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Location matters as offshore energy changes with the tide

Ideally situated for logistics, operations and maintenance for offshore energy, how is the Port of Den Helder adapting to the effects of the energy transition, from gas to wind, and inevitably green hydrogen? Jacoba Bolderheij, CEO, gives PES an overview.

PES: A warm welcome to PES, Jacoba, it's lovely to have you with us. Perhaps we should begin with a short introduction to the Port of Den Helder and its current role within the wind energy industry?

Jacoba Bolderheij: Thank you so much. It is a pleasure to be with you and to have this opportunity to inform your readers about Port of Den Helder.

Let me begin by saying that we are quite an unusual port. We have a very specific focus as a pitstop port. For more than 40 years this port, our tenants and service providers have offered logistic services for offshore maintenance and supply activities in the North Sea.

As such, we differ from other seaports in the sense that we do not have a transit or transhipment function for large volumes of cargo, whether in bulk, liquids or containerized, to be transported to our hinterland.

Our port and our community are mainly busy with offshore energy production in the North Sea and has become a very prominent offshore operation and maintenance hub in the Netherlands and around the North Sea.

Of course, with these activities a large maritime community with all kinds of services, including ship repair, has found its home base in Den Helder.

PES: Can you tell us a bit about your location and what makes it suitable, strategically and logistically for offshore energy operations and management?

JB: If you google Den Helder and find it on the map, you will immediately see our central location at the North Sea. Napoleon called it Gibraltar of the North and started his naval base just because of the central location in the North Sea.

In modern times and offshore, distances play a very important role, as time is money. Looking at the offshore gas assets, it is clear that Den Helder is in an excellent location to serve as a pitstop port with quick turn-around times.

Over the years, all service providers have optimised their 'product' and logistics to be able to offer optimal service concepts. As a port authority we do our utmost to offer the maximum when it comes to providing berths and space and clear communication and admin.

And we have a top-notch heliport around the corner. The airport is five minutes away from the port and is the largest in western Europe, fully equipped and experienced for the offshore sector.

PES: The port and its harbour are steeped in history, aren't they? Energy transition is the latest mission, but it has witnessed

quite a few changes and turbulence through the years. How has the transition to focus on energy come about?

JB: The port and the city are indeed steeped in history. I invite all readers to come and visit the area. Remnants of a past long ago are still visible and visitable. Den Helder is also the hometown of the Royal Dutch Navy. But we can also build on half a century of expertise in the offshore energy sector.

Decades of experience in logistics, operations and maintenance of gas assets offer an excellent base to service the energy transition. The transition of our port takes place at the same pace as the energy transition towards sustainability.

PES: Focusing on the present day now, I would imagine the Port is a hive of activity as the offshore supply base for the North Sea. How has this changed or developed over the last couple of years or so would you say?

JB: Indeed we are a hive of activity. But we see the effects of the energy transition. The North Sea will become less of a location for gas production and eventually gas will be replaced by wind offshore energy production and we believe green hydrogen as well.

Of course this is not immediate. North Sea gas will play a substantial role in the transition and is needed in that transition, no doubt, but the speed of developments is mind boggling. Until 2030, 20GW of wind power is envisaged to have been erected at the North Sea, just on our doorstep.

To realise those ambitions, we are convinced that all ports large and small are needed. With our current facilities and developments in the future, the Port will play a significant role.

PES: Are there any particular challenges that are quite commonplace? How does the Port of Den Helder help to overcome these?

JB: I am convinced that space is key. Quays for berthing of ships, but also square meters. In the installation phase of the wind farms and in the operation and maintenance phase. Luckily these wind parks will not be there overnight, so we can adjust our infrastructure over the years to come.

At the moment we can accommodate a couple of operations and maintenance hubs for offshore wind. But for the future we have calculated with TNO Research that we need at least 6 hectares to serve the industry. Space is a challenge more ports are facing.

PES: The Port is supported by the Royal Netherlands Navy with this, is that right? What role does the navy play?

JB: With local and regional governments and the Royal Navy, we have embarked on a 'ports transition path' called Maritime Cluster. We are working on a rearrangement of infrastructure in the port so that growth of both the Navy and commercial activities can be accommodated.

PES: Wind energy is notorious for carrying a high cost, something that many of the business leaders we speak to are continually striving to bring down. How do you see the Port helping with supply chain costs, which are always a major factor?

JB: Based on so many years of offshore experience, I am convinced that our supply chain comes with even more efficient concepts to serve the sector. As a port we are supporting those efforts.

We took the initiative to start research on a supply chain/vessel train where gas, wind and in future h2 logistics will be integrated, including concepts of unmanned sailing and other modes of transport, e.g. helicopters.

Jacoba Bolderheij

We hope to start this research project, led by TNO research, one of the most distinguished research centres in The Netherlands, this autumn.

PES: With sustainability and environmental factors being at the heart of the offshore wind industry, how big a part does sustainability play within the Port itself?

JB: We look at three levels of sustainability and environmental policy: energy, emissions, circularity. In our own operations, we obviously use green electricity, focus on electric driving, improve the energy label of our office building and support sustainable procurement.

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On the second level, we focus on the availability of shore power and clean bunkers. We do not have much industry in Den Helder and are blessed with very clean air. But when it comes to shipping there are steep ambitions. We have to comply with Fit for 55 ambitions and while being a Waddenzee Port, we have even higher goals. Green shore power is high on our list of priorities.

To be able to receive the clean/green ships of the future we put our utmost effort into projects regarding shore power and hydrogen bunker stations in our port. We aim to contribute to zero-emission mobility on road and water. One of the projects includes a sailing demonstration vessel that is propelled entirely by green hydrogen.

On level 3, in the future we trust we can play a role in the circularity of offshore wind components and decommissioning of gas infrastructure.

PES: As many offshore windmills come to the end of their life-span, how big a challenge is the dismantling and recycling of these, in a sustainable way? Will the Port play a role here too?

JB: Dismantling of wind farms becomes a topic after their operational life span, which is after about 20-25 years. Various options are there: repowering, life time extension and, at the end, decommissioning. It would be great if a turbine can become 100% circular.

Nowadays, 85-90% of a dismantled wind turbine can be recycled, as most of the materials are made of concrete, steel and iron,

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for which materials there is an active economy in Europe. However, the materials in the turbine blades are more complex and markets are not yet matured. We are still exploring how we can play a role in the dismantling.

PES: With the offshore industry developing rapidly, what plans are in place to further the development of the port and its economy?

JB: Together with our partners the Navy and local and regional governments we are developing a breeding ground, a Maritime Cluster, where Navy, offshore operations and ship repair can excel.

We believe that the combination of high tech activities at sea by the Navy, with the high tech environment of the offshore energy sector forms an excellent environment to further develop our port and the port community to strengthen our regional economy.

PES: What about the future hydrogen economy? Are there plans being made for the Port to support this, should it be the game-changer that many are predicting it might be?

JB: We have several projects running. I already mentioned the hydrogen tank station and bunker station in the port. On a larger scale contributing to the CO_2 targets in our partners are currently working on a decarbonized hydrogen factory.

Den Helder is the gateway for the majority of gas produced in the Southern North Sea. We have the ambition to play that same role when h2 is produced at sea in future. Our focus is to realise a landing point in Den Helder for green hydrogen production at sea.

Our main asset today is the pipeline infrastructure, which is currently used by the offshore gas operators in the North Sea. We envisage those pipelines being used for green hydrogen molecules in the future. There are some promising projects and I hope that we can be part of those plans in future.

In the meantime, scientist argue that decarbonized hydrogen is a necessary step towards green hydrogen. In our H2 gateway project a decarbonized hydrogen production facility is being studied, which converts gas into hydrogen, while the CO_2 will be pumped back via existing pipeline infrastructure into depleted gas wells.

The facility will be engineered for a production of 550 tonnes of h2 per day. The CO_2 reduction will be around 2 mega tonnes annually, which is 14% of the industrial target. We trust that by the end of the year we can start with the next phase of the project, which is the financial and technical feasibility of this project.

PES: How do you see the future of the offshore wind sector developing from here? What will the Port of Den Helder look like in 2030, do you think?

JB: I believe that by 2030 the Port will still be a bee-hive with ships sailing in and out of our port. Ships serving the gas sector, wind offshore and h2 activities, like green hydrogen and hydrogen with CCS produced at the North Sea.

It will be crazy busy with ships transporting people, project materials, but also with ships in need of maintenance and repair and other services. Maybe we will be servicing new energy islands and I foresee new logistics concepts combining and pooling many modes of transport including helicopters and drones.

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