



INTERREG Inn2POWER REPORT: **Obstacles & solutions to Small & Medium sized** Enterprises  
working in the  
Offshore Wind Sector: installation, maintenance and ports services operations

April 2021



## CONTENT

INTERREG Inn2POWER REPORT:	1
Obstacles & solutions to Small & Medium Enterprises working in the Offshore Wind Sector: installation, maintenance and ports services operations	1
EXECUTIVE SUMMARY	4
INTRODUCTION TO THE OFFSHORE WIND INDUSTRY AND INN2POWER	5
1. Offshore wind industry	5
2. Inn2POWER	5
CHAPTER ONE: DESCRIPTION OF THE METHODOLOGY, FRAMEWORK AND RESEARCH BUILDING BLOCKS	8
1. Methodology	8
2. Offshore Wind Ports Platform and the future market of offshore wind	8
3. Workshop Supply Chain 24.06.2019 Brussels and its most relevant conclusions	3
4. EU definition of an SME	10
5. Type of SMEs involved in the Offshore Wind cluster	13
6. Roles to play for SME's in the Offshore Wind sector	15
7. Initiatives and networks to boost the Offshore SME supply chain	18
CHAPTER TWO: OBSTACLES & SOLUTIONS TO SME'S WORKING IN THE OFFSHORE WIND SECTOR	20
1. Overview	20
2. Personnel and human resources	21
3. Port infrastructure, services and organisation	22
4. Local and Regional Strategic Planning	26
5. Finance and investment	28
6. Capacity within the Public authorities to assist the sector	30
7. Legal context	33
8. Operations and planning	35
9. Business case development	36
10. EU regulatory environment	38
11. Technological context	41
12. Accessibility of data	42
13. Environmental context	43
14. Economic factors	43
CHAPTER THREE : CONCLUSIONS – CHALLENGES & SOLUTIONS	45



## ***Executive summary***

This report produced in the framework of the Interreg North Sea Region project Inn2POWER aims at developing innovative solutions for overcoming barriers for SMEs in Offshore Wind Industry (OWI) harbour logistics. Therefore the authors based themselves on the following methodology: group and bilateral exchanges within the Offshore Wind Ports Platform, local experience in the case Port Oostende and a workshop on supply chain and harbour logistics in OWI.

A series of challenges, obstacles and solutions, opportunities for SMEs in OWI harbour logistics have been identified for port SMEs and other SMEs in the OWI supply chain.

The OWI will grow three-four times its current capacity between now and 2030. The opportunities for SMEs to enter the market and to grow are situated in the supply chain related to development, manufacture, installation, maintenance, repowering or decommissioning offshore wind farms. Port logistics and crew transfer services will grow especially when cost savings can be demonstrated. Issues of cross border and transnational cooperation need therefore to be settled. A stronger cooperation between the offshore wind ports and their respective supply chain and interconnectivity between these ports will be of major importance to facilitate the industry is cost effectiveness. The opportunities for SMEs to grow aren't guaranteed if left to market forces only. Public support for SMEs in the OW supply chain – including port SMEs - will be indispensable.

The upscaling of the OWI forms a challenge for ports and their efficient use of port space. The trend to move towards multifunctional wind farms also offers a lot of opportunities to OWI SMEs and SME ports. A hesitant financial and insurance sector needs to be further informed on this multifunctional trends, and marine operations in general. The lack of a transparent project pipeline and investment bottlenecks will need therefore to be solved.

The lack of skilled workers in the labour market and the challenges for SMEs to hire them will also need creative solutions to be developed in collaboration with public authorities. EU regulatory requirements impacting SMEs negatively will hopefully be modified in the future after dialogue between the relevant stakeholders.

The use of IT, IoT and data management has become a major instrument for efficient offshore wind farm management in a multifunctional perspective. In order to promote this new multifunctional development opportunities for SMEs, it will be key to share elementary data sets within regional maritime zones.

All different policy levels need to collaborate to create the regulatory and supportive framework SMEs in the offshore wind supply chain need to enter the OW market and to grow. A strong dialogue between all relevant stakeholders will remain key to overcome barriers and find solutions for the actual and future challenges.

# ***Introduction to the offshore wind industry and Inn2POWER***

## **1. Offshore wind industry**

The onshore and offshore wind industry covers 16% of the electricity consumption within the EU27+UK in 2020<sup>1</sup>. In 2020, Europe has installed overall 14,7 GW of new wind energy of which 2,9 GW offshore. While Sweden, Spain and France almost exclusively build capacity onshore, the North sea countries are investing more in offshore installations.

Offshore wind today represents 2% of EU27 power demand. Europe now has a total installed offshore wind capacity of 25 GW. This corresponds to more than 5,402 grid-connected wind turbines, in 116 offshore wind farms across 12 countries. 99% of this capacity is concentrated in just five countries: UK, Germany, Denmark, Belgium and the Netherlands<sup>2</sup>.

Offshore wind is expected to grow to at least 70 GW in 2030 in order to comply with Europe's environmental and renewable energy goals and National Energy and Climate Plans. This amount is nearly three times the current installed capacity and will require to double the annual installations rate as from 2025. This will have a major impact on the organisation of the logistic chain as well on the supply chain.

The development of the Offshore Wind Industry (OWI) is an important driver for economic development in the North Sea Region (NSR). The Inn2POWER project (Interreg North Sea Region) brings together 11 partners committed to the development of SMEs that are located in and around Offshore Wind clusters around the NSR.

## **2. Inn2POWER**

Inn2POWER is a four-year Interreg project of 11 partners from the five leading offshore wind clusters in the North Sea Region – Denmark, United Kingdom, Germany, Belgium and the Netherlands. The aim is to expand the capacity for innovation and to improve access to the offshore wind industry for small and medium enterprises (SMEs) by connecting offshore wind businesses in the North Sea Region.

Inn2POWER cluster SMEs are challenged by disadvantages of size, complex procurements, high costs and insufficient understanding of the (global) market for their services. They can address this by collaborating on a regional, sectoral and transnational level. Preparatory work from previous projects has paved the way and allows the partnership to deliver focused support to SMEs.

This is the first time that the NSR regional clusters and other supporting organisations in the OWI work this closely together on the shared goal of bringing their SMEs across the borders to engage them in innovative business collaborations. The project's overall objective is to

---

<sup>1</sup> WindEurope Annual Statistics 2020

<sup>2</sup> WindEurope Annual Statistics 2020

- improve innovation capacity of SMEs and to facilitate access to the OWI by creating the appropriate supportive conditions;
- Connect and strengthen regional OWI clusters of SMEs by supporting SMEs to enter new transnational markets and by developing transnational SME collaboration;
- Develop innovative concepts of harbour logistics and test facilities for SMEs in the OWI;
- Improve the workforce for SMEs in the OWI;
- Identify cross-border business collaboration opportunities.

This report forms part of Work Package 4 of the Inn2POWER project. This Work Package aims at

- making test and demonstration facilities more accessible for OWI SME's on the one hand side and
- developing innovative solutions for overcoming barriers for SMEs in OWI harbour logistics at the other hand side.

This report is the deliverable related to the second objective of this Work Package and so, looks to identify the shortfalls/obstacles and possible solutions for SME involvement in OWI.

- Ports as SME, bridging land and sea: many offshore ports are specialised SMEs and working as SMEs, facing different challenges related to the implementation of land-based regulations which are hard to implement in maritime conditions.
- Port services for offshore wind development: within the supply chain, several SMEs can be involved both on landside as on waterside, in order to realise the installation, the monitoring and the maintenance of the operations. Production companies, working in close cooperation with the offshore wind industry in ports.



## **CHAPTER ONE: Description of the methodology, framework and research building blocks**

### **1. Methodology**

This report is based on the following:

- Bilateral and group exchanges within the Offshore Wind Ports Platform (OWPP) and reports produced by this platform;
- More than 15 years of experience with offshore wind and harbour logistics within Port Oostende;
- Workshop outcomes (organized by WindEurope, OWPP and Port Oostende).

The report takes into account

- the framework provided by the EC regarding the definition of an SME;
- the perceived types and roles of SME's in offshore wind;
- initiatives and networks to boost offshore wind SME's in the supply chain.

Within the research building blocks in chapter one the identified obstacles and solutions for offshore wind SME's in harbour logistics are already identified. In chapter two, the report goes more in detail in these obstacles and solutions. In chapter three, the report contains conclusions.

### **2. Offshore Wind Ports Platform and the future market of offshore wind**

The aim of this report is to support Inn2POWER project work package 4 by developing a transnational analysis of the obstacles to Small & Medium Sized Enterprises (SMEs) that might prevent them from taking full advantage, as most experts agree, with the growth of the Offshore Wind Industry (OWI) in the next few years. Correspondingly, if SMEs are to mirror that growth, a number of important factors will need to be pursued to make the supply and offshore logistics opportunities more transparent and efficient for SMEs to take advantage of in their coastal clusters. This report *“Obstacles & solutions to Small & Medium sized Enterprises working in the Offshore Wind Sector: installation, maintenance and ports services operations”* has been commissioned by Port of Oostende to contribute to new thinking and support for SMEs if they are to become providers in future of logistic concepts, technologies and cost efficient logistics.

The starting point for this analysis has been the work done by setting up the **Offshore Wind Ports Platform (OWPP)**, that has been created for offshore renewable ports and supply chain stakeholders within Wind Europe. Considering the fact that there was no other port partner within Inn2POWER, there was no other choice for the Port of Oostende to search for port partners outside the project to maximise both insights for and impact of this report deliverable. Therefore, the Port of Oostende has taken this initiative in coordination with the management of Wind Europe.



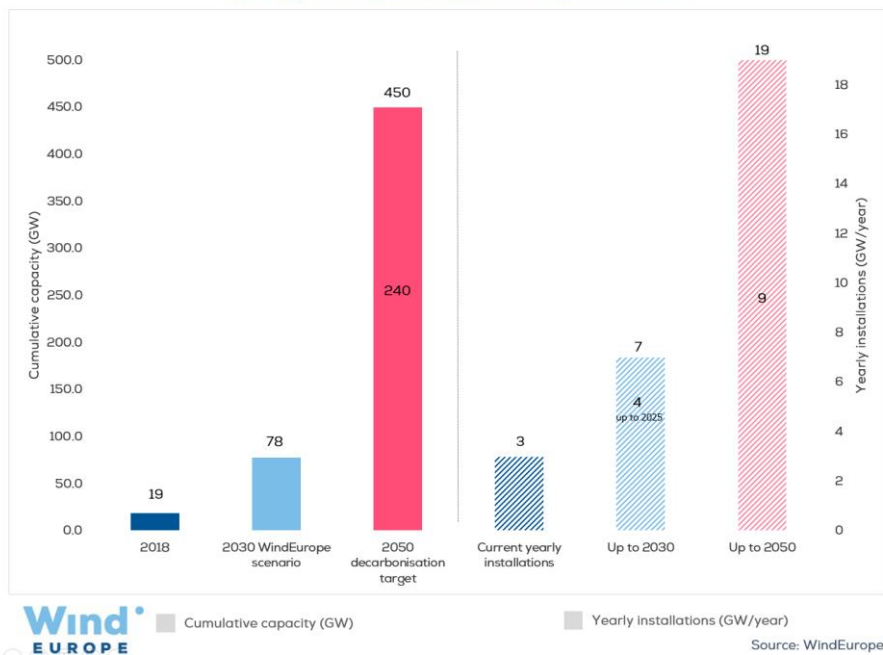
This new forum has allowed ports with active operations and interests in offshore wind to come together, to share best practices and importantly, to engage with industry and policy makers with one voice. The experience has learned that the offshore wind industry considers the logistics at the last moment, where the knowledge of the cost and the technicality of the work at sea, are not recognised or underestimated. Through the OWPP, ports share knowledge and align communication priorities through regular meetings and networking events which provide discoverability, visibility and branding opportunities for their businesses. Moreover, it gives them access to the development of new technologies as well, like the floating wind power. Its members are: Groningen Seaports, Port of Saint-Nazaire, Port of Amsterdam, Port Atlantique La Rochelle, Port of Den Helder, Port of Esbjerg, Port of Grenaa, Port La-Nouvelle, Ports of Normandy , Port of La Coruna, Port of Bilbao, Port of Ronne, Port of Oostende and Renewable Energy Base Oostende (REBO). The Port of Oostende is leading the OWPP. The OWPP has been a key forum that has inspired the preparation of this report. A major part of these ports are SME ports themselves and are facing similar obstacles like SMEs in the supply chain of offshore installation and maintenance.



In order to make the effort to integrate SMEs in maritime production, supply and logistics for the offshore industry, it is of major importance to know if there is a market for them. In cooperation with Wind Europe, the OWPP has made a major analysis to get a better view on the future market

- Actual situation: approx. 5400 turbines (25 GW)
- Prognosis 2030 : 10 000 offshore wind turbines (70 GW)
- Annual rhythm of installation: 6 to 7 GW, representing 600 turbines
- Annual rhythm of O&M: 10 000 offshore wind turbines x 2FTE
- Annual rhythm of decommissioning: 600 wind turbines
- Annual rhythm of repowering and life expansion: 600 turbines

### The expansion of offshore wind to 2050



### 3. Workshop Supply Chain 24.06.2019 Brussels and its most relevant conclusions

All operations, related to the offshore wind industry, including installation, maintenance, life time extension and decommissioning, need to be supported by port operations (landside/seaside) and related port services.

Upon the initiative of Wind Europe, the OWPP the port of Oostende and the other Inn2POWER partners, on the 24<sup>th</sup> June 2019, WindEurope gathered 46 stakeholders in Brussels, representing the Offshore Supply Chain, including cable manufacturers, project developers, ports, heavy lifting industries, wind turbine manufacturers, marine contractors, national wind organisations, representatives from the European Commission and other associations that support the growth of the offshore wind industry in Europe. The workshop discussed the main challenges and opportunities in technology, logistics and sea operations for the supply chain industry as the OWI sector upscales and grows by as much as three, four times its current scale, new deep sea bottom and floating based wind technologies come on stream by 2030.

## BY 2030, PORTS WILL NEED TO ANNUALLY SUPPORT:



Specifically the workshop looked at:

- How cooperation among the supply chain can improve reliability, quality and safety of ports' logistics and sea operations;
- The latest technological developments and how the supply chain is preparing to the commercialisation of them (e.g. floating, HVDC (high-voltage direct current) and cables);
- Challenges and obstacles that the Supply Chain is facing following the increase pace of offshore wind installations and the upscaling of turbine sizes;

The most relevant conclusions from the Workshop Supply Chain 24.06.2019 are the following:

### **Technological development**

Within the working-group technological development, the main focus went to the development of the floating wind turbine, which has not reached a status of major commercialisation. Actually, 8 to 10 prototypes are under development. The relevance of the floating wind for the North Sea area lies in the development of the Northern offshore wind farms, wind farms connected to other marine resourcing platforms and the offshore wind farms that might be constructed at a far distance.

Moreover, offshore floating wind is a global market, whereby Europe is leading with 250 MW in total installed capacity by 2023 and it is applying the same technologies across other markets, such as Japan, USA and Korea. The supply chain, and specifically the electrical interconnection solutions, must be market-ready for the first commercial-scale projects. France and South Korea have clear plans to develop 1 GW each before 2030. Market available high voltage cables and a steady pipeline of projects will help auxiliary equipment and create more cost reductions. Cooperation between companies in the design of mooring systems and cables will have a significant impact, and could lead to cost reductions of approximately 30%. To be effective, such cooperation needs to start in the early stages of the design process. Predictive O&M and plug in plug out technologies that allow arrays to continue functioning are importance factors. Finally, it will be crucial for the European offshore wind expansion that it will not be hindered by 'bottlenecks': the preparatory works with governments, fishermen and environmental bodies need to be started in an early stage, in order to facilitate timely planning and permitting when (>200MW) wind farms require an electrical connection to the shore. Adequate maritime spatial planning and stakeholders' management are here of major importance. Larger wind farms will require important extensions of area for the laying of cables and thus have the potential for more interaction with other sea uses.

Cooperation between companies, including SMEs is also an important factor in order to be able to develop a more mature commercial and technological market. This relates to both installation as well as maintenance activities. In order to downsize the cost of the O&M activities, a greater emphasis in Europe needs to be placed on predictive maintenance reducing costs from breakdown. Additionally, more attention is needed to a permanent monitoring of the underwater cable connections in order to guarantee the optimal functioning of the offshore parks.

#### A. Challenges

- Market-ready electrical interconnection solutions

#### B. Solutions

- Market available high voltage cables
- Steady pipeline of projects
- Cooperation between companies in the design of mooring systems & cables
- Preparatory work with relevant parties (government, fishermen,..) started at early stage – including adequate maritime spatial planning and stakeholder management
- Cooperation between companies to develop a more mature commercial and technological market (installation & maintenance)
- Permanent monitoring of underwater cable connections



## **Port infrastructure**

In the discussion on port infrastructure, wind farm construction and heavy lifting, stakeholders acknowledged that whilst the majority of installation vessels were currently found in European waters, increasing competition from China, USA, India, Vietnam, South Korea and Taiwan would put pressure on European growth if the vessels and cranes were unavailable. The bigger vessels, with cranes able to lift heavier components, might also affect the current logistic flow for assembly and installation of wind turbines. For example, vessels able to lift over 5,000 tons will be used by the wind sector only (cf. Alysé-Jan de Nul).

As to ports, there is a huge challenge considering the overall target of installing offshore wind farms in function of the target of 2030 (70 GW). A further specialisation within the active offshore ports will be the trend. Considering the future size of the wind turbines, more storage space will be needed in ports for the handling of the parts on land side. At the seaside, more investment need to be made in order to guarantee the accessibility of the specialised ports for the larger installations vessels. Considering the time constraints in order to make the demanded investments, it will be of major importance that the ports have a better insight in the pipeline of the projects: the adaptation of the port infrastructure engages long building procedures and larger amounts of investments. Meanwhile, the older generation of

installation vessels can be organised to support the decommissioning of the older wind farms. Again space for these activities in the ports should not be underestimated. The logistic chain for the decommissioning has also not been identified yet.

The workshop also identified the availability of skills and qualified personnel as a constraint on the smooth development of the OWI sector in the near future. The overall labour markets and the related public services are hardly aware of the kind of jobs that are available within the OWI market. Therefore, stakeholders underlined the vital importance of companies investing in training and retaining of staff. Often there are not enough engineers and technicians in the regular labour market, and the sector should invest in making training attractive to attract and motivate young people. Skill transferability might be an option, but workers cannot come from the oil and gas sector only and there is a large difference in the organisation of the labour chain in the OWI. Considering the pressure on the installation market, it will be necessary to investigate how training facilities might be shared. Fundamental in this process will be the cross-border and transnational recognition of training and certificates in Europe. Notwithstanding the shortages in the OWI-market, national authorities and training institutions prefer to support short-sighted solutions and to protect their own labour market.

#### A. Challenges

- Available vessels and cranes
- Further specialisation within offshore ports
- Storage space (land side)
- Accessibility for larger installation vessels (sea side)
- No insight on pipeline of projects
- Non identification of logistic chain for decommissioning
- Limited availability of skills and qualified personnel

#### B. Solutions

- Better insight of pipeline of projects
- Companies investing in training and retaining of staff + making training attractive to attract and motivate young people
- Sharing of training facilities
- Cross-border/transnational recognition of training and certificates in Europe
- Use of older generation of installation vessels to support decommissioning older wind farms

## Repowering

As to repowering of the existing offshore wind parks, the age and the technologies that has been used within the offshore wind farm, will be of major importance in order to make the business case for the repowering. Moreover, considering the limited timeframe of the concession, there will be major legal work in order to prepare the prolongation of the concession as well as the relevant measures that need to be taken in the field of marine environment and the security of maritime operations. Further, the cost of the quality-check of the existing installations and the rentability of the energy production will be other parameters, that need to be considered. Finally, the organisation of the supply chain needs to be revised in order to be able to set up the repowering process and the effective maintenance during the repowering. Consequently, there is much work to be done on both the policy and business side.



### A. Challenges

- No legal framework regarding repowering
- Consideration of the cost of the quality-check of existing installations and the rentability of energy production
- Organisation of the supply chain

### B. Solutions

- Legal preparation of the prolongation of the concession
- Relevant measures taken regarding marine environment + security of maritime operations
- Revision of the organisation of the supply chain

## **Decommissioning**

Finally on **decommissioning**, the industry must promote it as an opportunity for new businesses within the recycling and waste management sectors. Repowering should also be promoted as it allows to increase the capacity of the wind farms while decreasing the number of operations needed. For both these new businesses, government support will play a very important role and the industry should ensure that different countries align when developing their legislative frameworks.

### A. Challenges

- Very early stage, both on legal/policy side and industry side
- Support by industry and government
- No business case
- Waste flows
- Cross-border cooperation

### B. Solutions

- Promotion of decommissioning by industry: as an opportunity for new businesses within recycling and waste management sector + decrease number of operations needed
- Government strategy and support (for above mentioned new businesses)
- Alignment of legislative frameworks within different countries
- Cross-border cooperation





#### 4. EU definition of an SME

The EU SME definition consists of three major categories: micro enterprises, small enterprises and medium-sized enterprises (SMEs). Clear conditions have been identified.

- A **micro-enterprise** is defined as an enterprise which employs fewer than **10 persons** and whose annual turnover and/or annual balance sheet total does not exceed **EUR 2 million**.
- A **small enterprise** is defined as an enterprise which employs fewer than **50 persons** and whose annual turnover and/or annual balance sheet total does not exceed **EUR 10 million**.

- A **Medium-sized enterprise** employs fewer than **250 persons** and will have an annual turnover not exceeding **EUR 50 million**, and/or an annual balance sheet total not exceeding **EUR 43 million**.

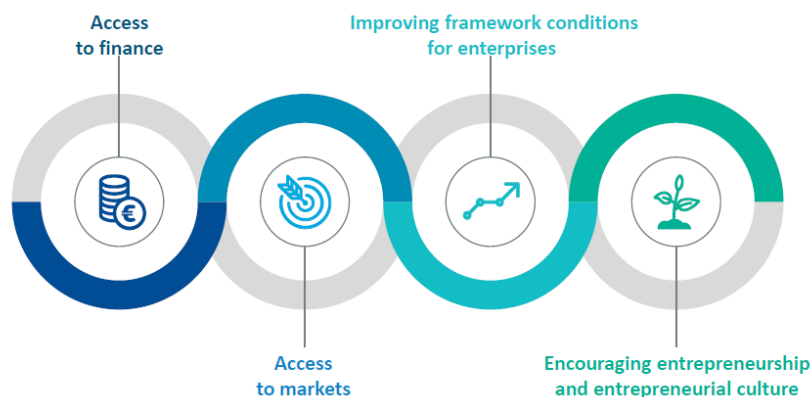
Enterprise category	Headcount: Annual Work Unit (AWU)	Annual turnover	or	Annual balance sheet total
Medium-sized	< 250	≤ €50 million <small>(In 1996 € 40 million)</small>	or	≤ €43 million <small>(In 1996 € 27 million)</small>
Small	< 50	≤ €10 million <small>(In 1996 € 7 million)</small>	or	≤ €10 million <small>(In 1996 € 5 million)</small>
Micro	< 10	≤ €2 million <small>(previously not defined)</small>	or	≤ €2 million <small>(previously not defined)</small>

SMEs in the EU, however, face barriers and challenges that hamper their full potential for growth and job creation. For example, they suffer from a low capacity to compete and grow internationally as their small size as well as their lack of financial and human resources prevent them entering new markets. They mostly operate in sectors which do not require intense scientific knowledge or intense technology investments as they have limited research and development capabilities and access to test infrastructures.

In comparison with these SME/businesses, some public authorities and research institutions have less considerations for the specificity of SME's and implement very strict one-size-fits-all regulations and high financial securities which makes it hard for SMEs to make the relevant investments in developing their core competences and technologies.

In comparison to large enterprises, they have lower turnover, no access to financial resources, as well as limited strategic planning options on a long term. Considering the maritime character of the operations within the OWI, the cost and complexity of working at sea makes it even more difficult for SMEs to enter the market of the offshore operations, unless they have very specific specialisations like demining.

Finally, some of the markets, like the energy markets are extremely regulated, imposing "red tape" before any activity can be started.



Innovation in small and medium sized enterprises (SMEs) is at the core of inclusive growth strategies within the EU : more innovation is necessary in order to strengthen their position in the market and to extend their life chances. In this way, SMEs can be more productive, they can develop products with an international added value, and they can pay better wages and offer better working conditions to their workers. Furthermore, recent developments in markets and technologies offer new opportunities for SMEs to innovate and to grow. Digitalisation accelerates the diffusion of knowledge and is enabling the emergence of new business models, which may enable firms to scale very quickly, often with fewer employees, tangible assets or a geographic footprint. Moreover SMEs are far more flexible in order to adapt to the ever faster changing market conditions: as they have less fixed procedures and a horizontal way of organising their services and production, they are able to understand the needs of the market faster,

Some research institutions, banks and public authorities stick with the high amount of regulations and fixed schemes, which is counterproductive to the market and very expensive.

#### A. Challenges

- Difficult entry in new markets due to small size and lack of financial and human resources
- Limited research and development capabilities
- Limited access to test infrastructures
- Strict regulations and high financial securities implemented by some public authorities and research institutions
- Limited strategic planning options (long term)
- Maritime character of operations within OWI + costs of working at sea

#### B. Solutions

- Innovation in SMEs within growth strategies (EU,...), like the Inn2POWER project., e.g. by providing EU funding for testing and demonstration projects and facilitating access to funding for SMEs
- Digitalisation and development in markets/technologies offers new opportunities to innovate and grow
-



## 5. Type of SMEs involved in the Offshore Wind cluster

Offshore Wind cluster SMEs are providers of generic port services or very specialised maritime services for offshore wind development. On the one hand, the SMEs play a role as subcontractors to the larger companies within the port wind farm operational and maintenance supply chain. They can also be involved both onshore as well as afloat in providing fuel services, servicing vessels and engines. The larger production companies often bring with them their specialist supply chain SMEs who work with them in close cooperation at other sites where they know they can source specialist skills and services rapidly. On the other hand, some of the SMEs have developed very specialised technologies and products which can assist the major companies to reduce their installation and maintenance costs in a substantial way or can help them with the preparation of their maritime wharfs.



Some ports, active and specialising within the OWI market, comply with the EU definition of an SME, like described above. Notwithstanding the fact that the majority of the ports in EU have a public shareholders scheme, but need to be competitive within a private logistic market, considering the recent package of directives that have been launched by the EU Commission. This is merely the case for the ports in the North Sea region. SME Ports play a vital role on facilitating their Offshore Wind projects by organising the land / sea interface in a cost-effective way, which is crucial for the offshore wind logistics.

In addition to the obstacles for SMEs that have already been highlighted above, SME ports are even facing more challenges. Ports are by definition static and cannot be removed from one place to another in order to make their operations more efficient. Any investment in port infrastructure needs large preparation and is time-consuming due to the red tape, introduced by public authorities. Moreover, their operational space is constraint and they have to deliver several functions which go beyond the logistic operations (like water-householding in Flanders and Netherlands, energy-provision in Denmark, etc). Finally, they have to cope with a mountain of directives and regulations which are not especially considering the impact of the development of the OWI sector within ports. It is only very recently that organisations like ESPO are considering the fact that ports might have more functions than the purely logistic function. The actual development of SME ports goes in the direction of multi-functionality on the one hand and specialisation on the other hand. As this is a fairly recent development, this generally still has to sink in with public authorities and is not yet reflected in all public policy.

Further, SME ports are challenged by growth opportunities and need to recruit specialised staff and finance large scale marine infrastructures to avoid 'bottlenecks' that will hinder the growth of the private sector investors as the offshore cluster grows in time with economic opportunities and technological advances like the larger turbines and the new cabling possibilities for arrays.



## 6. Roles to play for SME's in the Offshore Wind sector

SME market entry to the Offshore Wind Industry supply chain can be divided into two distinct areas

- 1) Offshore Wind installation, maintenance and energy transmission market and
- 2) Port infrastructure required to deliver supply chain elements.

For the Offshore Wind installation, maintenance and energy transmission market , the opportunities for SMEs are influenced by the product life cycle: **development, manufacturing, installation and foundations, maintenance, repowering or decommissioning of wind turbines**. As for the maintenance, also shipbuilding and ship repair, as well as decent training facilities are an issue and can give chances for SME to enter indirectly in the market or to adapt their products to the new challenges. One example is the French shipbuilder Naval, that is specialised in the building of ships for harvesting oysters and has taken the challenge to build a CTV Seafox 1. As for the energy transmission market, three supply chain areas are relevant: export cables, substation structure, and substation electrical system. As for the decommissioning, there is still a lot of work to be done to identify the cost-effective logistic chain for the

dismantling and the recycling of wind turbines. One lesson from the waste industry that can be included, is that the transport of waste is a huge cost-factor, negatively influencing the proposed business model. In other words, the recycling of the wind turbines should be done as closely as possible to the landing-area and transport handling costs should be limited.

For port infrastructures, there is harsh competition for space and quays from within the port areas from other economic and logistic activities which take a lot of space as well (e.g. container-storage) . Publicly owned ports are more likely to accept a new industry entering the port authority based on the economic and social benefit to a wider municipal area whilst privately owned ports will evaluate a potential change to the utilisation of port infrastructure purely on financial merit, not considering the wider supply chain. There is also lack of certainty about the dates of the construction of the offshore wind farms (the pipeline) and the necessary capacity of the transmission grid that will be needed, which is a risk to ports considering investment in further infrastructure: if the transmission grid on land is not able to absorb the energy that will be produced by the offshore windfarm, the business model for the offshore wind farm will not be cost-efficient and the concerned ports will not be considered. E.g. Belgium has faced this issue when the grid connection of the first offshore wind farms was faced with delays due to appeals against this project at the Council of State in 2014.<sup>3</sup> Hence, planning and executing both offshore wind farms and grid connection is essential, not only for the projects themselves but also for port operations.

One important consideration for ports is its own in-house personnel to adapt and grow with the changes in function of the offshore wind market: used to work with fisheries , offshore oil and gas, and traditional cargo owners, there is a complete new type of port workers entering the port area, with different needs and different expectations: whereby traditional logistic operations go from one port to another, most of the staff of the maintenance companies go to their offshore wharfs every morning and return in the evening. The port facilities need to be adapted for frequent and rapid interventions from the quayside into the offshore wind farms . The concept of SME ports comes into play here whereby smaller ports need to upscale and prepare for future growth opportunities despite the uncertainties and the difficulties they face in relation to investment and access to financing from public and private sector institutions.

#### A. Challenges

- SME's in offshore wind sector
  - Larger production companies bring own specialist supply chain SMEs
  
- SME ports
  - SME ports are static: they cannot be removed from one place to another to make the operations more efficient
  - Need of upscaling and need to be adapted regarding future growth opportunities
  - Investments in port infrastructure needs large preparation
  - Operational space of SME ports is constraint
  - Need of enough and timely capacity of the transmission grid
  - SME ports have to deliver several functions which go beyond the logistic operations
  - A high amount of directives and regulations not considering impact of development of OWI sector within ports
  - Need of specialised staff

---

<sup>3</sup> See e.g. <http://www.flanderstoday.eu/innovation/energy-manager-elia-plans-ambitious-offshore-grid>  
16 | Page

- Need to finance large scale marine infrastructure

## B. Solutions

- SME's in offshore wind sector
  - Very specialised technologies and products to assist major companies to reduce their installation and maintenance costs or help with preparation of maritime wharfs
  - Opportunities within product life cycle: development, manufacturing, installation and foundations, maintenance, repowering or decommissioning
    - ❖ Regarding maintenance: opportunities within shipbuilding, ship repair, decent training facilities, digitalisation and automation
    - ❖ Regarding energy transmission: opportunities within following supply chain areas: export cables, substation structure, substation electrical system.
    - ❖ Regarding decommissioning:
      - ✓ identification of the cost-effective logistic and value chain for dismantling and recycling of wind turbines
      - ✓ organize recycling of wind turbines as closely as possible to the landing-area
- SME ports
  - Long term preparation/planning regarding the investments in port infrastructure
  - Sufficient and timely capacity of the transmission grid
  - Port facilities that are adapted for frequent and rapid interventions from quayside into the offshore wind farms
  - Upscaled and prepared ports for future growth opportunities





## 7. Initiatives and networks to boost the Offshore SME supply chain

Within the North Sea region, several efforts have been taken by the different sector organisations - often supported by public authorities - in order to find experienced suppliers and potential staff for the installation and the maintenance of the offshore wind farms. On the other hand some of the EU countries are imposing conditions of local content when tendering major projects for the construction of offshore wind farms.

Hereby we present an example as this report does not have the ambition to make an exhaustive enumeration of the numerous initiatives and networks focussing on offshore wind SME's. In Kent, the initiative Low Carbon Kent is a network of SMEs across Kent and Medway that Kent County Council as a local authority has set up, supports their move toward a low carbon, resource efficient and resilient way of working and engage with public, private and customer sectors. Their vision is to support national and local strategies to strive for a smart, sustainable and inclusive economy and to create a county that is low carbon and resource efficient. With over 3.7GW of installed capacity, the UK offshore wind market is estimated to be worth more than £100 billion over the next 20 years, with £15 billion open to manufacturers in the supply chain, offering a significant and sustained growth opportunity.

The UK Government has developed *GROW - Offshore Wind, a business support programme* delivered by MAS, RenewableUK, Grant Thornton and the Advanced Manufacturing Research Centre at the University

of Sheffield. In partnership with GROW and the Kent County Council project 'Low Carbon Across the South East (LoCASE)' Low Carbon Kent has hosted a *meet the buyer event* on 6th December 2019 that includes consultancy, technology and funding support tailored for SMEs with the potential to enter the offshore wind supply chain, particularly those that can be involved in the manufacture of components for offshore substations, foundations, transition pieces and undersea cables. The event formed a part of a consistent, accessible business support programme that helps businesses optimise the use of resources and adopt eco-innovative and low carbon solutions in ways that improve business performance in terms of resilience, profitability and competitiveness, at the same time contributing to the protection and preservation of the environment.



A number of similar initiatives are ongoing in the Baltic and North Sea regions also.

#### A. Challenges

- Experienced suppliers and potential staff for installation/maintenance of offshore wind farms
- EU countries imposing conditions of local content when tendering major projects for construction of offshore wind farms

#### B. Solutions

- Consistent, accessible (EU) business support programmes, including consultancy, technology and funding support tailored for SMEs with the potential to enter the offshore wind supply chain

## **CHAPTER TWO: OBSTACLES & SOLUTIONS TO SME'S WORKING IN THE OFFSHORE WIND SECTOR**

### **1. Overview**

Capital investment, competition, certification, and track record in the offshore wind industry are vital to SMEs entering the market. Considering the increasing growth of the offshore wind sector over the next decade, the growth in demand for SMEs services will not necessarily grow at the same speed. The demand varies across supply chain elements and lifecycle stages of the offshore business and projects i.e. development, manufacture, installation, and maintenance, repowering and decommissioning. The greatest growth is likely to take place in maritime services such as marine information technologies and crew transfer vessel services that are required for the installation and maintenance of offshore transmission assets. Considering the high security requirements and the heavy financial investments, an entry into the offshore transmission supply chain will be more challenging for SME's, but not impossible.

Often SMEs face high costs from testing and certifying new products, components and materials that have to operate in right harsh environmental maritime conditions. Understanding SMEs' needs for testing and test facilities in the North Sea Region is vital. Accessibility to sufficient funding and simplified procedures are key conditions in order to motivate SMEs to participate. This activity will be divided between products/ supplies in an **R&D phase (technological readiness)** and those in the **product approval phase (commercial readiness)**.

One of the objectives of the Inn2POWER project is to facilitate access and reduce costs for SME's active in the OWI regarding testing. Therefore, an overview of test facilities within the NSR is set up online<sup>4</sup> and several webinars are organised on test facilities to give the opportunity to SME's to get familiar with the broad range of available test facilities. It gives the possibility to those SME's to find the most perfect match possible between their technology and the right test facility.

A promising development in Belgium to support a.o. offshore wind SME's regarding testing is the following. The maritime innovation and development platform "Blue Accelerator" has been launched, an open offshore test facility for all blue economy research, development and innovation projects. Located at 500m off the port of Ostend in Belgium, this offshore platform allows companies, organisations and knowledge institutions to organise a broad range of tests in real life sea condition. Blue Accelerator is owned and operated by POM West-Flanders, with support of i.a. Port of Oostende.

In this chapter the following obstacles and solutions have been described further:

- Personnel and human resources
- Port infrastructure, services and organisation
- Local and regional strategic planning
- Finance and investment
- Capacity within the Public authorities to assist the sector

---

<sup>4</sup> <https://testfacilities.eu/>

- Legal obstacles and procedures
- Operations and planning
- Business case development
- EU regulatory environment or the lack of EU regulations
- Technological issues
- Accessibility of data
- Environmental issues
- Economic factors

## 2. Personnel and human resources

One of the key obstacles for the operations for SMEs is to find qualified staff and skilled labour. SMEs often experience problems in hiring skilled workers due to competition from large enterprises and general financial conditions, which can be offered by these large companies. SMEs do not have the financial resources to invest sufficiently in training in depth of their existing staff and they are often hampered by increased labour and other costs. Next to the financial issue, some of the other issues that confront SMEs in the recruitment of qualified labour, include:-

- The non-transferability of certificates from one industrial sector to another. This is often compounded by a lack of international recognition for certain certificates and training centres.
- The general recruitment and sourcing of well-trained staff in the offshore wind port clusters requires longer term partnerships with local colleges and apprenticeship schemes to address longer term skill shortages. Unfortunately, the adaptation and the changing of the curricula take a lot of time, hampering the procedures which are established by the civil servants within the different ministries of education, and also with the effect that once appropriate education is installed, this already is outdated. Also, experience with employment services has learnt us that the flexibility to arrange specific trainings for offshore services includes a lot of administrative obstacles and thus a lot of time.
- Also another important element is the price of the oil and gas in the North Sea: insofar the oil price is high and keeps on rising, the SMEs and major companies in the oil and gas sector are becoming much more attractive as to labour conditions and salary offers. This has an impact on the attractiveness of the offshore wind industry that cannot offer the same interesting salary conditions. Anyhow, the evolution in offshore wind is promising seen the positive trend compared to oil and gas.



### 3. Port infrastructure, services and organisation

Ports play a unique role in cost reduction and efficiency in organising the logistic operations in offshore wind projects. In an industrial sector that is growing rapidly in volume of projects and technology dimensions, ports continuously are obliged to adapt their infrastructure to cater for ever larger components, bigger vessels and increased number of activities. Considering the capital investments that needs to be made by the port authorities in order to facilitate these operations, it is of major importance that the port authorities are informed about the project pipeline. Their offer may span over the entire life-cycle of assets, from installation to operation and maintenance (O&M) and decommissioning.

Ports are becoming the focal point in local and regional development by offering testing facilities, training centres and hosting warehouses, offices and operation centres for manufacturers, developers and the supply chain. Therefore, ports are the natural centre of industrial activity and development, bringing together knowledge, labour and capital to offshore wind energy.



Obstacles or bottlenecks can occur when a developer alerts the port to a project development only a few months prior to a project tender or before work is due to start, leading to challenges to strategic investment planning and to effective construction of the infrastructure in order to facilitate the diverse offshore operations. Without guidance from industry and sufficient planning timelines, ports face the choice of making investments without any guarantees of business development on a longer term. It is here where the Wind Europe OWPP group is helping to enable port members to communicate with developers on the role of ports in strategic investment planning and on how they can contribute to cost reductions across the entire life of the project.

Moreover, within an European perspective, it is even more important that the role of the offshore wind ports, of which many are SMEs, can be recognised within the EU policy programs. On the EU Commission level, the ports are only recognised as gateways for logistic operations. It is a fact the ports play an crucial role in contributing to the EU Commissions 6 priorities 2019-2024 and to the implementation of the Green Deal and the renewable energy supply within the EU. Despite this, offshore wind ports are specialising in these industrial sectors, but they are not recognised within the EU programs that flow from these priorities: not within the logistic policy programs and not within the renewable energy policy programs. It is of major importance that specialised offshore ports do not fall between the cracks in the policy architecture at the European level with low or no priority recognitions under maritime transport and logistic policies, or under the growing array of renewable energy policy programmes. First steps have been taken at the level of DG Mare, as they are more open for the multi-functional use of maritime spaces within the EU. Contacts with DG Move and the Connecting Europe Facility (CEF), have been established. But other policy impacts on the offshore sector are coming from DG MARKT (recognition of professional qualifications), DG EMPLOY (emerging skills agenda and the European Social Fund), and DG RTD with the emerging Horizon 2020 Plus framework. Policy recognition at this level influences the Member States policies framework in the future.

Within the port areas, there is another challenge, coming up for the SMEs, specialising in the delivery of services and products to the offshore wind farms. Due to the fact that the space within the port area is constrained and limited, the price for warehouses and offices is becoming more expensive and might influence the opportunity to set up a fixed basis within the developing offshore service wind bases. Insofar the cost becomes too high, they need to reallocate their activities and loose the instant contact with those companies. Moreover, the infrastructure which has been built in the ports might not be adapted to the needs of the SMEs and the level of delivered services do not justify to adapt the major port infrastructure. This can lead as well to major cost elements that are hampering the entry to the offshore wind market.



What are the emerging demands of the offshore wind industries to Ports?

- Large components (not manufactured at the port) arrive by sea, increasingly utilising RO-RO vessels; this is a cost-effective trend and avoids the necessity to install heavy-lift infrastructure
- Road infrastructure around ports improved for supply of smaller components, and avoiding issues with public transport
- Quayside lengths increased to enable efficient reception of larger components
- Quaysides and subsea areas within the port area, strengthened to support increased loading pressures

- Quayside crane lifting capabilities increased
- Increased storage and laydown areas for components for shorter or longer period
- Dredging of the ports accessibility for larger vessels, considering the larger draft of the hotel-ships and the installation vessels
- Development of local supply chain – first and especially second tier.
- Water-borne inbound and outbound logistics creates strategic opportunities for ports with limited hinterland adaptabilities.
- Permanent upgrading of workforce and collocation of lower-tier suppliers creating new economies of scale;
- Streamlining the access of the support services by the ports and the developers working together from the earliest stages of a project to deliver smart wind farm management.
- Bespoke (and environmentally compliant) specialist facilities for receiving and processing components from decommissioned wind farms; set up a circular economy supply chain.
- Facilities to support the life-extension of wind farms reaching the end of originally planned life.
- Multi-fuel facilities, considering the greening of the offshore operations within the wind farms
- Performant port information systems that diminish the red tape and facilitate the operations
- Waste-handling facilities that are accessible for all operators
- Lack of accessibility to funding in order to justify marine innovation operations by SME's.

Obstacles that block the development of port infrastructure and port services within SME ports :

- Lack of clear project pipelines, justifying the preparation of major port investments
- Volatile and unpredictable markets that inhibits SMEs and SME ports obtaining financing and investment;
- Administrative report procedures and emerging legal obligations;
- Long innovation and certification track records;
- Lack of critical mass of industrial activities in order to justify adaptations of the port infrastructure
- Issues of stakeholder management within the community of the port users
- Issues of marine spatial planning and marine safety issues
- Limited access to private and public funding, including EU funding
- Issues of intermodality in order to guarantee the just-in-time delivery of components
- Investment and organisation of the test facilities within the port areas, in order to guarantee the innovation in the offshore wind industry
- Availability of energy grid capacities
- Attempts for enrooting the offshore wind clusters into the further renewable energy production sites within the port area
- Competition with traditional and new logistic industrial markets,
- Seveso-industrial activities
- Environmental issues





#### A. Challenges

- Continuous adaptation of infrastructure to cater larger components/bigger vessels/increased number of activities.
- Information on project pipeline
- Narrow view on role of ports only as gateway for logistic operations
- More expensive price for warehouses and offices due to limited space in ports
- Not adapted infrastructure to the needs of SME's
- Emerging demands of OWI to ports (=> see above)
- Obstacles that block development of port infrastructure/port services (=> see above)

#### B. Solutions

- Sufficient **planning** timelines and guidance from industry
  - Make sure that the role of ports in strategic investment planning is taken into account, by communication with developers
  - Recognition of the role of offshore wind ports in EU policy programs (logistic policy programmes as renewable energy policy programmes)
  - Contact/lobby at EU level (several DG's)

## 4. Local and Regional Strategic Planning

Based on WindEurope's own scenarios, a 3-4 GW/year growth of offshore wind installations is expected to be constructed between now and 2025. This rises to 7 GW/year until 2030 or put another way will mean around 460 next-generation wind turbines (12- 15 MW<sup>o</sup> increasing to 19 GW/year around 2050).



Image of the Port of Oostende

The question of land availability and usage arises. Ports need to work closely with local and regional authorities in order to overcome future bottlenecks that may occur as a result of forecast growth of the land and sea operations to accommodate these increasing volumes stemming from development, manufacture, installation, maintenance, repowering or decommissioning phases.

Considering the technological developments, it is of major importance that there is a direct communication between the industry and the ports that are active in the offshore wind sector. Considering the need for specialisation and the very specific handling techniques, it is recommendable that the industry and the ports work together in order to find solutions and to reduce costs.

Considering the spatial constraints, it becomes very hard for the SMEs to get direct access to the relevant terminals or to the business sites that are focusing on the offshore wind industry. Even direct access to the quayside becomes a huge issue and is very expensive. By consequence, the logistic costs for some of the SMEs, active in this industry, become higher and put their margin for negotiating the prices for their services under pressure.

As the offshore wind industry and the farm developers claim to receive optimal services within the offshore ports, they want to have areas, where they can organise a direct access to the sea. Confrontations with other port users are not very well accepted by this industry, due to the security and the protection of intellectual property linked to these infrastructures. As a consequence, and especially in

the low countries, SME's need to work in areas which are behind the locks : this incurs additional logistic costs from their separation from the larger waterfront operating companies.

#### A. Challenges

- Land availability and usage
- Spatial constraints: direct access to relevant terminals or business sites focussing on OWI
- SME's working at location not having a direct access to sea (behind locks,..) = additional logistic costs
- Need for specialisation and very specific handling techniques

#### B. Solutions

- Working closely with local and regional authorities to overcome future bottlenecks
- Direct communication and close cooperation between industry and ports active in offshore wind sector
- Sufficient space for SMEs having direct access to the sea

### 5. Finance and investment

Entry into the Offshore Wind transmission supply chain requires significant capital investment in order for SMEs to compete with larger companies or to keep up with the quality requirements that are imposed by the major industries. In addition, this is compounded by the costs of marine investments which is often 3 times that of a comparable infrastructure investment onshore.

Finally, the staff that is working in the offshore wind industry, needs decent training and certifications, which are expensive. By consequence, the cost of labour is higher and for some SME's, this can be an obstacle to invest in further growth.

Further, the sector of the offshore wind industry is characterised by the definition of enormous liabilities, considering the strict obligation for the production and the supply of energy. This has serious impact on the cost of insurances that need to be taken by the SMEs, delivering different kind of services to the offshore industry.

Moreover, the offshore wind industry installation and maintenance market is by nature a transnational market. By consequence, insofar the SMEs want to follow their major clients or to work with them in a joint partnership, this implies that extra investments need to be made in order to access the new foreign markets. Despite the EU single market, it has been shown that some of the markets are more protected than others with different regulations that are applicable on the same staff for similar operations. Therefore more financial resources are needed in order to guarantee the same level of services.

Finally, on the longer term, the uncertainty of the project pipeline has also a major impact on the level of investments that can be prepared and taken up by the SME. As most of the SMEs are working in subcontracting, they have to be more flexible in order to deliver the demanded services. This flexibility has a price. Moreover, due to the uncertainty of the project pipeline and the related subcontracting, this uncertainty is a major obstacle to SMEs attracting investment from financial institutions. SME financial needs are still significant, especially for fixed investments and working capital, though the costs for such finance are still high. Moreover, access to public financial support (including guarantees) remains limited

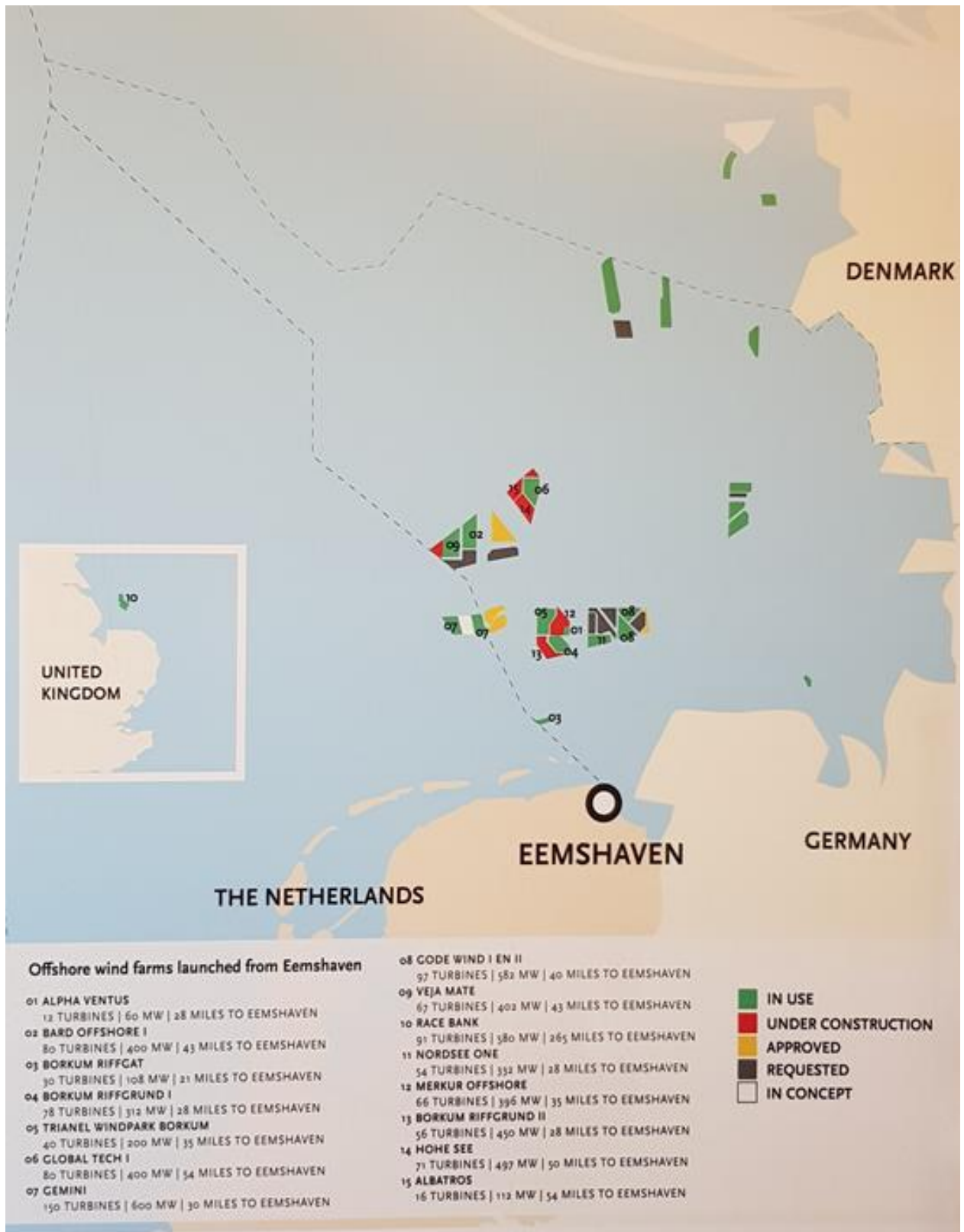
for SMEs. As a result, long term investment in capital infrastructures and skills often limits SMEs to short-term operations rather than medium term innovation opportunities.

A. Challenges

- Significant capital investments, costs of marine investments, expensive training & certification
- Enormous liabilities: strict obligation for production and supply of energy = high costs of insurances
- Investments needed to access new foreign markets
- Uncertainty of project pipeline
- Limited access to public financial support (including guarantees)

B. Solutions

- More financial resources in order to guarantee the same level of services
- Better insight of project pipeline



Specialisation and niche products and services to be offered by SM

## 6. Capacity within the Public authorities to assist the sector

Vitally important to the development of the Offshore Wind SME supply chain are regionally financial instruments that can often be co-financed by the European Structural and Investment Funds – a point underlined by the EU's own Blue Growth Strategy in the context of EU2020. They should involve local partners including regional financial institutions and regional agencies in the design and implementation of more tailored instruments. A robust market assessment and financial gap analysis is also needed. Indeed, quantifying the financial gap is a key precondition to assessing any market failure to be addressed by financial instruments.

Local and regional authorities play a vital role in creating the framework conditions for SMEs to grow in these circumstances. For example, mechanisms - such as the [Investment Plan for Europe](#) that is supported by the European Investment Bank loans - require a significant critical mass for a region to create a SME support package that can be of support to the OWI SME development.

There are also profound interregional business environment differences across the EU which can further exacerbate these key challenges. For instance, the quality of institutions directly impacts the regulatory framework but also affects labour and financial markets. Low quality governance and institutions are the main obstacle to development in low-growth regions, posing particular problems for SMEs. The quality of local and regional institutions is sometimes affected by a lack of personnel resources and understanding of the public sector. It would be useful if these institutions would focus more on the organisation of innovative and qualitative services than on the correct implementation of rules and procedures.

These key external obstacles for SMEs can significantly impact regions creating a vicious circle affecting the entire regional economic system. Since SMEs represent the majority of people employed and value added in most EU regions, challenges that limit their capacity to grow and compete can therefore negatively affect the capacity of regional economies to be innovative and to compete. In turn, this limits the capacity of SMEs to grow and compete which implies that regional economies are more exposed to risks from globalisation and technological change.

Globalisation has a highly differentiated impact on EU regions. Some can more easily take advantage of new opportunities, with SMEs well positioned in international value chains. Others are hit by job losses, stagnating wages and shrinking market shares when low-cost competitors move into more technologically advanced sectors. The best response to globalisation is to move up the value chain but this requires innovation, entrepreneurship, knowledge transfer and continuous upgrading of skills. Regions that are innovative with a large share of high-skilled jobs and a highly educated work force are less likely to face heavy job losses. In general we can say that in offshore wind a lot of the North Sea Region SME's are taking advantage of globalization, given the successful export of which the potential further development is high.

On the other hand, the sector of the offshore wind lacks visibility. The lobby from the traditional oil sector and the nuclear sector, supported by diverse institutions, has been very harsh and detrimental for offshore renewables. Those economic players informed the public sector in a very one-sided negative way, stressing the lack of cost efficiency in case of building the offshore wind farms. The added value for

the environment, employment, research and supply chain development have been underplayed, and some public institutions have been reluctant to express themselves explicitly on the added value of the offshore wind sector to the national and EU growth, in comparison with the oil sector, the coal sector and the nuclear sector. Moreover, the economic and environmental cost of decommissioning those installations was never calculated by the lobbyists, supported by some research institutions in their communication to the public sector. The offshore wind sector and their supply chain was not strong enough to make the point to the public sector, as they were focusing on their technological developments: in 10 years' time, the capacity for each wind turbine has been more than tripled, which has never been seen in any other energy sector. The supply chain also had to adapt their capacity of handling the support services in order to guarantee the cost effectiveness. Some public entities followed the opinion of the major industries and energy sector, instead of fully embracing these rapid evolution in the offshore wind sector.

The European level fully embraced offshore wind and expressed high ambitions by the adoption of the EU Strategy on Offshore renewable energy. Offshore renewables are of key importance to the European Green Deal. This impacts positively the "lower" policy levels their position towards offshore renewable energy.

#### A. Challenges

- Regional financial instruments
- Poor quality governance and institutions
- Globalisation
- Lack of visibility; harsh lobby from oil and nuclear sector
- Lack of knowledge at public sector (no information on rapid evolutions within OWI)

#### B. Solutions

- Involving local partners – including regional financial institutions and regional agencies – in the design and implementation of tailored instruments
- Quantification of financial gap to be able to assess market failure (market assessment and financial gap analysis)
- Organization of innovative and qualitative services
- Move up the value chain as a response to globalisation by innovation, entrepreneurship, knowledge transfer and upgrading of skills
- Lobby from OWI sector: added value for employment, research and supply chain development. Added value to the national and EU growth.
- Increase social acceptability and support for offshore wind and offshore renewables in general



## 7. Legal context

Identified as a high-growth industry, as offshore wind industrialises and fertilizes spin-offs in the blue industry, it will contribute up to 8% of the global ocean economy by 2030. Through providing visibility and a growth pathway, the national energy policy is a huge driver of this growth, but **policy surrounding ports development, is often locked away at the regional level.** In other words, there is no coordination between the relevant policy levels, related to the different levels, nationally and internationally. The OWPP is investigating the opportunity to develop a pathway to bridge the gap between EU and national- and regional policy to identify regulation that unlocks both green and blue growth.

Above all, offshore wind ports need clear, ambitious, predictable and stable regulatory frameworks. Together, they seek commitment from governments on a visible steady pipeline of projects. Excessive regulations and administrative burdens are for SMEs, more than for large enterprises, an obstacle to have cost-effective operations. And the compliance costs and requirements affect their capacity to innovate, the level of qualified human capital at their disposal. Finally, as mentioned above, SMEs are confronted with national and nationalistic regulations which impose major obstacles for them to enter the market and to internationalise in an efficient way. These regulations may be related to the level of



certification of staff, the level of insurability, the quality standards related to the products that are used in operations, the organisation of the waste collection, etc.

#### A. Challenges

- Policy surrounding ports development is locked away at regional level
- No clear, ambitious, predictable and stable regulatory frameworks
- Many strict national regulations regarding level of certification of staff, level of insurability, quality standards, organisation of waste collection,...

#### B. Solutions

- Coordination between the relevant policy levels (related to national and international level)
- Develop a pathway to bridge the gap between EU and national/regional policy to identify regulation unlocking green and blue growth
- Visible steady pipeline of projects
- More information and support for SME's on national regulations (related to a.o. safety, quality, environmental standards)

Administrative simplification of national regulations



## 8. Operations and planning

The future attractiveness of ports to wind farm developers will be affected by the level of SME services they can provide. Therefore, it is a major trump card if the ports have the following services available:

- The variety and supply of third-party services in ports : accessible fuelling, mechanics, electronics, ship repair, training facilities, vessels spare parts and chandlery services for CTVs and SOVs;
- General ports services such as accommodation, warehousing, airport, transport, helicopter services;
- Physical port logistic quayside infrastructure: availability of HD quayside areas, pontoon availability, quayside depths and dredging frequency, fenders on quayside etc;
- Port management and facilities: recruitment sites and HR policies, cargo handling experience, fuel storage and supply facilities, cold ironing, waste management policies, conference and meeting facilities, water management, parking and issues such as opening hours of ports and lock gates between outer and inner harbours;
- Availability of fast marine services, for emergency deliveries;
- Direct accessibility of the ports to the wind farm is an important factor in increasing the efficiency of sea operations, but so is the sharing of facilities, warehouses, offices and vessels that also allow cost reductions;
- Enlarging of port storage and related facilities to offer to O&Ms extra space, will need to be balance against an increasing amount of O&M going offshore where costs are lower;
- The emergence of offshore energy islands or similar concepts amongst arrays, allowing to reduce time and cost;
- Prioritisation of offshore marine traffic and all related services for SMEs;
- Prioritisation of access to the ports information systems for all the different marine SMEs and services;
- Public information services and dissemination services to the general public (seldom available for offshore wind farms);
- Accessibility to IT-services and related data transmission providers at sea and on land;
- Shared costs opportunities for CTVs, storage and warehouses in ports;
- The organisation of the lifting operations of project cargo and higher volumes; Energy Cluster Denmark has made an in-depth study and concertation in order to coordinate and standardise the requirements of lifting of major components in coordination with the bigger industry;
- Vicinity and availability of R&D facilities and institutions (e.g. Blue Accelerator, Blue Cluster, Ostend Science Park,... near the Port of Oostende)

### A. Challenges

- Level of SME services that can be provided

### B. Solutions

- Availability of the above mentioned services



## 9. Business case development

Obstacles for SMEs to enter the market of the Offshore Wind sector supply chain, can be very different for those high technology SMEs, looking at the Offshore Wind transmission market, and those more generic SMEs involved in the traditional port infrastructure and logistics provision, focusing on the delivery of supply chain elements.

The business case for SMEs gaining entry into the more specialist cabling and offshore wind transmission market is likely to be more limited. In these specialist areas, SMEs can face huge barriers to entry, with upfront high capital investment costs, the need for high-level recognised and trusted expertise, high levels of expensive quality certification and the growing emphasis on turnkey solutions. As a result, much of the manufacturing presently is carried out by larger and more established medium and larger companies. As an example, the established market for HVAC cables (alternative current) the cabling technology most regularly used for installations less than 50 kilometres from the shore, is dominated by a few larger companies for the time being. A move to inter dependent arrays more than 50 kilometres offshore may create new demands and new market opportunities for the supply and maintenance of HVDC (direct current) cables in the future as the OWI upscales. But considering the enormous cost of working at sea, the access to this market for SMEs is rather limited, unless offering specialisations, like the development and the installation of sensors, the set-up of underwater communication or seabed preparations.

The business cases of the SMEs are confronted by high obstacles. Recruitment of experienced individuals and skilled workers from competitors or other sectors, the chartering and the acquisition of specialised cable-laying vessels and the development of specialised expertise are significant barriers to developing a track record and winning the trust of larger companies. Considering the long time to prepare the operations at sea, the financial component becomes also more and more a heavy burden. Companies

that have experience of supplying similar industries (such as oil and gas, telecommunications, or interconnectors) are more likely to be successful in the transmission market. Partnerships with existing offshore wind suppliers can help establish credibility and facilitate sector entry with SMEs offering the most innovative, cost-cutting solutions being those that will most likely overcome barriers to market entry.

Consequently, the supply chain opportunities within the offshore market with the lowest barriers, involving the SMEs in a direct or indirect way, tend to have fewer growth opportunities and create limited added value; moreover their profit margin is under pressure, considering the strong impulse for cost efficiency within the sector. The Port of Oostende testifies that most local SMEs are hardly directly working in the supply chain, as the cost and the financial risks are very high. Most of them are subcontracted and working in the supply to those who are executing the contracts. Two examples of exceptions are GEOxyz and [Ostend Marine Services](#), which are working as maritime service providers mostly in diving, seabed scanning and sailing for maintenance operations at sea.

#### A. Challenges

- Limited business cases for SME's gaining entry into more specialist cabling and offshore wind transmission market (barriers to entry: high capital investment costs, need for high-level expertise, expensive quality certification,..)
- Offshore market with lowest barriers have fewer growth opportunities and create limited added value

#### B. Solutions

Partnership with existing offshore wind suppliers to establish credibility and facilitate sector entry with SME's offering innovative, cost-cutting solutions

- Specialization as maritime service providers (e.g. diving, seabed scanning, sailing for maintenance operations at sea)

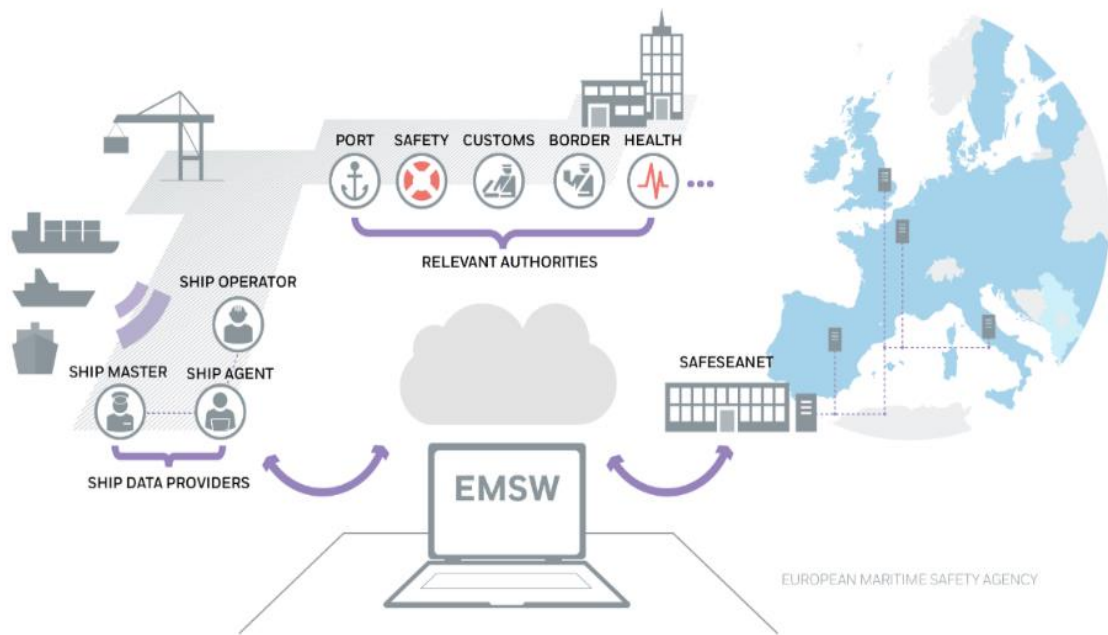


## 10. EU regulatory environment

EU regulatory requirements like the new ‘European maritime single window’ if transposed in their current form, will negatively impact SMEs, providing direct services at sea within the scope of the offshore wind industry. Insofar they use Crew Transfer Vessel services, they seem to be obliged to report all the staff on board of CTVs. Although they are not making a maritime journey in the traditional way anticipated under the new Regulation bringing goods and people from port A to port B, they risk additional administrative and reporting requirements that will hit the SMEs more than the larger companies providing these services. This is even more the case, especially considering the inherent need for flexibility, whereby the decision to send out a CTV, is in certain cases only taken the evening before in function of the weather forecast and the urgency of the needs for certain operations of maintenance and repair. This is again a consequence that the specificity of maritime needs within the offshore sector are not known by the administrators at the EU-level.

On the other hand, there is a lack of regulation as to the status of the qualifications of the staff that needs to be hired by the SMEs and that needs to be operational in diverse countries and diverse projects. As the level of qualifications and standards are defined on national level, it might cause a lot of trouble for the same worker to work in two different wind farms in two different countries. For SMEs, this is again another administrative burden that needs to be handled and that gives room for interpretation with long procedures as a consequence. The EU could mitigate these negative effects by defining overall minimum qualifications in order to work in the different markets, which are characterised by the different European seas: the North Sea, the Irish Sea, the Baltic Sea, the Mediterranean Sea, etc. This would help enormously

as the EU is willing to create maritime powerhouses in the different seas.



In

addition, the Port Service Regulations came into effect on 24th March 2019 with the objective of providing greater transparency in funding of ports and charges to make it easier for companies and SMEs to enter the market of the port services and to reduce the level of obstacles. On the basis of recent observations focusing on the port ownership model, it has been found out that publicly owned ports are more likely to accept new industries, providing potential economic benefits to a wider maritime area and port cluster of companies. Privately owned ports, however, evaluate the introduction of new activities primarily on their financial merits and the impact of the profit-level for the concerned private shareholders, whereby the interests for the port community are not even considered. The wider SME development questions in maritime services are strongly influenced by the ownership and governance structures in the ports themselves. This is an issue that the Port Service Regulation (PSR) is trying to tackle whilst avoiding unnecessary regulatory burdens.

The PRF Directive 2000/59/EC requires vessels to land the waste they produce during voyages that they are executing to and between EU ports, to the port reception facilities. It requires ports to develop Waste Handling Plans and provide Port Reception Facilities to all the ships using their port. It requires vessels to pay a Mandatory Fee for landing this waste and to notify the port of what waste it has in advance of arriving in port. The mandatory Fee ensures that a ship can land its waste and that waste is not discharged into the sea, however the amount and type of wastes that can be delivered in each port vary. Nevertheless, the practice of the waste handling within the maintenance of offshore wind farms might be organised in a different way. In some ports, the waste handling, related to the maintenance of the wind farms, is organised according to the organisation of the wind farms, whereby each park manager organises its waste treatment system. Considering the contents of the waste-handling directive, the mandatory fee is still due as well as the mandatory notification, even if the park manager has set up his own waste management system. For SMEs, active in the delivery of maritime services, this causes an extra burden and an extra cost, which is more difficult to bear by the SMEs.

Whilst the decommissioning of offshore wind farms is not yet subject to EU wide legislation, several Member States including UK, Denmark and Netherlands have guidance on full or partial decommissioning of their offshore wind farms. Nevertheless, the EU has already set up a significant package of EU legislation, amongst others related to ship recycling and to Environmental Impact Assessment. Much of the latter is built into the consenting procedure for the authorisation of the offshore wind farm to be built in the first place. Nevertheless, the guidelines do not consider the identification of dedicated areas and services, which are submitted to specific regulations and operational procedures. Considering this legal vacuum, it is even more difficult for SMEs to anticipate and to develop the relevant tools and procedures in order to support the execution of the decommissioning operations. Moreover, for the SMEs active in the recycling of components, it is even more difficult to make the relevant investments and to hire the competent staff, as the whole project pipeline of decommissioning is still not defined. Notwithstanding the major flexibility of SMEs, it is hard for them to prepare for engineering activities if the functional matrix has not been written out.

#### A. Challenges

- EU regulatory requirements having negative impact on SMEs (high demand of SME's such as administrative and reporting requirements)
- The specificity of maritime needs within offshore sector is insufficiently appreciated by administration at EU level
- Lack of regulation regarding the overall minimum qualification of staff. Differences in national requirements in this area.
- Development in maritime services is influenced by the ownership and governance structures in the ports themselves
- Waste handling regulation
- Decommissioning:
  - ❖ EU guidelines do not consider identification of dedicated areas and services, which are submitted to specific regulations and operational procedures = legal vacuum.
  - ❖ No definition of project pipeline of decommissioning
  - ❖ No cross-border consultation or collaboration on a strategic and planning level

#### B. Solutions

- Consultation with EU level to transfer knowledge/expertise on specificity of maritime needs; informing administrations at EU level and help translate this in policy initiatives or support
- Definition at EU level on overall minimum qualifications in order to work in different markets
- Revision of mandatory fee if the park manager has set up his own waste management system
- EU policy initiatives to address the legal vacuum with regard to decommissioning
- Insight in project pipeline of decommissioning
- Cross-border consultation and collaboration on a strategic and planning level decommissioning



## 11. Technological context

During the recent decennium, the offshore wind sector has been characterised by enormous technological progress: whereby in 2012, it took 3 days to install one wind turbine at sea, today 3 wind turbines can be built per day. This implies that the supply chain has also been characterised by enormous changes: the size of the installation vessels has grown rapidly and their equipment has been improved radically; the size and the quality of the maintenance vessels have been improved a lot; whereby the first wind farms were built very closely to the shore, today the technology has been optimised so that wind farms can be built at 50 miles and even further away from the shoreline. All these elements of technological innovation are more and more expensive. Considering this evolution, it is clear that it becomes more and more difficult for start-ups and SMEs to enter this high technological and expensive market. The financial obstacle to develop new products or to implement new technologies becomes more and more an issue, especially for SMEs and considering the aversion of banks to work in maritime projects, there is a need for appropriate tools to give the SMEs access to major technological tools or to the financial tools that are needed in order to create added value within the existing value chain of the offshore wind farms.

### A. Challenges

- Enormous changes within the supply chain: very expensive technological innovations

### B. Solutions

- Give SMEs access to major technological and financial tools that are needed to create added value within the existing value chain of the offshore wind farms, e.g. access to test facilities for R&D of new products and technologies, access to private and public funding,...



## 12. Accessibility of data

Considering the newest evolutions within the sector of the installation and the maintenance of offshore wind turbines, and considering the pressure to work more and more cost effective in order to produce energy at a market-conform price, more and more processes within the offshore industry have been monitored. Upon the analyses of the monitoring exercises, combined with the real experiences of the offshore workers at sea and the implementation of common sense, it has been possible to optimise the maintenance schedules and the planning of the operations at sea in function of wave height and weather conditions. Considering this evolution, an increasing amount of data have been gathered by the wind farm managers in order to produce the best quality of wind energy at the lowest price. These data collections have become increasingly important and in combination with real-time information, they are crucial for optimising different offshore operations. The impact of data collection, both for the operations at sea as well as for the production of wind energy, has become crucial in the management of the offshore wind farms. Major investments are made to optimise the communication between these farms and the control units on land.

As for SMEs, it is very hard to make similar major investments in order to build up data collections or even to get access to the data collections that have been set up by the offshore wind farm managers. Moreover, it is not guaranteed that they have access to the same data-streams, related to the offshore wind farms where they need to operate. Further, the different wind farm managers are using and developing different data frames, which makes it even more complicated for SMEs to step into the supply chain that has been developed by the wind farm managers.

Another obstacle is the fact that the diverse wind farm managers, who are operating in the same regional zoning, are not opening or sharing their data collections, not even the elementary information, like weather conditions and weather forecasts. By consequence, every farm manager has to gather his own information which is not cost effective. This situation is even worse for the SMEs that are delivering services to these wind farms, and that need to make a proper interpretation of the same reality by implementing different parameters in order to make a decent planning of activities.

The same counts for the test facilities, whereby every test facility is setting its own data-sets and which make it for the SME or the innovator quite hard to make a comparison between the results of the tests, executed on different sites. An exception in Flanders is e.g. Blue Accelerator, of which the data are open.

A more open cooperation on elementary data sharing in certain regional maritime areas would make the operations more efficient and cost effective for all parties concerned: wind farm managers, SMEs and port authorities.

### A. Challenges

- Major investments to build up data collections/get access to data collections set up by wind farm managers
- Use of different data frames by different wind farm managers
- No opening/ sharing of data collections by wind farm managers
- Own data sets by different test facilities

### B. Solutions

- More open cooperation on elementary data sharing in certain regional maritime areas
- Sharing elementary data sets within regional maritime zones

- Open data of basic information, such as weather and sea conditions

### 13. Environmental context

Wind farm managers receive a concession of the national authorities in order to build and to maintain offshore wind farms. These concessions are normally linked to very strict conditions as to environmental marine management. This refers to the marine spatial plans that have been developed in certain countries around the North Sea. First steps have been taken in order to have a better coordination of these actions on a transnational scale. Nevertheless, not all parties involved are convinced that transnational collaboration is the way to go and some prefer to stick to national actions.

Considering the protective measures that have been taken in order to build, to maintain and to decommission offshore wind farms, this has a direct impact on the way the SMEs in the supply chain have to organise their services. The waste issue has been handled above.

Another element that is coming up, is the type of working-boats that might be used for future operations within the offshore wind farms. Today, all vessels that are used, are still using marine gasoil, which is not consequent with the option to reduce CO<sub>2</sub> and to support the development of renewable energy and a carbon free economy. Today, several initiatives have been taken in order to introduce different types of fuels that comply with the objective of a carbon free economy. The introduction of new types of fuels are not cost effective yet and are an obstacle for SMEs and SME ports in order to support the offshore activities and to step into the supply chain. Hardly any support scheme is accessible for the SMEs and the SME ports, considering the major administrative conditions that are imposed by the diverse administrations.

#### A. Challenges

- Different marine spatial plans in NSR countries
- Introduction of new types of fuels (carbon free economy) for vessels

#### B. Solutions

- Coordination of marine spatial plans on a transnational scale
- Speed up the transition to carbon free vessels, i.a. by setting up a support scheme for SMEs and SME ports, facilitate access to private and public funding,...

### 14. Economic factors

Another obstacle that might influence the accessibility of the development and maintenance of the offshore wind farms is the economic reality. This plays at several levels.

On the overall level of the energy production, it is clear that offshore wind production has gained some place on the energy market, but this place is not secured. Nevertheless the adoption of the EU Renewable Offshore Energy Strategy provides a degree of certainty on the future role in the EU energy market. From the moment that the Middle East starts to play with the cost of crude oil, more pressure is executed on the offshore wind sector in order to produce the energy at a lower cost, which affects the rentability of these major marine investments. Considering the cascade effect of the prices, this will have its direct impact on all the SMEs that are invited to operate in the supply chain, which will have a direct impact on their development opportunities considering the high investments that need to be made to step into the market.

Further, when the price of the crude oil is very high, this affects again directly the development opportunities of the concerned SMEs that are active in the marine operations and management of offshore wind farms, and reduces the chances for marine innovation and testing.

Another trend is that offshore wind farms, in cooperation with the authorities, are investigating the possibilities to go from monofunctional wind farms to multifunctional operations. The option of aquaculture is investigated, the introduction of other renewable energy sources like wave devices and solar panels is also being tested, and the newest plans refer to the production of H<sub>2</sub> at sea. It is clear that the concerned areas in the seas will be used for multiple functions which make the operations at sea more rentable and will imply more support services, to be delivered by the SME ports and the SMEs, active in the supply chain.

Notwithstanding these market opportunities, some insurance companies make it quite difficult for diverse operators to obtain the necessary insurances. The insurance companies, active in the energy sector, have a limited knowledge of the marine and maritime operations and are imposing rules and regulations that are counter-productive in order to improve the efficiency and the cost-effectiveness of offshore wind energy. Therefore, the wind farm managers are reluctant to open up their farms for any multifunctional activity, and for the SMEs and the SME ports is even more difficult to invest in the development of multifunctional activities. The difficulty to find appropriate finance and investment for innovation – next to the insurance element - has already been mentioned earlier in this report.

#### A. Challenges

- Economic reality at several levels (energy production,...)
- No fully secured place of offshore wind production within energy market
- Dependency on the price of crude oil
- Lack of knowledge by insurance companies and by investment institutions on marine and maritime operations; high insurance needs and costs

#### B. Solutions

Inform insurance companies and investors – active in energy sector - on market opportunities of marine and maritime operations (multifunctional operations at sea – aquaculture,...)

## **CHAPTER THREE : CONCLUSIONS – CHALLENGES & SOLUTIONS**

### **A. Challenges**

1. While there is wide consensus around the growth of the Offshore Wind Industry between now and 2030, by at least three-four times its present level, a corresponding equal growth in SME opportunities cannot be guaranteed, if this is left to market forces and the financial institutions alone. Public support for SMEs and intervention will be indispensable.
2. Other generic port, logistics and crew transfer service opportunities will grow especially where they demonstrate potential to make cost savings and insofar the issues of cross border and transnational cooperation are settled in a reasonable way; the nationalistic approach of some of the countries in the EU is rising costs and only protecting their industry on the very short term.
3. Ports and the planned upscaling of the offshore wind farms, raise questions of efficient use of space and port areas , especially considering the competition from other sectors in ports. Planning, lack of transparency of the project pipeline and investment bottlenecks, created by a risk averse financial and insurance sector, could be major obstacles to creating increased opportunities.
4. SMEs are challenged by skills shortages and the ability to hire skilled workers due to competition from large enterprises - within the offshore wind sector and beyond - and general financial conditions.
5. EU regulatory requirements like the new 'European maritime single window' if transposed in their current form will negatively impact upon smaller SME crew transport providers.
6. The trend from moving from monofunctional wind farms to multifunctional wind farms gives many opportunities for the SMEs and SME ports, insofar the financial and insurance sector are not blocking these opportunities, due to their lack of knowledge of the impact and the organisation of marine operations.
7. The use of IT, IOT and data management has become a major instrument for efficient offshore wind farm management. The lack of transparency of the data collections, even as to elementary data sets and the different systems that have been set up, are a major obstacle for SMEs and SME ports in order to integrate their services into the supply chain in an efficient way.

## B. Solutions/opportunities

1. Some of the fastest growing opportunities for the SMEs and SME ports that are able to enter the market, will be in the supply chain related to development, manufacture, installation, maintenance, repowering or decommissioning.
2. Ports and the planned upscaling of the offshore wind farms: A stronger cooperation between the Offshore Wind Ports and their respective supply chain, as well as the strengthening of the interconnectivity between the ports will be of major importance. Wind Europe 'Offshore Wind Ports Platform (OWPP)' has been created as an effective voice for offshore renewable ports and supply chain stakeholders to come together to share best practices , studies, workshops and importantly engage with industry and policy makers with one voice. The core objective is to strengthen the port connectivity in order to facilitate the industry in the cost-effective way.
3. Moving from monofunctional wind farms to multifunctional wind farms: It will be a major asset to facilitate room for innovation and testing at a cost-effective level for SME's in order to make an appropriate risk assessment as well as a founded business case.
4. The use of IT, IOT and data management: In order to support the multifunctional use of the offshore wind parks and to promote new development opportunities for SMEs, it will be of major importance that elementary data sets can be shared within regional maritime zones.
5. Several levels of public authorities play a vital role in creating the framework conditions for SMEs to grow. For example, mechanisms such as the Investment Plan for Europe that is supported by the European Investment Bank loans require a significant critical mass for a region to create a SME support package that can be of support to the OWI SME development. Another crucial aspect of support of public authorities is the facilitation of training and education of staff. All different policy levels need to collaborate to create the regulatory and supportive framework SMEs in the offshore wind supply chain need to enter the market and to grow. A strong dialogue between all relevant stakeholders will remain key to overcome barriers and find solutions for the actual and future challenges.



Jointly written by



Simon Pascoe, Sint-Lambertusstraat 59, 1200 St-Lambrechts-Woluwe, Belgium

And

Wim Stubbe, founder of OWPP, BDM at port of Oostende,

contact : [wim.stubbe@portofoostende.be](mailto:wim.stubbe@portofoostende.be)



Inn2POWER is a 4 year project (01/11/2016-31/10/2020) 50% co-funded by the EUROPEAN UNION and the European Regional Development Fund (ERDF) through the Interreg North Sea Region Programme 2014-2020.

INN2POWER is co-funded by the North Sea Region Programme 2014-2020; Priority 1 Thinking Growth: Supporting growth in North Sea Region economies

<https://northsearegion.eu/Inn2Power>