## Foundation for Sustainable Energy





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# Polish Offshore Wind Energy and Maritime Industry Development Programme

### executive summary

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### Introduction

The discussion on the justness of the development of offshore wind energy (OWE) in Poland has been carried out for years. Decisions about the development of OWE are not easy due to the innovative nature of technology, high investment costs and long time and high risk involved in the execution of such investments. On the other hand, very high efficiency and stability of this low-emission renewable energy generation, considerably low operating costs and low social and environmental interference make this branch of industry one of the fastest growing in the European energy sector. **However, the most important reason for the development of offshore wind energy market is its direct connection with the offshore industry. Production of components for offshore wind power plants and vessels necessary for their construction and maintenance in shipyards and services provided by seaports are today a major stimulus driving the process of modernisation and growth of the European - and also the Polish - offshore industry.** 

The development of Polish coastal regions depends strongly on the condition of the domestic offshore industry. Failure to develop offshore wind energy in Polish maritime areas would be detrimental to the economy and the societies of those regions. Especially, if the Polish shipyards have already taken the serious effort and invested in the preparation and development of production facilities for foundations, towers and transport and construction platforms for offshore wind power plants.

In 2009-2011 the Polish Government and Parliament successfully implemented a new system of issuing location decisions for offshore wind farms in the Polish exclusive economic zone, after recognising the justness of the development of offshore wind energy and industry in Poland. Thanks to that solution there are several projects already in the phase of development and their value exceeds PLN 30 billion. Those projects may supply the Polish energy system with 2.2 GW of installed capacity of emission-free, renewable energy sources.

Today, in the context of the economic crisis, the essential question must be asked: how to develop offshore wind energy in order to gain maximum economic benefits and to involve minimum social costs, in particular due to the increase of electric energy prices?

A possible answer to the question may be found in the "**Polish offshore wind energy and maritime industry development programme**", which was elaborated by the experts of the Foundation for Sustainable Energy in cooperation with Ernst & Young.

The mentioned Programme demonstrates an optimum - from the economic, social and environmental perspectives - scenario for the development of offshore wind energy and industry, assuming the installation of 6 GW of capacity in offshore wind farms up to 2030, out of which 1 GW should be installed up to 2020 and the following 2 GW up to 2025.

Such a share of OWE in the national power system will not only increase in a sustainable manner the diversification of energy sources and also decrease the amount of emissions generated by our national economy, but it will become the driving force behind the development of the coastal regions.

Execution of the investments in OWF in Polish maritime areas may contribute to the development of Polish economy with an added value in the amount of PLN 81 billion up to 2030 and ca. 25,000 new jobs. The majority of new employment opportunities (ca. 85%) will be associated with the offshore industry.

The Programme assumes not only very ambitious investment plant, but also a strong regime in the reduction of investment and operating costs related to the development of offshore wind farms, what is compliant with the European tendency in creating the policy for this sector.

- **Investment costs (CAPEX) should be reduced by ca. 25%** in relation to the estimated data for 2012.
- **Operating costs (OPEX) should be reduced by ca. 24%** in relation to the values estimated in 2013.

This will allow for the reduction of a unit cost of energy generation by about 23%.

Hence, the value of the support for offshore wind farms would be reduced by 50% in the years 2014-2025. It should be also note that the system costs related to the support mechanism will occur only after 2020, when the first OWF are commissioned.

**The development of the domestic production, logistics and service facilities, based on the national potential of our shipyards and ports** will be the basic tool for the optimisation of costs. Major production and logistics centre should be located in Szczecin and Świnoujście. The operation and maintenance centres - in Darłowo and Ustka. The centres in Gdynia and Gdańsk will also play a vital role in terms of the production of components and vessels for the construction of offshore wind farms and the ports in Wejherowo and on the Hel Peninsula - in terms of maintenance and service.

A crucial factor for the optimisation of costs will also be the **construction of an offshore transmission grid**, connecting the Main Power Supply Station (*Główny Punkt Zasilania - "GPZ"*) in Słupsk-Wierzbięcino with GPZ Żarnowiec, what will allow for the creation of a connection point (hub) for OWF in maritime areas.

To sum up, we can state that the benefits associated with the development of offshore wind farms in Poland will several times exceed the costs related to the creation of appropriate conditions for their development. The scale of benefits (and the surplus over the costs) directly depends on the scale of development of the OWF sector in Poland. This results, in particular, from the fact that in case of the development of the sector up to the level of ca. 6 GW of installed capacity, the proportion of capital expenditures associated with the construction of OWF, which will be the revenue of Polish companies and it will contribute to the economic development of Poland, will be considerably larger. A smaller quantitative goal will make the investments in the production capacity of the Polish offshore industry unprofitable, and the delivery of components for OWF and the services related to the construction will be executed by foreign companies and on foreign markers - in particular in Germany, Sweden and Denmark, instead of Poland.

Therefore, from an economic point of view, it should be acknowledged that the support mechanism for offshore wind farms is an investment, which in the 2030 perspective will bring benefits to the Polish economy and may even contribute to the creation of a new economic sector in Poland, which will provide the increase of GDP and general employment, especially in the coastal regions.

This Programme was created due to the expectations of many political, business, scientific and non-governmental groups, what was explicitly stated during the conference: "Offshore wind energy - the driving force behind the development of maritime regions and industry" which took place in Słupsk, in January, 2013. This Programme will be subject to wide political, business and social consultations. Nevertheless, the implementation of this Programme will depend on certain political decisions.

### Non-specialist summary

### Chapter I

### The potential of development of offshore wind farms in Polish maritime areas

In this chapter a thorough analysis of the potential of offshore wind energy in Polish maritime areas was carried out along with the analysis of the domestic offshore industry in terms of providing delivery, logistics, maintenance and service facilities for the offshore wind energy sector.

The **theoretical potential** was determined on the basis of the availability of locations for OWF projects, wind conditions and the maximum possible productivity of OWF. The said potential was estimated at the level of **12 GW of installed capacity and 48-56 TWh of energy per annum.** 

The theoretical potential was then confronted with the following conditions: chances for the connection to the grid, national power system conditions, possibilities associated with the delivery and logistics facilities and available staff. On this basis the **technical potential** was determined, showing that there is a possibility to construct up to **7,4 GW by 2030**.

Technical potential was then verified in terms of the most important market conditions. The verification covered the limitations resulting from the optimisation of costs and organisational matters, both from the perspective of investors and the state. The analysis lead to the conclusion that the **market potential should reach the level** of 6 GW in 2030.

### Chapter II

### Programme objectives

In the second chapter the quantitative and qualitative objectives were determined in relation to both - the target capacity of offshore wind farms to be constructed in the Polish maritime areas and the production of construction elements by the Polish offshore industry.

### Quantitative objectives:

I phase of market development - up to 2020: 1 GW of installed capacity and facilities providing:

- deliveries of supporting structures for the European market: 500-600 items and for the domestic market: 150-200 items,
- fixed area of ca. 30 ha for storage and assembly in seaports for the OWF components.

II phase - up to 2025: 3 GW of installed capacity and facilities providing:

- deliveries of supporting structures for the European market: 1000 items and for the domestic market: 300-400 items,
- delivery of 200 km of seabed cables,
- fixed area of ca. 50 ha for storage and assembly in seaports for the OWF components.

**III phase - up to 2030: 6 GW** of installed capacity and facilities providing:

- deliveries of supporting structures for the European market: 1500 items and for the domestic market: 500-600 items,
- deliveries of wind turbines for the domestic market: 500 items and for the European market: 500 items,
- delivery of 400 km of seabed cables,
- fixed area of ca. 80 ha for storage and assembly in seaports for the OWF components.

### Cost optimisation objectives:

The economic conditions, which must be met in order to achieve the quantitative objectives, were also specified.

As an objective in terms of the **reduction of investment costs** ("CAPEX") in the **2025 perspective the reduction by ca. 25%** was assumed in relation to the unit costs in comparison to the costs valid for 2012 - from PLN 14.7 million per MW to PLN 10.9 million per MW.

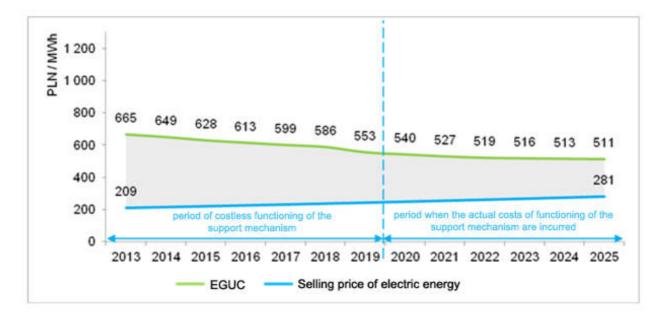
As for the **operating costs** ("OPEX") **the reduction should reach ca. 24%** in comparison to the estimated costs for 2013 in the 2025 perspective, *i.e.* from **250,000.00 PLN/MW to 190,000.00 PLN/MW**.

The reduction objective related to the **decrease of unit cost of energy generated** by OWF by 2025, in comparison to the estimated values for 2013, should reach 23% of costs, *i.e.* from 665.00 PLN/WMh to 551.00 PLN/MWh.

On the basis of investment and operating costs estimations for OWF constructed and exploited on foreign markets, in comparison to the Polish location and wind conditions and taking into account the reduction of CAPEX and OPEX assumed in the Programme and resulting from the accepted forecast of the development of OWF market and from the 'learning curve', it can be estimated that in order to provide the profitability of OWF in Polish maritime areas the **level of support for offshore wind farms could be reduced by 50% in 2014-2025** and it should be determined at the following levels in the new mechanism:

- 1. from **456 PLN/MWh** (with the productivity of 45%<sup>1</sup>) up to 600 PLN/MWh (with the productivity of 35%) **in 2013**,
- from 292 PLN/MWh (with the productivity of 45%) up to 351 PLN/MWh (with the productivity of 35%) in 2020,
- 3. from **230 PLN/MWh** (with the productivity of 45%) up to 253 PLN/MWh (with the productivity of 35%) in **2025.**

**Diagram 1.** Assumed gap in the revenues between the energy generation unit cost (EGUC) in OWF and an anticipated electric energy price in Poland in 2013-2025 - an optimistic scenario.



Source: own work

<sup>&</sup>lt;sup>1</sup>Productivity - the value determined as the relation between the number of working hours and the number of hours in a year in total (this indicator is expressed as a percentage value).

Document prepared by Foundation for Sustainable Energy as a part of two projects: "National programme for offshore wind energy development in Polish maritime areas" and "Creating stable and efficient support mechanism for renewable energy in Poland."

**The costs of the support mechanism** due to the surcharges to the sold energy, with an assumption that the parameters given in the previous draft Act on Renewable Energy Sources of October 2012 (specified guaranteed price of energy indexed with reference to the inflation value, certificate of origin with the coefficient guaranteeing the coverage of the revenue gap so that the project can reach IRR<sup>2</sup>=12%) **in a mean annual perspective should not exceed PLN 1.1 billion for wind farms commissioned up to 2020 (1 GW) an additionally PLN 1.8 billion for wind farms commissioned up to 2025 (2 GW).** 

### Up to 2020 the support mechanism for OWF will not involve any costs.

### **Economic benefits**

We estimated also the scale of economic benefits associated with the achievement of the objectives given in the Programme<sup>3</sup>:

- the total added value for the Polish economy up to 2030 should reach the amount of PLN 81.8 billion (aggregate value for the investment and operation phases),
- mean annual added value in the operation phase of OWF should reach the value of PLN 13.7 billion, out of which PLN 12.7 billion are the direct results,
- **the level of budget revenues up to 2030 should reach the value of PLN 16.4 billion,** where ca. 80% of this amount are the revenues from indirect taxation and CIT paid by the companies directly and indirectly associated with the offshore wind farm sector:
  - o ca. 82% of the income (*i.e.* PLN 13.5 billion) will go to the central budget (the State Treasury),
  - o ca. 18% of the income will go to the voivodeship, commune and poviat budgets,
- up to 2030, for a period of 20-25 years of operation, functioning OWF will provide mean annual income to the public finances sector in the amount of ca. PLN 3.1 billion,
- due to the payment of the location fee the income will reach the value of ca. PLN 0.9 billion up to 2030,
- in total the income to the Social Insurance Fund in 2012-2030, resulting from the development of OWF, will reach ca. PLN 5.1 billion,
- mean annual social insurance contributions associated with the development of OWF after 2030 will generate the income of ca. PLN 0.13 billion per year.

### Impact on the labour market

On the basis of results from the comparative analysis of the impact of OWF on the labour market in the UK and in Germany we estimated that in case of executing projects with the capacity of 6 GW at the investment and operation stage in total in 2012-2030 in the OWE sector there may be ca. 24,800 new jobs created, and in case of 3 GW of installed capacity - ca. 12,400 new jobs and in case of 1 GW ca. 4,100 new job opportunities should occur.

In order to assess the scale of the impact of OWF on the development of the labour market in Poland it is necessary to take into account also the installation operation phase (2040-2045 perspective). On the basis of estimated data the mean annual employment resulting from the development of OWF should reach ca. 5,100 new jobs, with the assumption that the projects of 6 GW capacity will be executed (pursuant to data of 2013)<sup>4</sup>.

To sum up, we can state that the benefits associated with the development of offshore wind farms in Poland will several times exceed the costs related to the creation of appropriate conditions for their development. The scale of benefits (and the surplus over the costs) directly depends on the scale of development of the OWF sector in Poland. This results, in particular, from the fact that in case of the development of the sector up to the level of ca. 6 GW of installed capacity, the proportion of capital expenditures

<sup>&</sup>lt;sup>2</sup> Internal Rate of Return.

<sup>&</sup>lt;sup>3</sup> On the basis of the Report: "Morska energetyka wiatrowa – analiza korzyści dla polskiej gospodarki oraz uwarunkowań rozwoju" (Offshore wind energy - analysis of benefits for the Polish economy and development conditions) prepared by Ernst & Young in cooperation with the Polish Wind Energy Association (PWEA) and own analyses prepared by FNEZ.
<sup>4</sup> Ibid.

Document prepared by Foundation for Sustainable Energy as a part of two projects: "National programme for offshore wind energy development in Polish maritime areas" and "Creating stable and efficient support mechanism for renewable energy in Poland."

associated with the construction of OWF, which will become the revenue of Polish companies and it will contribute to the economic development of Poland, will be considerably larger. The development of OWE at a level lower than 6 GW will not result in exceeding the threshold necessary for further investment decisions related to the development of domestic production, delivery and logistics facilities for the provision of services for offshore wind farm construction. The construction of OWF on a smaller scale may be efficiently supported by foreign markets, especially the German, Danish and Swedish markets.

Therefore, from an economic point of view, it should be recognised that the support mechanism for offshore wind farms, which should be established during the works on the new Act on RES, is an investment with the objective to provide maximum economic benefits in the 2030 perspective by creating a new economic sector, which will provide the increase of GDP and general employment, especially in the coastal regions. What matters here is that the investment will not trigger any costs due to the support for OWF before 2020, because the energy from the offshore wind farms located in Polish maritime areas will be first generated in 2020.

### Chapter III

### Analysis of the current situation

In the third chapter an analysis of the legal and market environment was carried out in terms of their influence on the possibility to achieve the assumed objectives. The following procedural conditions for the development, execution and exploitation of OWF were presented:

- 1. current stage of project development,
- 2. CAPEX,
- 3. energy reception and transmission conditions,
- 4. current condition of the delivery, service and labour markets.

Taking into account the organisational and procedural conditions, the development of an OWF project should take ca. 7 years, organisation of the construction site and the construction phase: 3-4 years, exploitation up to 25 years.

### **Table1.1** Planned offshore wind farm execution schedule

Development stage	Time [Q⁵]	I year	II year	III year	IV year	V year	VI year	VII year
Procedure for obtaining the permit to erect and exploit artificial islands, installations and equipment within Polish maritime areas for an offshore wind farm and a research and measurement station (PSZW)	3							
Procedure for obtaining the connection conditions and the connection agreement	5							
Environmental impact assessment procedure and the procedure for obtaining the decision on environmental conditions (including environmental research)	12							
Obtaining the permit to construct the research	10							

### <sup>5</sup> Q - quarter

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and measurement station and to carry out wind measurements														
Procedure for obtaining the permit to lay and maintain seabed cables and pipelines in internal waters and territorial sea (including the agreements on the seabed cables and pipelines routes)	4													
Procedure for obtaining the permit to lay and maintain the seabed cables and pipelines in Polish EEZ (including the agreements on the seabed cables and pipelines routes)	4													
The procedure for obtaining the decision on environmental conditions for the connection (including environmental research)	8													
Procedure for obtaining location decision for the ground connection (including the agreements on the location)	6													
Procedure for obtaining the construction permit for the I stage of OWF construction and for the seabed cable (including geotechnical research and designing)	11													
Procedure for obtaining the ground connections construction permit	3													
Procedure for obtaining licenses for the generation of energy from renewable sources	2													

Source: own work

### **Chapter IV**

### Compliance of the Programme with national policies and strategies

In the fourth chapter we carried out the assessment of the compliance of assumptions and objectives of the Programme with the national policies and strategies and we concluded that the Programme is compliant with the basic directions of the Energy Policy of Poland until 2030, National Renewable Energy Action Plan, Maritime Policy for Poland up to 2030, Seaport development strategy up to 2015, "Polska 2020" strategic document, Programme for the Development of Power Engineering taking into account the Renewable Energy Sources in Pomeranian Voivodeship up to 2025, and with the major EU strategic documents. **We concluded, however, that the above listed documents fail to state the appropriate objectives for the offshore wind energy, which would provide a stable base for the planning of further market development.** 

### **Chapter V**

### **Analysis of barriers**

In the fifth chapter the major barriers were specified, which currently hinder the achievement of goals stated in the Programme, in reference to the subsequent stages of market development.

### I stage of market development - up to 2020

The analysis of the offshore wind energy market potential in Poland confirms that the development of this sector, according to the assumed quantitative and qualitative objectives, is possible and should bring significant economic benefits for Poland. The description of legislative and market conditions proves that since 2011 there have been very strong grounds for the initiation of the development of the said market. It is confirmed also by a serious interest of national and foreign investors in this subject, which resulted in the preparation of first OWF projects. On the basis of issued location permits, connection conditions and the initiated environmental procedures we can state that the quantitative objective for the I stage of OWE development in Poland - 1 GW up to 2020 - may be achieved without any substantial changes in the system, on condition that the support mechanism planned by the Government for renewable energy sources will be implemented. **It is worth highlighting that the failure to adopt the new support mechanism for renewable energy sources ("RES") in 2013-2014**, providing a stable base for the development, execution and exploitation of pilot projects, *i.e.* those which may be constructed up to 2020, will block the development of the OWE market and will prevent the achievement of the assumed objectives.

Also the national sector of offshore industry showed a serious interest and demonstrated the capacity to launch production for offshore wind farms, what resulted in the initiation of production of specialist vessels, towers and foundations for foreign OWF markets. The existing port facilities and infrastructure will allow for the support of offshore wind farm construction, provided that some part of the components will be delivered from foreign ports (*e.g.* wind turbines, seabed cables).

### II stage of market development - 2020-2025

Larger problems may be associated with the achievement of objectives of the II stage of development - 3 GW up to 2025. **The major barrier here are the connection capacity of the National Power System ("NPS").** In the opinion of the system operator, it is possible to connect ca. 2.2 GW from offshore wind farms up to 2025, *i.e.* 800 MW less than the Programme assumes. It seems, however, that the verification of currently issued connection conditions for the onshore wind energy and the verification of feasibility of the investment plans in the conventional and nuclear energy in the 2025 perspective may result in finding the expected connection potential for the additional OWF projects. The increase of the connection capacity may occur also as a result of the development of offshore transmission grids, transboundary connections or energy storage systems.

Another problem for the second group projects may be the financial aspects. The most intensive development of OWF on European markets will most probably fall on the years 2020-2025. This will naturally create a serious competition around the financing sources, especially in the context of quite high investment costs in that period. This means that the Polish support mechanism must be competitive in comparison to the foreign systems, so that the investor would find it profitable to invest in Poland. Creating such a support mechanism requires a strategic approach and pre-emptive actions to create stable and long-lasting grounds for investment planning and constructing financial portfolios.

Another problem for the projects of the II stage of market development may be the availability of delivery and logistics facilities. When the demand for devices and services on foreign markets is high, it seems inevitable to create own domestic potential, which will not only be competitive in comparison to other European markets, but will also provide maximum support for domestic investments.

#### III stage of market development - 2025-2030

The installation of 6 GW capacity in offshore wind farms up to 2030 in Polish maritime areas will require a strategic approach to the development of the OWE sector as a significant element of the energy and economic policy of the state for 2020-2050. Lack of strategic planning and shaping the legal system according to the needs of temporary interests and problems may constitute a serious barrier for the achievement of this ambitious objective. A substantial development of offshore wind energy in the next decade requires the making of critical political decisions right now, at the national and local level and the maintenance of those decisions for the next several years. Such a responsible and strategic approach to the development of a new industry sector is fundamental also for the development of

# the offshore industry in Poland in order to make it the driving force behind the development of Polish coastal regions.

In order to select projects, which could be executed after 2025, it would be necessary to introduce certain legal changes, which would guarantee the availability of locations along with the connection conditions for investors, guaranteeing the largest economic efficiency of their project.

The basic barrier for the achievement of the goal for 2030 will be the possibility to connect the additional 3 GW of capacity to the power grid and to provide the balance of evacuated energy. This problem may be solved by the investments in the offshore transmission systems, including transboundary grids and energy storage systems. The current national energy mix will have a serious impact on the actual connection options for OWF. Unfortunately, due to the lack of a stable investment scenario it is very difficult to forecast the future energy mix.

The development of technology will be a substantial condition for the development of OWE after 2020. As the technologies applied in OWF will become more common, the domestic production, logistics and service facilities will develop and the experience in executing OWF will increase, leading to the reduction of investment costs and an optimisation of investment schedules.

### Chapter VI

### **Programme for executive actions**

The achievement of objectives stated in the Programme requires preparations and implementation of actions in various fields and at various organisational levels - national, local and private.

In the sixth chapter of the Programme we present a series of executive actions divided into three complimentary executive programmes. The purpose of each of those programmes will be the creation of stable foundations for the development of offshore wind energy and industry in Poland.

### I. "Investment facilities" - executive programme

### Programme objective:

creating political, system and legal frames in order to provide the attractiveness of the Polish offshore wind energy market for future investors.

### Major Programme actions:

- 1. Provide strategic and political bases for the objectives related to the development of offshore wind energy and industry by adopting the Polish offshore wind energy and maritime industry development programme by competent state and local authorities or by including in appropriate strategies and programmes the objectives and tasks specified in the Programme:
  - a. Energy Policy of Poland
  - b. Seaports development strategy
  - c. Regional development strategies
  - d. Power Grid development strategy
- 2. Elaboration and adoption of a package of legislative changes providing a stable and competitive in comparison to foreign markets bases for the development, execution and exploitation of offshore wind farms:
  - a. the Act on Renewable Energy Sources
  - b. the Act on Energy Law
  - c. the Act on transmission corridors
  - d. the Act on maritime areas of the Republic of Poland and maritime administration

3. Preparation and implementation of operational programmes allowing for the support of investments associated with the execution of offshore wind farms, offshore power grids and the production and logistics facilities using the EU funds in the 2014-2020 perspective and the national and regional special-purpose funds.

### Schedule:

Actions should be carried out in 2013-2014.

Authorities responsible for the performance of those tasks: Minister of the Economy, Minister of Regional Development, Minister of Transport, Construction and Maritime Economy, Marshals of the Pomeranian and West Pomeranian Voivodeships.

### II. "Investment facilities" - executive programme

### Programme objective:

Creation of conditions for the development of the offshore industry and the infrastructure facilities at a scale and within a scope guaranteeing a full support for the domestic offshore wind energy market.

### **Major Programme actions:**

- 1. Preparation and implementation of the strategy for the development of production, logistics, operation and maintenance centres, covering:
  - a. the creation and development of special economic zones around the national port centres,
  - b. investments in the modernisation of ports and accompanying communication and storage infrastructure,
  - c. extension of the existing and the construction of new plants involved in the production of structural components of offshore wind farms,
  - d. creation of scientific, research and implementation centres combining the national and international scientific and industrial potential.
- 2. Elaboration and implementation of the "offshore transmission grid" project connecting the Słupsk-Wierzbięcino GPZ with Żarnowiec GPZ with an onshore-offshore DC cable, with an offshore transformer station, which is the connection point for OWF executed within the region of the Słupsk Bank and Middle Bank. The target grid should be connected with a seabed cable with the transboundary grids connecting the Baltic States, as the part of the so called Baltic Supergrid. The project could be executed in accordance with the public-private partnership, in cooperation with investors and the transmission grid operator.
- 3. Preparation and implementation of the marine environment monitoring programme, based on the construction and exploitation of 2 or 3 permanent offshore research and measurement stations. This programme would allow for the creating of an independent, objective source of knowledge on the condition of the marine environment and the impact of OWF on that environment.

### Schedule:

Preparation of particular projects should be carried out in 2013-2014.

Actions should be carried out in 2015-2019.

Authorities responsible for the performance of those tasks:

- Task 1: Minister of the Economy, Minister of State Treasury, Minister of Science and Higher Education, appropriate local government authorities,
- Task 2: Minister of the Economy, operator of the transmission system,
- Task 3: Minister of the Environment, Minister in charge of maritime economy, General Inspector for Environmental Protection.

### III. "Investment facilities" - executive programme

### Programme objective:

Creation of system conditions for a reasonable and efficient performance of development, execution and exploitation actions associated with the offshore wind farm projects.

### Major Programme actions:

- 1. Determination of locations for the OWF projects in the II round 3 GW to be executed in 2025-2030 by:
  - a. preparing and adopting the spatial development plan for the maritime areas, including the exclusive economic zone, in order to indicate the areas for the second round of OWF location selection and for the infrastructure corridors for the offshore grids,
  - b. carrying out the strategic environmental impact assessment of the spatial development plan for the maritime areas.
- 2. Associating the locations available for the OWF from the II round with the grid connection conditions by:
  - a. verifying, on the basis of previously adopted amendments to the Energy Law, the already issued connection conditions, cancelling the connection conditions for the projects without any chances for execution,
  - b. determining the connection capacity available for the OWF on the basis of the NREAP or the energy policy,
  - c. specifying the connection conditions for wind farms, which may be executed within the locations of the II round.
- 3. Tender procedures for location decisions and grid connection conditions for the OWF from the II round, which aim at selecting investors guaranteeing the optimum economic conditions for the execution of the investments within the given locations.

### Schedule:

- Action 1 should be carried out in 2013-2014. Authority responsible for the performance of this action: Minister in charge of maritime economy.
- Action 2 should be carried out in 2014-2015. Authority responsible for the performance of this action: Minister of the Economy and the transmission system operator.
- Action 3 should be carried out in 2016-2017. Authority responsible for the performance of this action: Minister in charge of maritime economy.

### **Chapter VII**

### Managing the implementation of the Programme

In the seventh chapter we recommended the principles of managing the Programme.

Preparing a programme and implementing the development of a new branch of industry, *i.e.* the offshore wind energy and the offshore industry associated with it, requires a coherent management system. Unfortunately, the scope of actions necessary to be taken is very wide and it covers the competence of numerous state and local administrative bodies and their subordinate institutions. Therefore, all actions associated with managing the Programme should be carried out at various levels of administration.

### Management at the national level

We suggest to appoint an interministerial group for the implementation of the Programme for the Development of Offshore Wind Energy and Industry, which would consist of the representative of the following Ministries and institutions:

1. Ministry of the Economy - chairman of the team, Government representative for the programme implementation issues,

- 2. Ministry of Transport, Construction and Maritime Economy vice-chairman of the team,
- 3. Ministry of State Treasury,
- 4. Ministry of Regional Development,
- 5. Ministry of the Environment,
- 6. Pomeranian Voivodeship Office in Gdańsk,
- 7. West Pomeranian Voivodeship Office in Szczecin,
- 8. Pomeranian Voivodeship Marshall Office,
- 9. West Pomeranian Voivodeship Marshall Office,
- 10. Polish Agency for Enterprise Development,
- 11. Polish Information and Foreign Investment Agency,
- 12. Industrial Development Agency,
- 13. National Fund for Environmental Protection and Water Management,
- 14. transmission system operator.

The Group would be involved in the approval of the scope of major executive actions, the methods and schedule of their performance and in the coordination of those executive actions.

### Management at the regional levels

At the regional levels we recommend the appointment of Voivodeship Marshal's representatives to be responsible for the management over the executive actions included in the competence of the regional self-governments. The Marshals could appoint working groups, which could consist of the representatives of the following institutions:

- 1. Marshal Office,
- 2. Voivodeship Office,
- 3. Maritime Offices,
- 4. port management,
- 5. commune self-government,
- 6. regional directorates for environmental protection,
- 7. offshore industry,
- 8. investors.

The Group would be involved in the approval of the scope of major executive actions, the methods and schedule of their performance and in the coordination of those executive actions.

### Monitoring and reporting

Monitoring the implementation of the Programme should be carried out by the interministerial group that would prepare a report on the progress every half a year. The report should be presented at the Government meeting and at the meetings of appropriate parliamentary committees. The report should be prepared on the basis of information presented by representatives of particular institutions (members of the group) and by the representatives of the Voivodeship Marshals.

### **Further works on the Programme**

The Programme will be discussed internally, by FNEZ experts, partners and representatives of the sector. Then the presentations and political consultations will take place at the national and regional level along with social consultations.

After considering and approving the remarks and proposals submitted during the consultations, the Programme will be delivered by FNEZ to the government representatives and to the Marshals of involved voivodeships along with the request for the formal acceptance and use as an aid in their current activities.



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