the project have already been issued and significant resources have already been committed. This could be mitigated by setting up dedicated communication channels between representatives of the renewable energy sector and defence and civil aviation to enable exchanges in the course of the development of the project and minimise the emergence of objections at late stages of the project. **Finland** and **France** have set up a dedicated Working Group to enhance cooperation between wind farm developers and defence forces. Furthermore, as a follow up to the EU Offshore Strategy, the Commission and the European Defence Agency are setting up a joint action to identify barriers for offshore renewable energy developments in areas reserved for defence activities and improve co-existence. This is being implemented in the framework of Horizon Europe.

6. Easier grid connection, combined technology power plants, repowering and innovative technologies

A better interconnected electricity grid is a precondition for the integration of higher shares of renewable energy in the European power system. The revised TEN-E Regulation includes strengthened integrated infrastructure planning provisions aiming at ensuring, through sector integration, the most effective and efficient solutions and allowing anticipatory grid investments to cater for future expansion of renewables generation capacities.

[75] https://wozep.nl/

While small-scale installations benefit from the provisions on simple notification procedure for grid connections under Article 17 of REDII, obtaining a grid connection permit is one of the required process steps for almost all other projects which result in new renewables production capacities. The permit-granting process for grid connection assets is covered by the obligation to establish single contact points referred to in Article 16, aimed at better coordination and synchronisation of multiple permit-granting procedures (handled by system operators and public authorities). Repowering of existing installations (as defined in Article 2(10) of REDII) and hybridisation, i.e. combining different renewables technologies at the same site, are ways to make a rational use of grid capacities and to limit grid expansion needs and should therefore be facilitated as much as possible.

a. Grid connection issues

Issues related to grid connections are widespread and, although generally less problematic in terms of causing delays than other administrative barriers, they can halt overall renewable energy deployment in some Member States. The main grid connection issues very often result from (seemingly) inadequate grid capacities, which require negotiations between the project developer and the system operator over the possibility, timing and cost for connecting a renewable generation plant to the grid, leading to project delays. In some Member States, the lack of transparency regarding the availability of grid capacity also creates a bottleneck for identifying a location for the project. Another challenge to renewable energy deployment stems from conflicts with distribution and transmission grid operators over the interpretation of technical regulations, the access to data or the distribution of connection costs. Moreover, the trend of increasing connection costs is a threat to the economic viability for many projects, especially in Member States where the costs of grid connection and expansion must be borne by project developers. In some Member States, these problems are aggravated by speculative behaviour of market actors having an incentive to hoard and sell grid connection permits when grid capacities decline.[76]

Network connection issues are even more pressing for renewable heat, since the heat they produce cannot be transported over longer distances. Similar to what is in place in some Member States for renewable electricity installations, it would be beneficial to ensure renewable heat installations can access fast-track procedures for a grid connection.

In order to help address the issues mentioned above, a good practice is to make full use of digitalisation and to ensure transparent processes, i.e. to facilitate grid connection permits by e-communication and by the activities of the single contact points, based on clear roles and processes which are described in transparent guidelines. In **Estonia**, the national TSO Elering has an electronic application portal[77], where all documents necessary for the connection of a renewable energy installation to the electricity transmission grid can be submitted.

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[76] European Commission, Directorate-General for Energy, Tallat-Kelpšaitė, J., Brückmann, R., Banasiak, J. et al., *Technical support for RES policy development and implementation – Simplification of permission and administrative procedures for RES installations (RES Simplify). Interim report., 2021,* https://data.europa.eu/doi/10.2833/239077

[77] www.egle.ee

Allowing for grid connection permits to be requested and granted in parallel to other authorisations, such as in **Austria**[78], can also help speed up the overall permit-granting process. In **Ireland**, specific privileged connection pathways are foreseen for energy communities, including the possibility to apply at any time, an exemption from the prior planning permission requirement, validity of the grid connection permit for two years and the annual reservation of 15 connection offers for energy communities.

Since infrastructure is essential to ensure the uptake of renewable energy, Member States and national regulatory authorities should consider ways to enable and facilitate anticipatory investments for energy infrastructure projects. Grid access requires specific attention in the offshore sector, as offshore wind parks usually are remote to the existing grid and onshore grid reinforcement might be needed before connecting an offshore project. Given long lead times, space constraints at sea and specific technical challenges for developing subsea infrastructure, it would be advisable to develop offshore grids with a view to future increases in generation capacities, or grids supplied with technological features exceeding what is necessary in the short term. The revised TEN-E Regulation provides rules for allowing projects that incur higher risks, including due to the need of anticipatory investments, to benefit from regulatory incentives to mitigate the additional risks. The Commission will work together with national regulatory authorities and with ACER to ensure clear frameworks to evaluate higher risks of investments in energy infrastructure projects and to ensure that an approach for addressing such risks is established in each Member State. In this respect, the Commission, Member States and ACER will support national regulators in drafting updated methodologies that will enable project promoters to carry out anticipatory investments allowing grids to integrate higher volumes of innovative offshore and onshore renewables energy.

Cross-border coordination is particularly important as regards offshore hybrid grid and power assets, so as to allow the coordination of the permitting and development of the grid infrastructure assets with those of the generation assets. By the implementation of single points of contact in the revised TEN-E Regulation, the Commission encourages Member States to adapt their permitting regime to allow for effective and efficient cross-border coordination. As a minimum measure, Member States should commit themselves to ensuring that, in the future, there is no possibility for further prolongation of permit-granting procedures and to setting up and fully applying the status of the highest national significance, which has been proven to accelerate the permit-granting process.

In order to enable long-term visibility of grid capacity, the coordinated planning of grids and renewable generation capacities should favour a strategic and comprehensive approach that takes into consideration limitations arising from the application of environmental legislation, including those relating to nature restoration areas. In this case, strengthened cooperation between competent authorities responsible for the permitting of grid and renewable generation assets is key in making use of existing tools and assessments, such as the strategic environmental assessments, to anticipate potential impacts arising from the application of environmental protection measures. Such a strategic and integrated approach would allow for improved tender design for renewable energy projects. Tenders could, for example, include potential locations, allowing for needed visibility on grid availability and development.

78 See chapter 2 b.

Another tool to address the grid connection issues described above is to ensure transparency on grid capacities, ideally via open data obligations and online databases in the form of Geographic Information Systems. Such transparency enables developers to focus on locations with higher availability of grid capacity and factor in the anticipated grid connection costs in their site selection decisions. In **Spain**, TSOs and DSOs are obliged to publish online the available grid capacity. In **Belgium**, the best locations for renewable energy projects are shown via a national grid capacity map. This is not binding and does not influence whether a project is permitted, but ensures visibility for developers.

France introduced regional grid connection plans for renewable energies to accelerate the connection to the electricity network and, moreover, to mutualise the costs throughout the territory. This planning tool enables the Regional Directorates for the Environment, Planning and Housing and project developers to closely monitor the development of the electricity network throughout the country. In addition, these plans provide planning and anticipation of grid connections needed in the future.

The area development plans prepared as part of maritime spatial planning processes in **Germany** also include the respective offshore grid development needs. Consequently, this will essentially lead to a synchronisation of wind park and grid development as the plan provides grid operators with a more long-term planning basis.

System operators can also address grid capacity issues by offering flexible connections, which allows restricting access to the network at times of peak load. Alternatively, grid operators should tap into the flexibility potential of distributed producers, active customers and energy communities by developing local flexibility markets. Member States should encourage openness of system operators to such more innovative solutions.

b. *Combined technology power plants*

Combined technology power plants, also referred to as hybrid plants, use and combine different renewable and related technologies (e.g. wind, solar and/or storage assets) at the same location. Combining different technologies is also relevant at sea, where offshore wind parks can be combined with ocean energy or floating solar installations. While the number of such power plants currently remains limited[79], as the share of variable renewable energy in the electricity grid increases, hybridisation offers a number of benefits. In the context of scarce grid connection capacity, hybridisation allows optimising the use of grids and can help to reduce the infrastructure investment costs. It can also ensure more stable power output, mitigating the variability of renewable energy generation when different renewable energy resources with complementary generation profiles (e.g. wind and solar) are combined. Adding a storage device could enable storing the energy that would otherwise need to be curtailed when the renewable energy generation exceeds the allowed grid connection capacity.

The current challenges to the development of combined technology power plants include the lack of a clear regulatory framework, access to grid and its availability. The regulatory framework would need to clarify such aspects as the applicable rules for permit-granting for plants combining different renewable energy technologies and/or storage, including on

[79] https://windeurope.org/about-wind/database-for-wind-and-storage-colocated-projects/

securing grid capacity, and the rules for monitoring the energy flows between the storage device and the grid.

Access to grid and its availability can constitute a barrier for developing combined technology power plants if these need to apply for grid capacity that is equal to the sum of the components of the individual technology plants. This barrier can be addressed for instance by allowing the power plants to apply for grid capacity on the basis of the maximum anticipated production, instead of the sum of the capacities of the individual complementary technologies. Thus, the connection capacity should be allocated to the combined project and not as if they were two separate projects requiring the duplication of capacity.

In 2019 **Portugal** introduced changes to its electricity production licensing regime, which enables the "hybridisation" of two technologies in the same infrastructure and connection point of the grid up to the maximum licensed capacity. This allows maximising the renewable energy production output, without incurring more costs for the grid infrastructure investments. The addition of the second technology is subject to additional licensing requirements[80]. **Spain** has also introduced regulatory changes which allow access to the grid by power installations using different generation technologies as long as it is technically feasible. In the case of hybridisation of existing assets, and provided that certain conditions on capacity and distance between the assets are met, only an update of the existing connection agreement is required. Both countries have also introduced scoring systems to incentivize combined technology projects by giving them higher priority for grid connection.

c. *Repowering*

Repowering is defined as renewing power plants that produce renewable energy, including the full or partial replacement of installations or operation systems and equipment for the purposes of replacing capacity or increasing the efficiency or capacity of the installation[81].

Although to date repowering has been concentrated in a few markets, by the late 2020s it could become a key business activity for the wind industry across Europe[82]. The benefits of repowering include the existing grid connection, knowledge of the wind resource availability and the potential environmental impacts, and frequently high levels of public acceptance[83]. In Denmark, between 2012 and 2019, there has been a 1.3 GW gain in wind capacity, of which 576.8 MW resulted from repowering of existing installations, and a net reduction of 109 wind turbines thanks to the higher efficiency of the new turbines. Only 10% more capacity was developed in greenfield projects than in repowering.

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80 Renewable energy law and regulation in Portugal. CMS Expert Guide. https://cms.law/en/int/expert-guides/cms-expert-guide-to-renewable-energy/portugal

81 Article 2 (10) REDII

82 According to WindEurope, 45 GW of wind parks are approaching their economic end of life in 2022-2026

83 Kitzing, L., Jensen, M.K., Telsnig, T. et al., *Multifaceted drivers for onshore wind energy repowering and their implications for energy transition*. Nat Energy 5, 1012–1021 (2020). https://doi.org/10.1038/s41560-020-00717-1

A Wind Europe analysis of 137 projects repowered in Europe to date shows that on average, the number of turbines in these repowered wind projects decreased by 27%, while installed capacity was doubled and electricity output tripled[84].

Repowering will also play a role for large hydropower plants, since a large share of the available hydropower potential has already been tapped[85]. An increasing number of solar projects will also reach the end of their life and be candidates for the replacement of some of the components, or repowering leading to a capacity increase. Clear guidelines and simplified procedures will also need to be established for the repowering of solar plants.

REDII requires Member States to facilitate the repowering of existing plants by ensuring a simplified permit-granting process, which does not exceed one year. This may be extended by up to one year where justified on the grounds of extraordinary circumstances, such as overriding safety reasons or substantial impacts on the grid or the original capacity, size or performance of the installation.[86] Member States may also establish a simple-notification procedure for grid connections for repowering projects where no significant negative environmental or social impact is expected, instead of requiring a new permit application.[87]

According to project promoters, currently repowering in most Member States has to undergo the same application and permit-granting procedures as greenfield projects, including the need to carry out an Environmental Impact Assessment. Industry also identifies the growth of dwellings close to existing wind farms, the increase in the turbine size, the increase in environmentally protected areas or the increase of the allowed distance between wind farms and military radars as factors reducing the possibilities to repower the existing projects. As a result, operators tend to choose lifetime extension of the existing assets for as long as possible, followed by full decommissioning at the end of the assets' lifetime, which creates a missed opportunity for the role repowering could play in reaching the 2030 targets.

The EIA Directive lists certain electricity production installations, such as wind farms and hydroelectric installations[88], among projects for which an EIA is not automatically required. Instead, Member States have to determine whether the project needs to be subject to an assessment. This is done through a "screening procedure", which determines the effects of a project on the basis of thresholds or criteria and/or a case by case examination, taking into account the screening selection criteria[89] defined in the EIA Directive. In accordance with the EIA Directive, Member States may set thresholds or criteria to determine when projects do not need to undergo a screening procedure[90]. The EIA Directive also provides additional flexibility to competent authorities, which may decide that an environmental impact assessment is not required on the basis of a description of features of the project and/or measures envisaged by the developer to avoid or prevent significant effects on the environment.

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84 Why repowering is key to wind power industry's growth, Windpower Monthly, available at https://www.windpowermonthly.com/article/1735687/why-repowering-key-wind-power-industrys-growth

85 Hydropower Europe, https://hydropower-europe.eu/about-hydropower-europe/hydropower-energy/

86 Article 16(6) REDII

87 Article 16(8) REDII

88 Annex II of the EIA Directive

89 Annex III of the EIA Directive

90 In such cases, Member States have to ensure that the fundamental objective of the EIA Directive as per Art. 2(1) is met.

In many cases, repowering of such projects would entail changes or extensions to existing projects. Most changes or extensions to existing projects fall under Annex II of the EIA Directive and are therefore subject to the screening procedure and not automatically require an EIA. The Commission has issued a guidance document regarding the application of the EIA Directive to changes and extension of projects[91]. As the Commission explained in this guidance, a change or extension of projects pre-suppose that there are risks similar, in terms of their effects on the environment, to the original project. This should be assessed during the screening or EIA process.

An appropriate assessment is also required for all projects/plans falling within the scope of Article 6(3) of the Habitats Directive if they are likely to have a significant negative impact on a Natura 2000 sites on their own or in combination with other plans/projects. Plans and projects that are considered as not likely to have significant negative effects on the integrity of the sites can be screened out without a need to conduct an appropriate assessment.[9293] Both screening and appropriate assessment should be carried out in view of the site-specific conservation objectives. These objectives may have not existed during the permit-granting procedure of the initial project or may have been revised since the permit was granted. Before authorisation, the authorities should therefore analyse the impact of the repowered installations in view of the relevant conservation objectives.

Similarly, according to the Water Framework Directive, new projects can only be authorised in case they (1) do not lead to deterioration of the status of any water body nor compromise the achievement of the WFD's objective, or (2) comply with all conditions of Article 4(7) (exemption to the first principle). Therefore, an assessment of the potential impacts of projects is generally needed to demonstrate that one of these two conditions are met.

Some Member States have introduced legislative or procedural changes which simplify the framework for repowering. **Italy** has introduced legislative changes for repowering projects, and no authorisation is required for modifications of wind turbines or their components which imply a size modification of no more than 15% of the initial size of the turbine. In **Germany**, legislation specifies that for the repowering of wind installations, only changes compared to the status quo have to be assessed. Public hearings are only required if the project developer requests it. **France** has also introduced requirements related to the EIA on the basis of thresholds for changes to the number and height of the turbines. If the increase in the number of turbines and tip height increases by no more than 10%, it is not considered a significant modification, and an EIA concerning impacts on noise and biodiversity is considered sufficient. In case the increase in the number of turbines and tip height exceed 50%, the modification is considered substantial, and a new EIA is required. In cases where the increase is between 10% and 50%, the competent authorities apply a case-by-case assessment, on the basis of e.g. comprehensive environmental monitoring and local acceptance. In **Denmark** renewable energy production plants are divided into three groups, based on capacity – less than 10 MW, 10-25 MW and above 25 MW. In case of changes to the capacity, including by repowering, a notification has to be made, or a new license has to be requested, depending on the capacity group into which the plant falls. Plants with capacity under 10 MW are exempted

[91] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.C_.2021.486.01.0001.01.ENG

[92] https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/EN_art_6_guide_jun_2019.pdf

[93] https://ec.europa.eu/environment/nature/natura2000/management/pdf/methodological-guidance_2021-10/EN.pdf

from the requirement to apply for a new license, while plants with capacity between 10-25 MW are exempted if the notify the Danish Energy Agency and the TSO before beginning the construction. For plants with capacity above 25 MW, a license is always required for repowering or any other changes to the capacity of the plant.

d. Hydrogen

The acceleration of renewable power generation is also important for providing decarbonised and affordable energy carriers to those sectors that will continue to rely on gases and fuels. In particular, the conversion of renewable electricity into renewable hydrogen through electrolysers will be an important pathway for our future energy system.

The conversion of renewable electricity into hydrogen, and the subsequent transport, storage and dispatch of hydrogen to the end-consumers will most likely encounter some of the same barriers as identified for renewable energy projects, such as the absence of enough and adequately skilled staff to process permit applications and the duration of administrative procedures. This is inherent to the nascent status of the hydrogen value chain and the lack of experience with related new, innovative technologies. Outdated or inexistent legislation at all levels of the administration for hydrogen production and use may result in confusing or inadequate permit-granting procedures. Some of these processes may be too complex, can vary between different countries or regions and often exceed the estimated timing for a permit response.

Relatively few experiences with developing hydrogen projects means that not all barriers may be known, and therefore exchanges of information through fora could be beneficial. Additionally, good practices to address these specific barriers may also emerge over time and be shared through these fora.

The Clean Hydrogen Alliance is currently working on a stakeholder-driven report on hydrogen project permit-related barriers which will derive some recommendations and best practices. Initial assessment of stakeholder feedback from the report suggests that having a single contact point could alleviate some of the complexity and streamline the permit-granting procedure particularly when numerous competent authorities are involved.

Prioritizing the implementation of hydrogen-related legislation would help to clarify the regulatory framework and its applicability, build expertise as concerns renewable hydrogen technologies and improve consistency and compliance with the existing environmental legislation. **Germany** introduced a framework regulating which authorisations are required for the repurposing of natural gas pipelines for the transport of hydrogen. In addition, Germany has regulated by law that existing contractual land-use rights for natural gas infrastructure must be interpreted as allowing the change from natural gas to hydrogen.

Further, guidance or manuals laying down the permit-granting procedures for renewable hydrogen production facilities would increase predictability and improve the efficiency of the overall process for all parties involved. **Portugal** already prepared such a guide for hydrogen projects.

Similar to renewable energy projects, spatial planning can be instrumental for the identification of suitable locations for the roll-out of electrolysers. On the basis of integrated network plans[94], dedicated areas could be designated for electrolysers. It could be a means to incentivize the roll-out of electrolysers at locations where they can play a role in avoiding or addressing electricity congestion and where they can bring higher societal benefit (e.g. by avoiding an increase in electricity network tariffs due to required grid reinforcements). Suggestions in this direction have been raised in a recent stakeholder consultation on hydrogen market regulation in **The Netherlands**.

e. Supporting innovation

Permit-granting procedures might also affect the future deployment of innovative decarbonisation technologies, including pilot and demonstration projects, that will be needed to reach climate neutrality. Considering the innovative nature of these technologies, there is less experience with the applicable authorisation procedures.

One of the potential avenues for supporting innovation, is by means of regulatory sandboxes. Regulatory sandboxes are frameworks which provide a structured context for experimentation to enable the testing of innovative technologies, products, services or approaches for a limited time and in a limited scope under regulatory supervision to ensure the appropriate safeguards[95]. They have already been used in the financial, banking and ICT sectors, but the use in the energy sector has so far been relatively limited. The rationale behind setting up a regulatory sandbox is to allow innovators to test new technologies and business models that may only partially be compatible with the existing legal and regulatory framework, and to allow regulators to familiarise themselves with particular innovations so that they can adapt the regulatory environment to accommodate them[96].

In **France**, regulatory sandboxes for the energy sector have been introduced in the legislation. The sandbox allows the national regulatory authority CRE to grant exemptions to the conditions of access to and use of networks for experimental deployment of innovative technologies or services supporting the energy transition, smart grids and infrastructures[97]. A number of projects were granted a derogation under this scheme, including a project aiming to increase the capacity of wind farms, derogating from the provisions of the French energy code limiting the installed capacity of production installations connected to a public electricity distribution network at high voltage.

In the **Netherlands**, the Ministry of Economic Affairs issued an executive order[98] on experiments with decentralised, sustainable electricity production, on the basis of which projects were authorised to set up a sandbox. The articles in the Electricity Act from which projects could be exempted were pre-defined, and only small entities such as energy

[94] As proposed under the hydrogen and gas markets decarbonisation package

[95] https://data.consilium.europa.eu/doc/document/ST-13026-2020-INIT/en/pdf (Council Conclusions on regulatory sandboxes)

[96] https://fsr.eui.eu/regulatory-sandboxes-in-the-energy-sector-the-what-the-who-and-the-how/

[97] https://www.cre.fr/en/Energetic-transition-and-technologic-innovation/regulatory-sandbox

[98] https://www.rvo.nl/subsidies-financiering/experimenten-elektriciteitswet-2015-2018

communities and homeowner associations were eligible. A follow-up executive order has been proposed that expands the scope, size and range of eligible entities for future sandboxes.

The **Austrian** Federal Ministry for Climate Protection, Environment, Mobility, Innovation and Technology is running a funding programme "Energie.Frei.Raum,"[99] which serves as a preparatory phase for a possible experimentation clause to test new market models for the system integration of renewable energy, storage and energy efficiency technologies.

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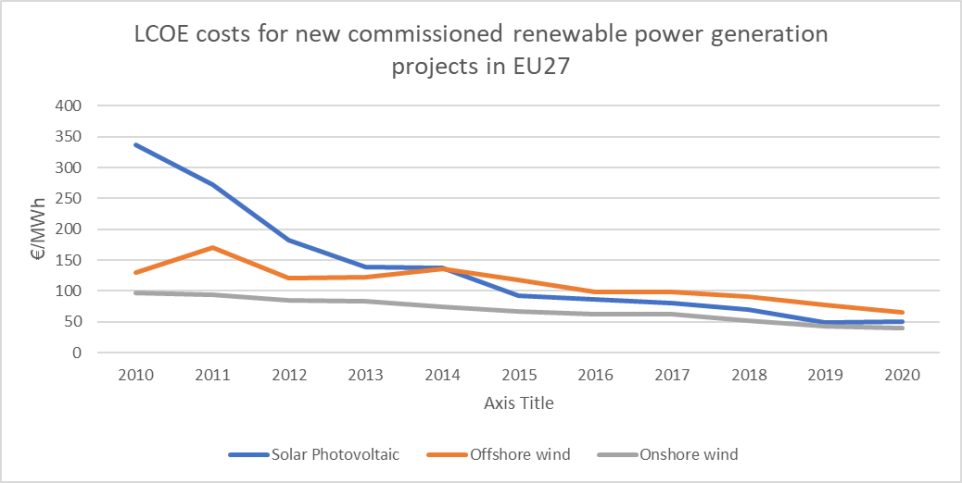
As the Member States have to present to the Commission a draft update of their latest notified integrated national energy and climate plan by 30 June 2023, the good practices set out in this guidance could serve for identifying policies and measures that the Member States could put forward with the aim of boosting the development of renewable energy.

[99] https://www.ffg.at/Energie.Frei.Raum

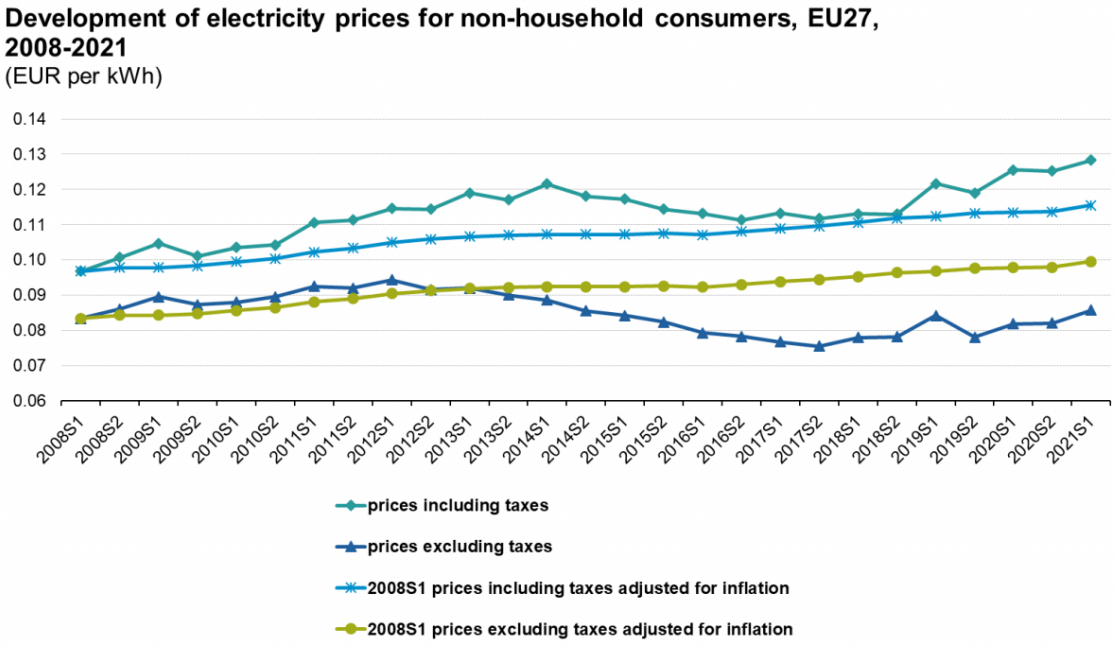
II. GUIDANCE TO THE MEMBER STATES ON FACILITATING RENEWABLE ENERGY PURCHASE AGREMEENTS

1. Introduction

Renewables deployment is increasingly becoming cost-competitive compared to fossil-based energy, with renewable power generation from hydropower, geothermal power, solar PV, onshore and offshore wind power producing at cost levels that are lower than the average European electricity prices for non-household consumers (see figures below).



Data: IRENA 2021



Data: Development of electricity prices for non-household consumers, based on Eurostat.

Based on the rapid decline of the costs of renewable energy, European corporates passed the threshold of 1 GW of contracted renewable power purchase agreements in 2016 which represented around 3.5% of the industrial electricity consumption. Since then, their volume grew exponentially – in 2021, it was over fifteen times higher than in 2016.

In its simplest form, a renewable power or a renewable heat purchase agreement is a purchase agreement between a renewable energy producer and a corporate off-taker. The corporate off-taker commits to the purchase of a specific volume of renewable energy at a predetermined price over a longer period. In most cases, the corporate off-taker will also receive the guarantee of origin that is issued for each unit of renewable energy produced within the EU. This way, the off-taker can show that its power, heat purchase or gas (including renewable hydrogen) agreement is directly contributing to a specific renewable energy asset. The vast majority of agreements to date of renewable power purchase agreements (PPAs) (see Figure 1).

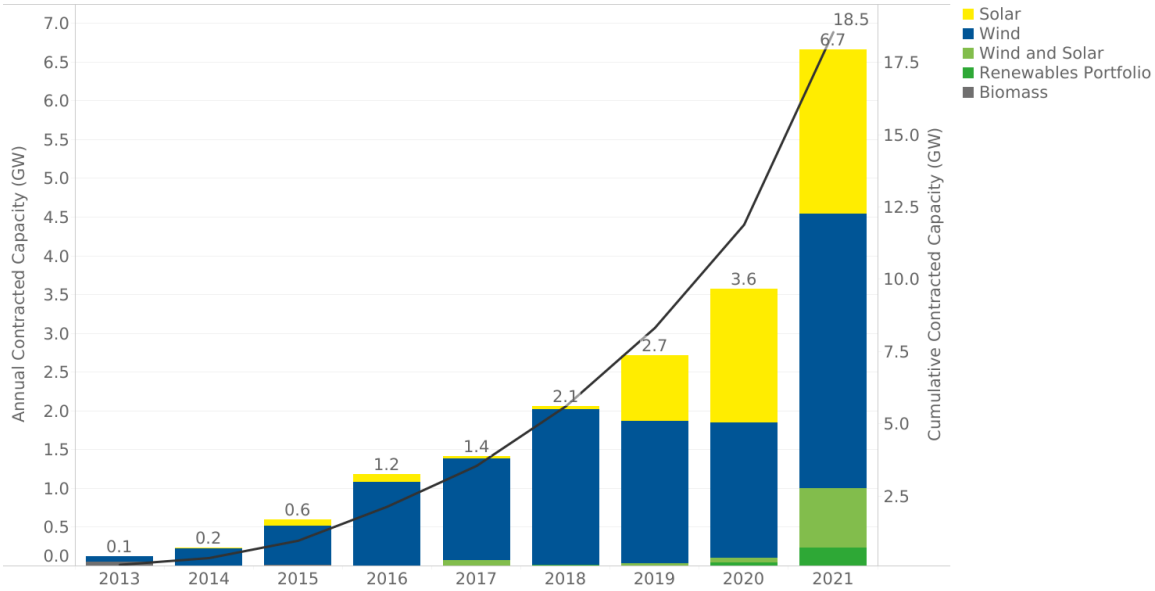


Figure 1 PPA Anouncements 2013-2021 (GW contracted capacity); Re-Source (2021) *https://resource-platform.eu/buyers-toolkit/*

The advantages of renewable power purchase agreements are manifold. In particular:

A. For corporate offtakers, renewable power purchase agreements provide cost-competitive electricity for their activities, and they can used as a hedging tool against electricity price risks from the wholesale market.

B. For corporate offakers, renewable power purchase agreements show commitment towards a green transition in a credible way, support their corporate social responsibility agenda, and help attract investors with green ambition.

C. For renewable projects developers, power purchase agreements provide an alternative and/or complementary source of stable income compared to public support schemes or merchant markets.

D. For governments, corporate power purchase agreements provide an alternative avenue to financing the deployment of renewables and can reduce public funding for renewables under support schemes.

Whilst the uptake of renewable power purchase agreements is growing year-on-year, the market share of renewable power purchase project is still only 15-20% of the annual deployment. Furthermore, renewable power purchase agreements are limited to certain Member States and large customer-facing companies. Finally, the majority of purchase agreements is limited to renewable electricity, even though 70% of industrial and commercial energy demand is heating.

2. Regulatory issues

In 2019, an EU-wide survey[100] was conducted as well as a detailed analysis of 10 Member States[101] to identify the key barriers for the uptake of corporate renewable PPAs. The results identified regulatory barriers, policy barriers, economic barriers, as well as awareness issues.

The main regulatory barriers included legal constraints to sign direct contracts between generators and off-takers, barriers to signing contracts with more than one supplier, and barriers to the transfer of Guarantees of Origin to the off-taker. Policy barriers included support schemes that were incompatible or competed with corporate PPAs, as well as limited visibility on the evolution of support schemes. Economic barriers included creditworthiness of off-takers, the variability of renewable electricity and the associated costs for managing volume imbalances between the renewable project output and corporate demand via 'sleeving contracts'. Furthermore, the transaction costs are still high and there is a lack of long-term hedging products to address imbalances or counterparty defaults. There is also still limited awareness and interest, especially for SMEs, as well as a perception that corporate PPAs are more expensive than wholesale electricity prices. In the public consultation, both producers and consumers raised the importance of issuing Guarantees of Origin for all renewable power generation, irrespectively of whether the project has been developed under public support schemes or not. Furthermore, they raised the importance of designing public support schemes in a way that is supportive and complementary to the development of renewable energy projects under corporate PPAs.

As a consequence, corporate PPAs are currently limited to specific Member States where the conditions are right for renewable power project developers to sell their electricity directly to end-consumers. Such supportive conditions include: 1) a vibrant market for renewable power projects, 2) liquid wholesale power markets to be able to sign 'sleeving contracts' as well as long-term hedging products, 3) no legal barriers to sign direct contracts between suppliers and consumers, and 4) public tenders that are complementary to or conducive to corporate PPAs.

The 2019 Electricity Market Directive, the Electricity Market Regulation and the Renewable Energy Directive already address a number of the regulatory and policy barriers. For example,

[100] Competitiveness of corporate sourcing of renewable energy. Annex C to part 2 of the study on the competitiveness of the renewable energy sector, Synopsis report: Online survey and interviews with EU stakeholders - Publications Office of the EU (europa.eu)

[101] Competitiveness of corporate sourcing of renewable energy. Annex B to part 2 of the study on the competitiveness of the renewable energy sector, Country overview - Publications Office of the EU (europa.eu)

the Electricity Market Directive requires that in all Member States generators and buyers can contract directly with each other, and that consumers can choose multiple supply contracts. Based on the Renewable Energy Directive, Member States need to provide long-term schedules regarding their public tenders, and are required to identify any barriers to corporate PPAs in their National Energy and Climate Plans, and put in place measures to facilitate their uptake. Only 8 Member States have reported on existing barriers and measures to support the uptake of renewable power purchase agreements. For most countries, however, there is not a clear framework for either renewable project developers or corporate consumers to set up direct power purchase agreements.

Despite existing barriers, the market for corporate PPAs is continuing to grow. Since 2020, Spain is the largest market for PPAs in the EU, representing 23% of the total contracted capacity[102] and the associated large-value financial transactions accounted for nearly 1% of the country's GDP[103]. In some Member States, for example Romania, corporate PPAs could not be signed until recently, because all electricity had to be sold on a centralised market. However, with a new decree opening up the possibilities for PPAs, the renewables pipeline could double compared to Romania's national energy and climate plan.[104]

PPAs are likely to become growingly attractive as 'business models' for renewables installations beyond the end of their support time. In 2021 the 2nd CEER paper on Unsupported Renewables has found that renewables PPAs are feasible alternatives for onshore wind and also for solar, biomass and hydropower installations.[105] This is important, because among the countries observed (members to CEER), 40% (114 GW) of currently supported RES will reach the end of their support time by 2030 and will either move towards market conditions or continue to be supported.

The Member States can facilitate the development of the PPAs through the following actions:

A. Use the EU's Technical Support Instrument[106] or other advisory or technical assistance to conduct a detailed assessment to support corporate renewable power purchase agreements. This has been done e.g. by Italy[107]. Other Member States could either conduct similar studies or replicate the findings of the studies already completed.

B. Announce an indicative volume of renewables deployment, which is expected to be financed through power purchase agreements. This provides visibility to renewable power project developers about the expected speed and avenues for project development. Such a step has been taken by Ireland[108].

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[102] According to RE-Source (2022), total contracted PPA capacity in Europe (including UK, Norway) is 18.5 GW of which Spain represents 23%.

[103] "Spain calls on EU to endorse renewable energy contracts for industry", EURACTIV.com, available at https://www.euractiv.com/section/energy-environment/news/spain-calls-on-eu-to-endorse-renewable-energy-contracts-for-industry/

[104] Aurore Energy Research, EEX (8th Dec. 2021) Romanian PPAs – A new growth potential for renewables.

[105] CEER(2021) C21-RES-75-05

[106] See more at https://ec.europa.eu/info/overview-funding-programmes/technical-support-instrument-tsi_en

[107] REFORM/SC2020/009, Support to elaborate the legislative and regulatory framework to promote Power Purchase Agreements in Italy

[108] The national energy and climate plan indicates that 15% of the electricity demand is expected to be met by renewable sources contracted under corporate PPAs.

C. Consider competitive tenders opening up the opportunity for renewable power project developers to take 'holidays'[109] from their public support schemes and sell their electricity through PPAs. Such an innovative measure has been introduced by Poland which contributed to making it the second largest market for PPAs in 2021.

D. Allow the issuing of Guarantees of Origin in public support schemes, so that the revenue from the Guarantees of Origin reduces the need for public financing.

3. Expanding the availability of corporate renewable purchase agreements to small- and medium-size enterprises

European markets for PPAs are dominated by large corporate off-takers[110]. A large number of these corporates are organised under RE100 corporate initiative which aims to source 100% renewables, including 58 companies headquartered in the EU. Most of these companies have predictable and large volumes of electricity consumption over long periods of time, and have good credit ratings. They are also often engaged in consumer-facing activities, and use renewable PPAs as an important instrument to brand their products and support corporate sustainable responsibility, which includes reducing greenhouse gas emissions of their energy consumption in the entire value chain. In this respect, CDP[111] compliant reporting allows companies to report on renewable energy produced by on-site installations, by off-site installations connected by direct lines, and by PPAs[112].

Large electro-intensive industries are also an important segment for corporate renewable PPAs. Historically, large aluminium smelters in Norway have been sourcing their electricity via hydropower power purchase agreements. More recently, they have also signed long-term wind power PPAs. Yet, the uptake among this type of offtakers has in the EU Member States has so far been limited.

One of the barriers that have been identified is the lack of predictability regarding the regulated component of the electricity prices (grid tariffs and taxes) [113]. Since these regulated components are a significant part of the electricity price by the off-taker, it reduces the attractiveness of PPAs as a long-term hedging tool for electricity price volatility. The Agency for the Cooperation of Energy Regulators (ACER) has issued an assessment report on the wholesale market design, which includes a dedicated section to discuss how foward liquidity in the wholesale electricity markets can be improved to ensure the availability of efficient hedging products.[114]

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[109] In the scheme, project developers need to indicate – as part of their bid – which years they want to take advantage of public support, and which years they would like to sell electricity onto the market or through power purchase agreements.

[110] E.g. Amazon, Microsoft, Google or BASF

[111] https://www.cdp.net/en

[112] C8.2f – Reporting on the consumption of purchased or acquired energy.

[113] Competitiveness of corporate sourcing of renewable energy. Annex A.2 to part 2 of the study on the competitiveness of the renewable energy sector, Case study: primary aluminium alcoa and norsk hydro - Publications Office of the EU (europa.eu)

[114] ACER's Final Assessment of the EU Wholesale Electricity Market Design, April 2022, available at https://www.acer.europa.eu/events-and-engagement/news/press-release-acer-publishes-its-final-assessment-eu-wholesale

In contrast, the barriers for small- and medium-size enterprises to engage in corporate PPAs are still very high. SMEs account for 99% of European businesses, 54% of EU's value added, and account for between 9 – 18% of gross inland consumption per Member State[115]. It is these small- and medium-size enterprises that often face high electricity bills due to low electricity consumption per facility, and which could benefit the most from renewable power purchase agreements. This is particularly relevant in the period from October 2021, when the electricity prices on the wholesale electricity market have been increasing.

Furthermore, they have limited visibility on their future electricity demand, lower credit ratings, and lower volumes of electricity consumption which makes managing imbalances more difficult. This makes SMEs more hesitant to sign long-term contracts, especially if there is no clarity on the potential impacts if long-term contracts need to be terminated. The impacts of signing long-term PPAs, both physically or virtually, on the company's balance sheet under the accounting framework for derivatives under the International Financial Reporting Standards (IFRS) is not always clear. The lack of awareness about corporate renewable PPAs is another important barrier for their uptake in medium- and small-size enterprises, and the complexity of negotiating PPAs acts as a soft barrier to those offtakers that do not have the experience or resources to deal with contract negotiations. European legislation has so far been limited to energy audits and energy management systems that address energy efficiency (EED, 2018). Finally, they have often limited space on-site to deploy renewable energy solutions.

Creditworthiness of an offtaker is another major barrier (and a risk factor) across most sectors. Debt providers to renewables projects continue to require strong credit rating in order to consider the PPA bankable. However, most small and medium-size enterprises are not rated by any major credit rating agency. Furthermore, creditworthiness and credit rating are also an issue for some companies in heavy industry and manufacturing, and in those European economies with a relatively less developed financial markets.

On the supply side, similar barriers exist. Large renewable project developers, such as Vattenfall, Eneco, Orsted, and Iberdrola, are dominating the market due to the fact that they have a large portfolio of projects and can provide more custom-made PPAs to the consumer. In this segment, large scale renewable power projects, such as offshore wind parks, sometimes face the challenge to find sufficient volumes of PPAs ahead of their final investment decisions. Small-scale renewable energy projects, on the other hand, face different challenges in entering the corporate PPA market, because of limited visibility, a limited portfolio of projects, and limited technical and legal expertise required to negotiate and sign PPAs. Similarly, renewable energy communities and citizen energy communities are often too small to sign economically attractive PPAs with large off-takers.

A small but growing segment of consultancy firms has started to offer solutions for small- and medium-size enterprises, such as the opportunity to aggregate demand over multiple consumers. The industry itself is also considering mechanisms to aggregate their demand to reduce risks and costs. For example, in **Greece** a number of electro-intensive industries are working on a "Green Pool" concept, whereby multiple companies pool their electricity demand. Subsequently, each industry partner signs one or more PPAs to meet its demand at aggregated level. To shape and firm the remaining electricity demand, a separate contract is

[115] https://leap4sme.eu/wp-content/uploads/2021/07/LEAP4SME-D2.1-SME-energy-and-economic-mapping-in-Europe.pdf

negotiated to reduce the overall costs to the participants. However, aggregating projects also adds additional costs and complexity to the closure of PPAs. Furthermore, some companies that are offering energy audits – as required under the Energy Efficiency Directive – are already expanding their services to include assessments of 'on-site', 'near-site', or 'off-site' renewable PPAs. Expanding energy audit services to include renewable PPAs is relatively cheap, since they rely on similar data that is already collected under energy management systems (ISO 500001).

The recent ACER report on EU Wholesale Electricity Market Design highlights the need to stimulate PPAs as well as improve access for smaller market participants. To address the economic barriers, the Commission and the EIB Group will explore whether dedicated financing and advisory mechanisms could be developed to support renewable purchase agreements. This may include mechanisms to facilitate better access to renewable purchase agreements for new off-takers such as SMEs. The InvestEU Programme[116] can already support finance for PPA investments. Member States could initiate similar guarantees to support local banks in their efforts to back renewable PPAs.

Also, the EU Sustainable Finance framework will incentivise renewable purchase agreements as well as increase awareness and interest in such agreements among non-financial and financial undertakings, contributing to re-orienting capital to sustainable investments. Its relevant elements include the EU Taxonomy Regulation, the first EU Taxonomy Climate Delegated Act[117] and the proposed Corporate Sustainability Reporting Directive (CSRD), which all contribute to increased transparency in financial and non-financial markets concerning sustainability. The EU Taxonomy sets out a framework to define environmentally sustainable economic activities and provides for disclosure requirements along certain key performance indicators for financial and non-financial undertakings. The related CSRD proposal extends the scope of reporting requirements of non-financial undertakings to include all large companies (whether they are listed or not) and includes listed SMEs[118]. The use of renewable purchase agreements will be an important instrument to demonstrate compliance with relevant technical screening criteria defined in the EU Taxonomy Climate Delegated Act and could be reflected by the key performance indicators under the EU Taxonomy Regulation, as appropriate.

Furthermore, the recently established European Corporate Covenant can be another avenue to raise awareness about the opportunities that exist for businesses signing renewable energy purchase agreements.

The Member States can facilitate the development of the renewable energy purchase agreements, particularly for SMEs, through the following actions:

A. Establish public platform to increase transparency on the price, volume, types and parties involved in signing renewable purchase agreements;

[116] As indicated explicitly in the Investment Guidelines for the InvestEU Fund (C(2021) 2633 final), supplementing Regulation (EU) 2021/523 (InvestEU Regulation).

[117] Commission Delegated Regulation (EU) 2021/2139, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R2139

[118] Listed micro-enterprises are excluded from this requirement.

B. Ensure implementation of the EU Taxonomy Regulation and its delegated acts and encourage its voluntary application beyond legislative requirements[119].

C. Flexible contracting for SMEs, including specific guidance for contract termination fees for small enterprises (Art. 12 of the Electricity Directive) ;

D. Enable multiple supply contracts, so that suppliers and buyers can contract directly with each other (Art. 4 of the Electricity directive)

E. Enable the development of on-site or near-site renewable projects that are developed under energy purchase agreements, especially if they are developed 'behind the meter' or through 'private wires';

F. De-risk renewable energy purchase agreements via credit guarantees or insurances supported by public financial resources, in line with the state aid guidelines.

G. Encourage national promotional banks and institutions to offer debt products for large scale renewable energy projects, including offshore wind, in markets where contracting sufficient volumes of renewable purchase agreements ahead of financial investment decisions is difficult given the size of the assets and the length of construction;

H. Set out regulatory conditions to allow energy communities to sell excess energy through renewable purchase agreements

I. Enable small business parks or industrial clusters to collectively purchase renewable energy through long-term purchase agreements.

4. Promoting cross-border renewable power purchase agreements

Renewable power generation accounted for 37% of all electricity consumption, and 21.2% of all energy consumption in 2020. Yet, there are large differences across Member States with the share of renewables in the electricity sector ranging from 9% to 78%. Similarly, the share of renewables in final energy consumption ranges from 10% to 60%.

Transforming the energy system towards a renewables-based energy supply will require to use the best renewables resources across the EU, and transport energy to where the demand is. The European Single Market allows businesses to purchase renewable electricity across the EU, whilst ensuring support for additional renewable power projects to be connected to the grid.

Already corporate users are taking advantage of renewable energy sources by signing:

1. physical cross-border PPAs,

2. virtual cross-border PPAs.

[119] A recent analysis shows that a large percentage of the companies are not reporting on the environmental sustainability of their economic activities yet.

In a physical cross-border PPA, the offtaker contracts with a renewable power generation asset in another country, and books physical or financial capacity rights on the relevant interconnectors to ensure a physical network connection. This entails risk and costs associated with the cross-border transfers. In a virtual cross-border PPA, the power producer sells the electricity into the local wholesale market, whilst the offtaker buys its electricity in a different local wholesale market. The contract between the power producer on the one side of the border, and the offtaker on the other side of the border consists of a financial settlement, whereby the power producer receives a payment from the local wholesale electricity market and a net-settlement against the PPA price agreed with the corporate buyer[120].

The advantages for offtakers are a greater access to low-cost renewable power projects across the EU, the ability to aggregate loads in different locations, and to meet a larger extent of their electricity. For renewable power project developers, cross-border PPAs allow access to markets with higher electricity prices and therefore higher willingness to pay for renewable power.

Besides cross-border PPAs within the European single electricity market, there are also opportunities to expand cross-border PPAs with third countries. A specific example is the collaboration between France, Germany, Portugal, Spain and Morocco, with the aim to analyse the options of cross-border PPAs between Morocco and EU Member States under the Sustainable Electricity Trade Roadmap[121]. A key requirement in that regard will be the establishment of a reliable, accurate and fraud resistant guarantees of origin system in the third countries with issuing bodies that are independent from production, trade and supply activities.

Despite the relative large differences in wholesale electricity prices and renewable power generation costs across the EU, the number of cross-border PPAs is still limited. One of the main barriers are the associated economic risks, due to the fact that suppliers and consumers are operating in different markets with different price developments and tax regimes, as well as the need to manage cross-border transmission price risk. Another barrier is the complexity of the contracts, especially if contracts need to adhere to local regulations that are not compatible. There are also administrative barriers associated with guarantees of origin, where the rules for the issuance, use and cancellation of guarantees of origin are not entirely harmonised across all Member States. This is particularly relevant for cross-border PPAs with countries that have not implemented a framework to issue guarantees of origin for supported renewable electricity generation. Finally, it is more difficult to explain the contribution of cross-border PPAs for corporate social responsibility purposes.

Despite these barriers, there are ongoing activities to support cross-border PPAs as they provide a unique opportunity and valuable tool to cover high shares or even all electricity consumption of a single off-taker from renewable power generation installations. The 2019 Electricity Market Directive and Electricity Regulations have increased the flexibility of the electricity market and the granularity of price formation which can help to enable cross-border

[120] WBCSD, 2020. Cross-border renewable PPAs in Europe. Available at https://www.wbcsd.org/contentwbc/download/10878/160801/1

[121] Signed at the COP22 in Morocco, see analysis: https://static1.squarespace.com/static/609a53264723031eccc12e99/t/60ec6e66dcef4a49b3a8c8da/1626107520287/Pursuing-Cross-Border-PPAs-Between-Morocco-and-EU.pdf

PPAs, and the Trans-European Network for Energy is supporting the development of a cross-border transmission infrastructure to open up and enable cross-border electricity flows.

In order to address the financial risk of cross-border PPAs, the Renewable Energy Financing Mechanisms can be used to facilitate a more cost-effective roll-out of renewables across the EU. The financing will be used for competitive tenders in all EU countries that are willing to host such projects. Private investors, including corporates, are able to contribute to the financing of these tenders, and may request the guarantees of origin for the energy production that corresponds to their contribution.

Additionally, the Renewable Energy Directive requires Member States to address local legal barriers to PPAs, and to harmonise the guarantees of origin on the basis of the revised standard CEN-CENELEC 16325, which will allow corporate PPAs to accompany the PPA contracts with the appropriate Guarantees of Origin across borders. Finally, new actors can be encouraged to step into the market to provide innovative solutions to assist the sourcing and contracting of cross-border PPAs in Europe, as well as new solutions to mitigate the risk and management challenges associated with corporate PPAs.

The Member States can facilitate the development of the cross-border PPAs through the following actions :

A. Where relevant and in line with TEN-E Regulation, strengthen interconnector capacity between EU Member States, as well as with third countries;

B. Opening-up existing networks to increased transmission capacity allocation;

C. Removing regulatory barriers affecting the transfer of guarantees of origin to off-takers and further harmonisation the rules for the use of guarantees of origin across countries;

D. Support the development of reliable, accurate and fraud-resistant guarantees of origin systems in third countries.