



## Graceful gateways | *A public trust*

# Danes make offshore windmills their proud symbol

By Charles M. Sennott

### COPENHAGEN

Looking out to sea from this city's picturesque harbor, a wall of 70-meter windmills dominates the horizon with rotors silently spinning in the glinting sunshine as sailboats and fishing trawlers glide past.

For most Danes, these towering turbines are anything but an eyesore, and anything but a threat to the environment. In fact, they are featured on postcards and proclaimed attractions by tour guides on ferry boats. They are the pride of the local Greenpeace office, which even owns shares in the project.

Here, the windmills are seen as a graceful gateway to a historic harbor and a proud symbol for an environmentally conscious country that has put itself at the cutting edge of one of Europe's fastest-growing energy sectors: wind power.

Danish wind-energy advocates say that the success of that industry, now providing 20 percent of Denmark's total power, was achieved by making the offshore wind farm projects a kind of public trust, with careful attention to the concerns of environmentalists and the local community.

Since the 1970's, the Danish government has promoted the industry through tax incentives and subsidies, enabling it to grow steadily.

Perhaps the biggest breakthrough was the development of the Middelgrunden Offshore Wind Farm Cooperative, the first large project lying less than three kilometers, or two miles, off the beautiful harbor of Copenhagen. Twenty turbines, each producing two megawatts of power, wrap themselves around the entryway to the harbor and provide energy for 40,000 or so households.

The previous government, led by the Social Democratic Party, provided substantial subsidies to Middelgrunden. Completed in 2001, the project paved the way for two other larger offshore parks. One, off the Danish west coast, was completed last year and is the

largest offshore wind farm in the world. The other, off the east coast, is expected to be completed later this year.

A conservative party now leads Denmark's governing coalition; it also supports wind power, but believes that the government subsidies should be cut back for an industry that is strong enough to stand on its own.

According to Jens Larsen, a civil engineer and the developer of Middelgrunden, the key to the early successes in Denmark came in making the first wind farms collectively owned enterprises. As a result, Middelgrunden is controlled by 8,500 individual investors, who own half the project, and the municipal utility provider, which owns the other half.

Larsen is widely viewed as the founding philosopher of the wind industry's politics of inclusion, and he points out that it was a seven-year battle to build the project.

From a fishing boat in the Copenhagen harbor, Larsen proudly pointed to the harmonious arc of the 20 wind turbines that stand at approximately half-kilometer intervals and hug the historic harbor.

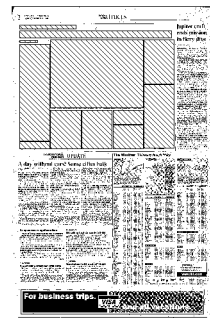
Windsurfers worked the waters just beyond the shadows of the turbines. And fishing boats set up nets not more than a few hundred meters off the concrete bases of the turbines, finding that the fish were actually drawn to the structure that the foundations provided.

"Aren't they beautiful in a way?" Larsen asked.

"The main reason for our success is local ownership," he continued. "There has to be a philosophy driving the industry, especially in the early phases, for people to accept it. Our goal was to make this locally owned, sustainable energy. If it is just a big company doing a wind farm, the community doesn't feel it owns it. And then they will resist."

The success of Middelgrunden opened a gateway for the much larger offshore projects. The

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massive Horns Rev offshore wind farm, 22 kilometers off one of the most beautiful beaches on the country's west coast, was completed last year. It has 80 towering wind turbines, each producing two megawatts of electricity. That is enough to power 133,000 households. It lies along a reef that provides a sensitive ecosystem for fish, seals, porpoises, and migratory birds. Intense environmental impact studies and assessments were ordered as part of the approval process.

Tarjei Haaland, who has headed up the wind industry campaign for Greenpeace in Denmark, is a member of a group of environmentalists commissioned by the government to carry out ongoing environmental impact studies of the existing offshore wind farms.

"The preliminary study shows that there is no serious impact on the environment," Haaland said. "There are some changes to the environment, but no damage as far as we can see."

Denmark has become an international powerhouse in the industry. Danish companies control an estimated 50 percent of the \$4 billion worldwide wind industry. Although the Middelgrunden project was a cooperative, the two other large offshore wind farms are being built by large public utilities that foresee big profits in wind. The industry says it has created about 25,000 jobs in a country of just

more than five million people.

The wind industry in Denmark is not without its critics. But even the environmental watchdog groups are quick to add that the initial fears of potential damage to fish and birds were largely unfounded.

The chairman of the Danish Ornithological Society, Christian Hjorth, whose group has been part of the environmental impact assessment of offshore wind farms, said that "it is fair to say that the early criticism of the offshore projects was exaggerated, but that does not mean there are not concerns."

The most vocal opposition to wind farms has come from an organization called Neighbors of Windmills, which has 400 registered members.

Erwin Thoreus, chairman of the Neighbors group and an industrial chemical salesman, contends that the wind turbines have proven noisy and that the shiny rotors often create a distracting glare in the sunlight.

But even Thoreus said the offshore projects are far more preferable and have proven less obtrusive to nearby residents than the hundreds of inland wind farms that dot the Danish landscape.

"We support the offshore wind farms. They are better than the sites on land," he said.

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