European University Institute
ROBERT SCHUMAN CENTRE FOR ADVANCED STUDIES

RSCAS POLICY PAPERS

RSC PP 2021/06
Robert Schuman Centre for Advanced Studies
Florence School of Regulation

An Optimal Strategy for Initiating and Efficiently Developing the Floating Offshore Wind Energy Sector in Greece

Dimitris Melissas and Nikolaos Vasilakos

European University Institute

Robert Schuman Centre for Advanced Studies

Florence School of Regulation

An Optimal Strategy for Initiating and Efficiently Developing the Floating Offshore Wind Energy Sector in Greece

Dimitris Melissas and Nikolaos Vasilakos

RSC Policy Paper 2021/06

ISSN 1830-1541

Published in May 2021 by the European University Institute.
Badia Fiesolana, via dei Roccettini 9
I – 50014 San Domenico di Fiesole (FI)
Italy

Robert Schuman Centre for Advanced Studies

The Robert Schuman Centre for Advanced Studies, created in 1992 and currently directed by Professor Brigid Laffan, aims to develop inter-disciplinary and comparative research on the major issues facing the process of European integration, European societies and Europe's place in 21st century global politics.

The Centre is home to a large post-doctoral programme and hosts major research programmes, projects and data sets, in addition to a range of working groups and ad hoc initiatives. The research agenda is organised around a set of core themes and is continuously evolving, reflecting the changing agenda of European integration, the expanding membership of the European Union, developments in Europe's neighbourhood and the wider world.

For more information: http://eui.eu/rscas

The **Policy Paper Series** of the Robert Schuman Centre for Advanced Studies complements its Working Papers Series. This series aims to disseminate the views of a person or a group on a particular policy matter, specifically in the field of European integration.

The European University Institute and the Robert Schuman Centre for Advanced Studies are not responsible for the proposals and opinions expressed by the author(s).

The aim of the Robert Schuman Centre for Advanced Studies is to contribute to the public debate by offering views and opinions on matters of general interest.

Florence School of Regulation

The Florence School of Regulation (FSR) is a partnership between the Robert Schuman Centre for Advanced Studies (RSC) at the European University Institute (EUI), the Council of the European Energy Regulators (CEER) and the Independent Regulators Group (IRG). Moreover, as part of the EUI, the FSR works closely with the European Commission.

The objectives of the FSR are to promote informed discussions on key policy issues, through workshops and seminars, to provide state-of-the-art training for practitioners (from European Commission, National Regulators and private companies), to produce analytical and empirical researches about regulated sectors, to network, and to exchange documents and ideas.

At present, its scope is focused on the regulation of Energy (electricity and gas markets), Communications & Media, and Transport.

This series of working papers aims at disseminating the work of scholars and practitioners on current regulatory issues.

For further information

Florence School of Regulation – Communications and Media, Robert Schuman Centre for Advanced Studies European University Institute Villa Raimondi, 121/111 Via Boccaccio, I-50133, Florence, Italy

email: FSR.ComsMedia@eui.eu

website: https://fsr.eui.eu/communications-media/

phone: +39 055.4685803

Abstract

The paper explores the current situation, prospects and developmental directions for the floating offshore wind energy sector in Europe, and in particular in the EU Mediterranean Region, with its prime focus on Greece. The intricate and rough seabed morphology, with steep changes in depth, of the Greek seas surrounding the mainland (both the Aegean and the Ionian) constitutes a key difference and distinguishing factor compared to the seabed found in Northern European countries, where most of the offshore wind farms are currently installed. As a result, the available marine areas in Greece suitable for fixed-bottom wind turbines are limited, despite the extremely high wind potential of the Greek seas. The evolution of the floating platform technology for mounting wind turbines can provide a significant boost to the exploitation of the offshore wind potential in Greece, bypassing the difficulties posed by its very complex seabed morphology.

Based on the particularities of the situation and the current lack of a national Maritime Spatial Planning, the paper discusses key strategic issues pertaining to floating offshore wind energy development in Greece and stresses the need for promptly formulating and applying a coherent, effective and efficient institutional and regulatory framework for this sector. The paper outlines in detail the main elements of such a framework, which has two distinct features: i) it is entirely based on existing environmental and spatial-planning legislation, and ii) it employs an "open door" licensing and project development model, at least for an initial phase of 3-5 years, until the aforementioned Maritime Spatial Planning is formulated, deliberated and legislated.

Keywords

Offshore wind energy, floating offshore wind, EU Mediterranean countries, offshore RES resource potential, floating offshore wind situation and prospects in Greece, development strategies, institutional and regulatory framework, marine spatial planning.

Summary

The present paper explores the current situation, prospects and developmental directions for the floating offshore wind energy sector in Europe, and in particular in the EU Mediterranean Region, with prime focus on Greece. The intricate and rough seabed morphology, with steep changes in depth, of the Greek seas surrounding the mainland (both the Aegean and the Ionian) constitutes a key difference and distinguishing factor compared to the seabed found in Northern European countries, where most of the offshore wind farms are currently installed. As a result, the available marine areas in Greece suitable for fixed-bottom wind turbines are limited, despite the very high wind potential of the Greek seas. The evolution of the floating platform technology for mounting wind turbines can provide a significant boost to the exploitation of the offshore wind potential in Greece, bypassing the difficulties posed by its complex seabed morphology.

Based on the particularities of the situation and the current lack of a national Maritime Spatial Planning, the paper discusses key strategic issues pertaining to floating offshore wind energy development in Greece and stresses the need for promptly formulating and applying a coherent, effective and efficient institutional and regulatory framework for this sector. The paper outlines in detail the main elements of such a framework, which has two (2) distinct features: a) it is entirely based on existing environmental and spatial planning legislation, and b) it employs an "open door" licensing and project development model, at least for an initial phase of 3-5 years, until the aforementioned Maritime Spatial Plan is formulated, extensively deliberated and legislated.

The proposed two-pillar approach is of vital importance for Greece's national economy, environment and local employment, as it will: a) enhance the legal certainty of the required and already planned investments in the floating offshore wind energy sector, b) strengthen the coherence of the country's general spatial planning, c) critically contribute to the acceleration of the installation and operation of the first offshore floating wind farms in Greece, and d) encourage the realisation of sound investments at the least possible cost for the public sector.

1. Introduction

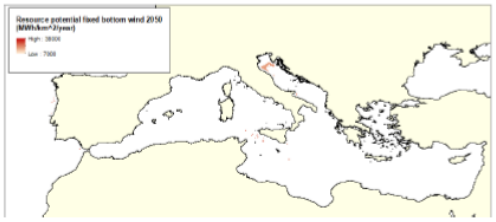
The installed offshore wind power capacity is rapidly increasing, worldwide, in recent years. At the European level, today this amounts to 12,000 MW and, according to recent European Commission estimates, Europe's installed offshore wind power capacity may reach 60,000 MW by 2030 and 300,000 MW by 2050. These highly ambitious European targets on offshore wind power require that certain important issues and challenges related to technology, engineering, infrastructure and networks, logistics and human resources must be dealt with, in an effective and efficient manner. The policies adopted on the European and national level, as well as the associated regulatory and administrative framework, are equally important factors, in order to ensure the rapid development of offshore renewable energy sources.

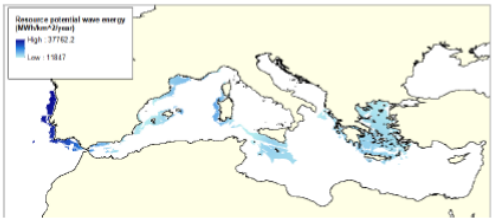
The vast majority of offshore wind farms today consist of fixed-bottom offshore wind turbines, installed in shallow waters, less than 50m in depth. After a decade of intensive development, interest is now mounting in the exploitation of the huge offshore wind potential found in deep-water sea areas. The innovative floating offshore wind technology is an attractive solution for the optimal utilisation of this potential, and provides effective solutions to a number of problems facing the fixed-bottom offshore wind turbines, such as techno-economic issues associated with foundations in deep water seas, and visual-disturbance concerns, which is a key issue for the offshore wind sector.

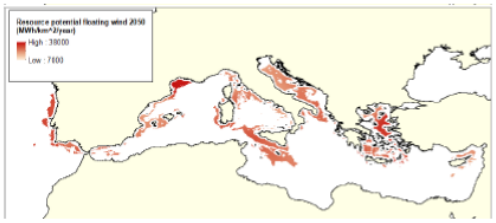
2. The current situation in Greece

The offshore wind energy potential, and in particular the floating wind potential of Greece, is impressive. According to a very recent study on the offshore grid potential in the Mediterranean region, prepared for the Directorate-General for Energy of the European Commission[1], Greece ranks second, next only to Italy, among the nine (9) EU Mediterranean countries, in terms of the annual technical resource potential for floating wind, both towards the 2030 and 2050 time horizons. More specifically, out of the 4583 TWh/a total floating wind potential in the entire EU Mediterranean region (2030), Greece possesses 840 TWh/a (18.3% of the total), compared to 1610 TWh/a of Italy and 581 TWh/a of Spain, which ranks third (see graph and table below). According to the same study, Greece can have 2.2 GW of offshore wind installed by 2030.

Annual technical offshore resource potential in the EU Mediterranean countries, in TWh/a







EEZ ID	Country	bottom-fixed wind potential 2030 [TWh/a]	bottom-fixed wind potential 2050 [TWh/a]	floating wind potential 2030 [TWh/a]	floating wind potential 2050 [TWh/a]	wave potential [TWh/a]	tidal potential [TWh/a]
1	Croatia	17.9	22.9	313.2	325.3	0.0	
2	Cyprus	0.0	0.0	109.7	128.1	0.0	
3	France	0.0	0.0	271.0	276.5	174.6	
4	Greece	0.0	0.0	840.3	858.4	1810.3	
5	Italy	24.2	31.9	1610.2	1662.9	623.6	0.1
6	Malta	1.4	1.4	430.5	440.4	341.0	
7	Portugal	1.9	1.9	427.3	436.3	887.9	
8	Slovenia	0.0	0.0	0.0	0.0	0.0	
9	Spain	1.0	1.1	580.5	594.0	660.8	22.0
	Total	46.3	59.2	4582.6	4722.0	4498.3	22.1

(***Source:*** *Navigant "Study on the offshore grid potential in the Mediterranean region", prepared for the Directorate General for Energy of the European Commission, Stakeholder Consultation, Brussels, 25/06/2020, p.9*)

It is noteworthy that all applications for offshore wind farms submitted so far in Greece (2010-present) concerned fixed-bottom foundation technology and, hence, maximum installation depths of 50m, within the Greek territorial waters (6 nautical miles). Nevertheless, the installation of fixed-bottom offshore wind farms in Greek territorial waters has limited potential, due to the "intense" morphology of the seabed, combined with the scarcity of sizeable sea areas of suitable depth (< 50m). Indeed, the Greek seas surrounding the mainland have a very complex and rough seabed morphology, with steep changes in depth. This is the case for both the Aegean and the Ionian Seas. Therefore, the morphology of the Greek seabed is the key difference and the distinguishing factor compared to the seabed found in the Northern European countries, where most of the offshore wind farms are currently installed. As a result of the aforementioned morphology of the Greek seabed, the available marine areas suitable for wind turbine installation using fixed-bottom foundations are limited, despite the, above mentioned, very high wind potential of the Greek seas. The evolution of the floating platform technology for mounting wind turbines should provide a significant boost to the exploitation of the offshore wind potential in Greece, bypassing the difficulties posed by the complex seabed morphology[2].

Floating offshore wind farms do not depend on specific water depths and, therefore, they provide an advantage, as the offshore areas available for their installation are significantly expanded, especially in countries with limited areas of shallow waters, such as Greece. Moreover, they provide an efficient solution to the increasing scarcity of available, suitable areas onshore. Floating wind turbines are

installed away from the shore and from inhabited areas, resulting in reduced visual disturbance and easier co-existence with other sea uses, such as fishing and shipping. They offer an improved exploitation of the stronger and more stable wind potential found at greater depths, eliminating the ground morphology impact experienced in onshore wind development. This leads to reduced swirling and, therefore, to improved utilisation of the available energy, as well as to a significant reduction in the fatigue loads experienced by offshore wind turbines.

3. Strategic issues pertaining to floating wind development in Greece

Formulating, legislating and applying an integrated, coherent, effective and efficient institutional and regulatory framework for the development of floating offshore wind farms in Greece is an issue of vital importance for the national economy, the environment and the local employment. This framework must, on the one hand, provide the necessary legal certainty for investment in a dynamic and, at the same time, technologically and economically continuously evolving field, and, on the other, it must incorporate the lessons learned (and avoid the mistakes made) during the failed first attempt of the Greek State to launch the development of marine wind farms in the country, in the 2010-2012 period.

Moreover, the progressive saturation of viable RES sites on the Greek mainland, primarily for wind, will necessitate for a sizeable portion of the new RES electricity capacity, projected by the National Energy and Climate Plan (NECP) for 2030 (8.5-9 GW), to be developed offshore, as near-shore or floating wind parks in the Aegean and Ionian Seas. The prospects of significant growth of the offshore floating wind sector in Greece, especially in the second half of the coming decade, is of particular importance for the country, due to the multiple advantages and the high added value that this sector can bring to the Greek economy (very favourable wind and wave characteristics, activation of the local manufacturing/assembly/installation potential, such as island shipyards for the construction of the floating platforms, installation of the electric substations on rock islets, manufacturing of dedicated subsea cables, etc.)[3].

As already mentioned, the first attempt of the Greek State to launch the development of offshore wind farms in the country (2010-2012) failed completely, due to the adoption of a statist development model ("The State does it all"), which was bureaucratic, inflexible, time-consuming and, ultimately, too expensive for the public sector. This statist model led, inevitably and quickly, to a complete standstill of the offshore wind sector for an entire decade, with zero investments, despite the considerable interest and the large number of project applications that were submitted at that time, by strong national and international investors. This failure deprived the national economy from a high added-value and dynamic green-productivity sector, at the very same period when there was a booming development of offshore wind in the rest of the world.

It should be clear that fixed-bottom wind farms and floating wind farms stand at very different maturity levels, from an institutional, technical/technological and economic standpoint, where floating wind farms are still at an advanced but, nonetheless, essentially demonstration stage, and still associated with numerous technical and financial risks. Therefore, for the fast and efficient development of floating wind farms, the private sector should be given the opportunity, at their own responsibility, expenses and time, to conduct the necessary surveys and measurements, by launching buoys and carrying out the required research, studies and project viability planning. This is a process that could only be to the benefit of the State, especially in countries such as Greece, where there is currently neither the legislative, regulatory and space planning framework, nor the required studies, data and measurements, for initiating offshore energy investments.

Possible adoption of "open tender" procedures, at the very early stage of conducting measurements/studies and exploring the initial viability of a potential floating wind project (an early stage which is difficult, cumbersome, time-consuming and costly) will excessively delay the entire process. This is so because it will require from the State to take over and perform all necessary operations

at sea (studies, surveys, measurements, marine space planning, etc.), so that the sea areas concerned can be delivered free of any incompatibilities and conflicts of uses (with regard to fishing, shipping, underwater antiquities, *Posidonia oceanica,* etc.). In Greece, such a procedure will require, even with the most optimistic estimates, at least 3-4 years to complete[4].

4. Main elements of the proposed institutional and regulatory framework for floating offshore wind in Greece

Based on the preceding analysis, we propose the following main elements and stages of a coherent and investment-friendly institutional framework, designed to effect the rapid and efficient development of the floating wind sector in Greece:

- Floating offshore wind farms shall be installed in the so-called Areas of Organised Development of Productive Activities (in Greek, POAPD), as set out in Article 10 of Greek Law 2742/1999, and shall take the form of Areas of Organised Development of Floating Offshore Wind Farms (in Greek, POAPAP), according to the provisions of Article 24 of Law 1650/1986, as amended and in force by Article 10 of Law 2742/1999. The spatial-planning tool of the POAPD has already been tested, successfully, in offshore and coastal areas, for the development of areas of organised aquaculture activities. Any POAPAP shall be located at a distance of at least 3km from the coast, so as to minimise any visual disturbance issues, and up to 11km from it, i.e. within the territorial sea waters.
- For an area to be declared and delineated as POAPAP, an application must be submitted to the Ministry of Environment and Energy, by a public or a private POAPAP-establishing/managing entity. The documentation accompanying the application, the type and contents of the application, the time and stages of completion of the application procedure and any other detail required to implement it, shall be defined by a decision of the Minister of Environment and Energy. The POAPAP establishes the exact location of a floating wind farm, the sea area it occupies and the maximum installed power capacity, as well as any land area necessary for the operation of the floating wind farm (i.e. for erecting the required electric substations, etc.).
- In order to designate a specific sea area as a POAPAP Wider Investigation Area, a pre-approval procedure shall be followed, as set out in Article 8(1e) of Law 4447/2016, as amended and in force by Article 11 of Law 4759/2020. The pre-approval shall be granted by a decision of the Minister of Environment and Energy, following: a) the submission of a pre-approval application by the POAPAP-implementing entity, b) the opinion/proposal of the Directorate of Spatial Planning of the Ministry of Environment and Energy, and c) the consent of the Central State Council for Urban Planning Issues and Disputes. The proposal of the Directorate of Spatial Planning of the Ministry of Environment and Energy shall take into consideration the opinion of a) the Directorate of Navigational Safety of the General Secretariat for Navigational Safety of the Ministry of Civil Protection, b) the Civil Aviation Authority and c) the Hellenic National Defence General Staff, all in relation to the possible obstruction of the activities and operations under their competence, as well as d) the opinion of the competent Ephorate of Underwater Antiquities. The opinions of the aforementioned competent authorities shall be granted within a mandatory time-limit of two (2) months from the date the relevant documentation is forwarded to them. The pre-approval decision will be issued within seven (7) business days from the consent of the Central State Council for Urban Planning Issues and Disputes, and will provide the authorisation to launch a measurement buoy and carry out the necessary surveys and measurements, in order to investigate all relevant parameters in terms of the precise location and viability of the floating wind project. The requested and pre-approved area will be reserved for research for a period of 18-24 months, with a possibility for a 12-month extension, following a justified request.
- The pre-approval application shall be accompanied by a technical report, including, as a minimum:

    a) The main characteristics of the POAPAP establishing and managing entity;

b) The approximate location of the maritime wind farms, at a minimum distance of 3km from the shore, the total sea area required for the wind farm development and the maximum targeted installed power. The wind farm's location will be determined based on the constraints posed by the current Special Framework for the Spatial Planning and Sustainable Development of Renewable Energy Sources in Greece;

c) A proposal for the spatial destination of the intervention area;

d) The directions of the applicable spatial planning;

e) A preliminary assessment of the impact on the landscape and the environmental impact in relation to special areas of ecological or productivity importance, such as aquaculture farms, designated sea parks or underwater parks, as well as Natura 2000 protected areas, Important Bird Areas (IBA) of Greece and *Posidonia oceanica*;

f) The required provisions of Article 10 of the Special Framework for the Spatial Planning and Sustainable Development of Renewable Energy Sources in Greece; and

g) In general, any information necessary to document the spatial development proposal, including the relevant maps -current state and proposed state- at a 1:5000 scale.

- The Central State Council for Urban Planning Issues and Disputes, in the context of the pre-approval procedure, comes together at least six (6) times per year, in ordinary meetings, with the sole purpose of issuing an opinion on the submitted pre-approval applications, and as many times as required in extraordinary meetings, to ensure that the pre-approval application procedure is mandatorily completed within six (6) months from the initial filing. The pre-approval decision from the Minister of Environment and Energy accepts, in principle, the establishment of an electricity generation project, due to its limited environmental impact and disturbance. The overall impact of the project, the terms and conditions/counter-measures will be considered during the final approval stage.
- Once the decision of the Minister of Environment and Energy is issued, granting the pre-approval to the floating wind project under consideration, the developer is obliged a) to pay an annual fee for the use of the pre-approved offshore area, for the entire period of investigation, and b) to submit a bank guarantee, as collateral against any environmental rehabilitation that may be required after carrying out the necessary surveys and measurements. The amount of the fee and of the bank guarantee, as well as its validity period and any other relevant detail, shall be determined by a decision of the Minister of Environment and Energy.
- Then, the project developer starts the necessary research surveys and measurements at sea, and initiates the procedure of carrying out a Strategic Environmental Impact Assessment, considering, in particular: a) the protection of the natural and underwater cultural heritage and its general ecosystems, focusing on the sustainability of marine life and birdlife, b) the national security, c) the prioritised energy sufficiency of the islands, and d) the safety of sea transport. The deliberation process for the Strategic Environmental Impact Study and for the POAPAP itself is common to both. The POAPAP is approved by a Presidential Decree issued on the recommendation of the Minister of Environment and Energy and the Ministers of Finance, Maritime Affairs and Insular Policy, Foreign Affairs and National Defence, following the opinion of the Central State Council for Urban Planning Issues and Disputes. The relevant Strategic Environmental Impact Study is approved by the same Presidential Decree.
- Once the Presidential Decree on the PAOPAP is issued, the project enters the stage of energy and environmental licensing, where the first step is to submit an application for a Special Project Electricity Producer Certificate to the Regulatory Authority for Energy (RAE), which is reviewed by absolute time priority, outside of the regular submission cycles.
- Once the Special Project Electricity Producer Certificate is granted, the developer of the floating wind farm project proceeds to file an application to obtain a final and binding electricity-

connection bid from the competent Power System Operator, which must be provided within two (2) months from application.

- With regard to the construction and operation of any floating wind farm, its developer must follow and adhere to the standard procedure of approval of the project's Environmental Terms and Conditions, according to the detailed provisions of Law 4014/2011 and Law 1650/1986, as in force.
- Afterwards, a competitive bidding process is initiated by the Greek State for RES power plants, in order to secure a selling price for their RES electricity, through a support scheme in the form of operating aid, as set out in Article 7 of Law 4414/2016.
- The operating license of the floating wind farms is granted by the Minister of the Environment and Energy to the project owner, in accordance with the procedure outlined in Article 8(11) and (12) of Law 3468/2006, as in force.

5. Analysis of certain key issues of the proposed institutional framework

A question that is reasonably raised in the current public debate to give offshore wind a second chance in Greece, is whether the development of the POAPAP by the private sector will offer greater legal certainty than the alternative option, namely development entirely by the State. At this point, it should be noted that the designation of sea areas as POAPAP, as well as the proposed floating wind farm pre-approval procedure, is a necessary substitute for the complete lack of Maritime Spatial Planning in the country. Once this Maritime Spatial Planning is carried out, deliberated, legislated and applied in practice, within the next few years (most probably, in the 2025-2030 time horizon), it will regulate both the sea polygons, where the offshore wind farms are established and, most importantly, any conflicts with competitive uses in the relevant sea area (tourism, leisure, shipping, fishing, national defence, etc.). Therefore, the degree of legal certainty is the same for both options.

Another important issue is the requirement, set in this paper, for a minimum 3km distance from the shore, for the establishment of floating wind farms. This requirement of the institutional framework that we propose, is mainly aimed at mitigating the serious political and social tensions created by the installation and operation of wind farms a) onshore, b) on the coastal mainland and c) on the islands of Greece. In those cases, the aesthetic changes to the landscape, brought about by the installation and operation of wind turbines, lie in the core of the intensifying public debate and heated local reactions. Since it is possible to establish a relatively longer distance from shore for floating offshore wind, we propose a minimum distance of 3km from the coastline, which is a distance also in line with the existing constraints of the general spatial planning framework. Even though floating offshore wind farms are expected to have less environmental impact during installation, compared to the fixed-bottom (offshore) ones, maintaining a distance of 3km constitutes, in our opinion, an important proactive measure to protect sensitive habitat types at sea.

Supporting our choice, is the preliminary assessment, results and proposals made in the context of an initiative, undertaken by the Ministry of Environment and Energy back in 2010, regarding the formulation of a National Development Programme (NDP) of Offshore Wind Farms (OWF). Although such a programme was never completed, nor applied, it did provide some general spatial guidelines for sea areas suitable for the installation of offshore wind farms, based on criteria related to the turbines visibility and their impact on the landscape. These guidelines proposed a 3km minimum distance from the coast of the offshore wind turbines (for the six OWF zones close to the Aegean and Ionian islands of Ai Stratis, Kymi, Petalioi, Karpathos, Lefkada and Othonoi), whereas for the other six OWF zone areas (Alexandroupoli, Samothrace, Fanari, Thasos, North Limnos and South Limnos) a minimum distance of 6km from the coast was proposed, due to the relatively larger size of these particular OWF zones and the spatial flexibility they provided to increase the distance of the offshore wind turbines from the shore. When the National Maritime Spatial Planning will be completed, in the next few years, each

individual sea zone will be reviewed according to its special characteristics, and shorter distances may be proposed, for example in cases of ragged, uninhabited coastlines.

Lastly, it should be noted that laying down criteria to ensure the public interest, such as to prevent a "plethora" or "congestion" of applications in one particular sea area, as well as to ensure conditions of transparency and fair competition, is, to a large extent, a political decision. In any event, suitable criteria may be adopted in relation to the proposed POAPAP procedure, which the investors requesting a first-stage pre-approval and/or a second-stage participation in a price-bidding auction for floating offshore wind farms, should meet. Such criteria, to ensure their competence and previous experience in the sector, may include:

- Financial guarantees provided by the applicants/bidders upon signing of the concession agreement for the construction and connection of the floating offshore wind farm to the grid.
- Substantial, fully documented, relevant experience by the applicants in the construction and operation of offshore wind farm projects, where at least one of these projects should involve a floating offshore wind farm, commissioned in the last 5 years. Moreover, applicants/bidders should have similar experience with subsea grid connection projects, associated with wind farms.
- A minimum annual turnover.
- An equity participation of 20% or more.

A plethora of applications for a specific sea area, or, simply put, an application "congestion", may also be avoided by establishing certain time constraints and financial requirements for the private or public entity submitting the application. More specifically, within a pre-set, limited time period, from the time the applicant is granted the pre-approval, it is obliged to carry out specialised, full-cost sea measurements and surveys. Otherwise, it will lose this right. Moreover, the applicant is obliged to pay an annual fee for the use of the relevant sea area, for the entire duration the area is reserved, and to submit a bank guarantee, as collateral against any environmental rehabilitation that may be required after carrying out the necessary surveys.

Transparency and fair competition are ensured by launching an open tender for the quantity and the selling price of the electricity produced by the offshore (floating) wind farms. In all these procedures associated with floating wind, the economic added value for the country is clearly enhanced, since specialised measurements, surveys and studies are required throughout the process of the POAPAP approval, which, most probably, will be carried out by Greek companies and engineering firms. At the same time, this process will act as a catalyst and will promote the development of relevant equipment and production infrastructure at the Greek ports and shipyards. In fact, it should be noted that the installation and operation of floating wind farms will provide an opportunity for the Greek companies to undertake a lot of the main and auxiliary manufacturing and construction works, such as the construction of the floats, or even the wind turbines at the shipyards, the manufacturing of the undersea interconnection cables and the construction of all the required civil engineering and electromechanical infrastructure/works in the coastal areas, and/or on small uninhabited islets.

6. Conclusion

The installation of floating offshore wind farms inside the national territorial waters is a top energy and geopolitical priority for Greece, in order to, on the one hand, implement the European Union Strategy for utilising the great potential of offshore renewable energy sources and, on the other hand, achieve the ambitious targets of the National Energy and Climate Plan (NECP)[3,5]. To this end, it is vital to integrate the institutional and regulatory framework design for floating offshore wind farms into the existing environmental and spatial-planning legislation, as this will: a) enhance the legal certainty of the required and already planned investments, b) strengthen the coherence of the country's general spatial planning,

c) critically contribute to the acceleration of the installation and operation of floating offshore wind farms, and d) encourage the realisation of safe investments at the least possible cost for the public sector.

References

1. Navigant "Study on the offshore grid potential in the Mediterranean region", prepared for the Directorate General for Energy of the European Commission, i) 2nd Interim Report, 17/06/2020; ii) Stakeholder Consultation, Brussels, 25/06/2020.

2. Dimitris Melissas "Floating Offshore Wind Parks – A proposal for an institutional framework for safe investments at the least possible public cost", Sakkoula Publications, January 2021.

3. Nikolaos Vasilakos "Energy transition challenges and development priorities for the Greek energy sector in the coming decade", Renewable Energy Law & Policy Review 9 (3), 32-38 (2019).

4. Dimitris Melissas and Nikolaos Vasilakos "The strategy for the development of floating offshore wind parks", article in the Greek newspaper "To Vima", Sunday, April 4, 2021, p. B10 (38).

5. Nikolaos Vasilakos "A no-regrets strategy towards 2030 Smart Sector Integration", Florence School of Regulation (FSR)/RSCAS Paper Series, July 2020, pp. 1-7.

Author contacts:

Dimitris Melissas
National Technical University of Athens (NTUA)
Athens, Greece

Email: melissasdimitris@gmail.com

Nikolaos Vasilakos
European Renewable Energies Federation (EREF)
Brussels, Belgium

Email: npvenergy@gmail.com


With the support of the Erasmus+ Programme of the European Union

The European Commission supports the EUI through the European Union budget. This publication reflects the views only of the author(s), and the Commission cannot be held responsible for any use which may be made of the information contained therein.