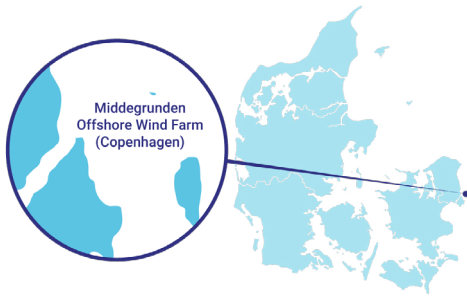


# MULTI-USE BLUEPRINT

Tourism and Offshore Wind in Middelgrunden  
off Copenhagen, Denmark





utility, and 10 turbines to the cooperative. This joint approach between the cooperative and utility to realise the Middelgrunden Project was a very good match for both. The utility had the financing & engineering expertise in place, while the cooperative gathered positive local citizens, who turned to be advocates and ambassadors of the project to their relatives and friends.

## Location

The multi-use activity took place near to Copenhagen at the Middelgrunden wind farm. The wind farm is located 3.5 km from Denmark's capital, visible from certain city beaches and rooftops. Middelgrunden was celebrated as the world's largest offshore wind farm when it opened in 2000 and produces up to 100,000 MWh of electricity annually, three per cent of Copenhagen's total power consumption. The wind farm consists of 20 turbines, each 2 MW, which are equally shared (i.e. 10 each) by its developers "Københavns Energi" (today HOFOR utility) and "Middelgrundens Vindmøllelaug" (Middelgrunden Cooperative), a private cooperative partnership with 8000 owners. Its operations are managed individually by each of the owners. The two partners initially invested a total of \$60 million in the wind farm.

After the success of a cooperative establishing a nearshore wind farm in 1996 in Copenhagen (Lynnetten wind farm), this same group of enthusiasts came up with the idea of establishing the first offshore wind farm in an area designated by the municipality for wind energy interests. Once they started working on it, they realised that the local utility had the very same interest, and so they decided to join forces together (cooperative + utility) for the planning and construction stage, and agreed that once in operation, the whole project would be divided in two: 10 turbines to the

## Description

This ocean multi-use comprises a combination of tourism with an offshore wind farm, consisting of an in-person boat tour to the wind farm as well as a virtual tour.

The physical tour to the offshore wind farm is organised by representatives of the Middelgrunden cooperative, who also contracts the boat operators. The tour starts in Copenhagen where visitors are picked up and provided with the necessary safety instructions and safety equipment for the voyage by a representative of the cooperative. The boat then sails directly to the Middelgrunden Offshore Wind Farm where people can take a closer look at the 20 astonishing wind turbines before mooring the boat at one of the wind turbines. Two boat operators are used for the tour, which is scheduled in advance depending on boat availability and weather conditions. While one of the boat operators also actively supports the promotion of tours, the tour is always organised and guided by the representative of the Middelgrunden Cooperative. One of the boats is also used for leisure fishing, thus providing the boat company with an alternative source of income. The 2-3 hour long guided tour allows people to experience the interior and even climb to the top of a 64-meter-high wind turbine.



They hear about the history of the turbines, their construction and maintenance as well as actual operation and electricity production.

About 40–50 tours are hosted annually, of which one tour in June is dedicated to the shareholders and individuals from the cooperative. On this day, usually the third Sunday of June, about 150–200 people climb the turbines. Most of the other tours are groups of 12 to 60 people. In total, around 800–1000 people tour the turbines annually.

A virtual tour consisting of a video showing a tour of the wind farm can be accessed via a QR code. The QR code is placed at all strategically important places around the city from where the Middelgrunden Offshore Wind Farm can be seen – for example rooftops of museums, parking lots, etc.

## Enabling conditions and tools

### Type of turbine:

The Middelgrunden turbines are one of the few wind turbines in Denmark that can offer this unique tour, as they are equipped with ladders and floor sections every 8 meters that allow visitors to safely climb up the turbine. Turbines installed after 2007 do not have such floor sections and would need to be climbed with equipment, which would make organising the tour more challenging.

### Local regulation:

In other offshore wind farm locations, local regulation in terms of the safety zone around the wind turbine and access limited to maintenance and operation boats may be a barrier for conducting this kind of tour. The direct involvement of the cooperative owners in the tours make this feasible in the case of Middelgrunden.

### Close to shore vs offshore:

It is important to note that the Middelgrunden wind farm is very close to shore and thus easily reachable with a small vessel after a short time. This type of multi-use may not be fully applicable to wind farms located further offshore, as they would likely be more resource intensive (staff, fuel/energy and time), thus making the business case unsustainable.

### Weather conditions:

The weather and wind conditions can have a big impact on this tour. Mooring can be an issue in harsh weather conditions, and

opening the nacelle in strong winds may also not be possible due to safety risks.

### Local cooperative ownership:

The wind farm is partially owned by the “Middelgrundens Vindmøllelaug”, a private cooperative partnership. The local ownership has had an important role in the wind turbines’ development in Denmark from 1980–2010.

The local engagement in planning and layout of the farm ended up being the pre-condition for the acceptance and rollout of the multi-use. The fact that 10 of the turbines are owned by the cooperative makes it easier to have access to the turbine and develop additional related add-ons such as tours and educational programs.

### Impacts and positive changes

- **Local economy:** The tours have contributed to local businesses – mainly boat tour operators and tour guides. It provides an alternative source of income for sectors in decline such as fishing, and it diversifies the local tourism offer. It is drawing tourists out of Copenhagen, thereby diversifying tourism geographically.

- **Awareness raising:** The educational and awareness raising elements of the tour have contributed to improved understanding knowledge about the role and importance of offshore wind for energy security in the context of the climate crisis. The tour has been offered to both locals and universities from abroad, as well as wind energy companies who use it for building their internal capacities and showcasing to clients.

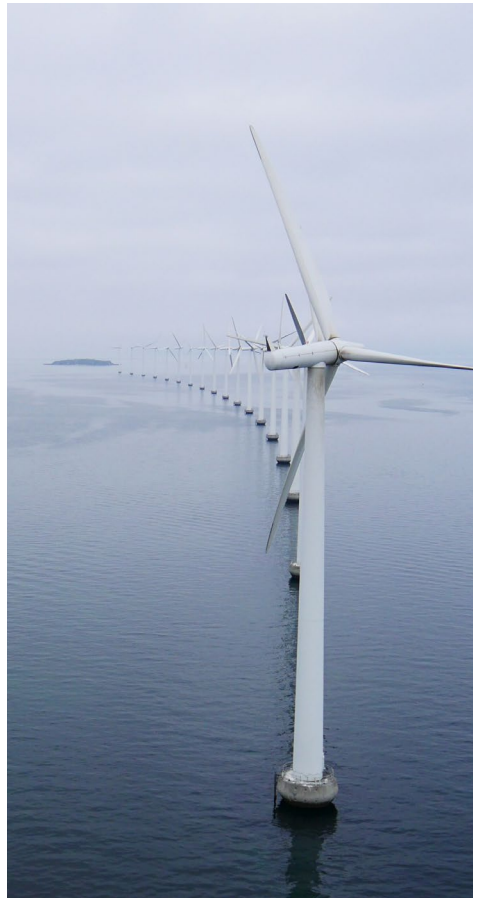
### Contacts and links

- **Hans Chr. Soerensen, PhD**, a board member of the Middelgrundens Cooperative, is responsible through his company SPOK ApS for the visiting program. *The guides and visitors are covered by a professional insurance through this company.*

- **Tours can be ordered on** [mollebesog@gmail.com](mailto:mollebesog@gmail.com)

- **Video virtual visit**  
[https://www.h2020united.eu/index.php?option=com\\_content&view=article&id=73](https://www.h2020united.eu/index.php?option=com_content&view=article&id=73)

- **More information about the windfarm**  
(<http://www.middelgrundens.dk/>)



---

## Imprint

Author: Ivana Lukic, s.Pro – sustainable projects GmbH

Date published: 20 September 2022

Suggested citation: Lukic, I. 2022. Ocean Multi-Use Blueprints Collection. Tourism and Offshore Wind in Middelgrunden off Copenhagen, Denmark.

*All pictures copyright: United Project.*

---

