MIDDELGRUNDEN WIND POWER PLANT

Given the disappointing situation of nuclear energy stations and their hazardous accidents, nations like Denmark have strictly excluded nuclear use as part of their strategy for producing electricity. This has increased aspiring concepts like alternative energy farms: socially and environmentally-harmless frameworks. Autonomous giant structures that coordinate their moves with nature’s rhythm, the wind power plants are contemporary engineering wonders that compromise escalating investment costs.

So far, implementing an alternative energy industry, successfully, has been much more of a hassle for many countries. Successful, prospering cases set viable examples and pave the way for advanced development.

The Danish proposed a subsidized system that involved thousands of small shares from the private sector to partly finance the green technologies. Back in the 70's, the citizens were shareholders in wind turbine cooperatives, which provided a tax exemption for generating their own energy. This has drastically influenced the evolutionary progress of wind turbines. Three decades later, 86% of the Danes are actively supporting clean energy; detrimental to exploiting other fossil fuel sources. The offshore Middelgrunden wind power plant was initiated with 50% shares from 10,000 citizens, counting even international investors. The twenty turbines, arrayed three kilometers away from the leisure beach areas close to Copenhagen, formed the largest offshore farm when it was constructed in 2000.

Wondering how the Danes have so successfully launched their wind energy program? A streamlined process of shared responsibilities between the engineers and the deliberately supportive authorities has played a major role in its success. All particular parties involved follow a step-by-step decision-making process in order to cover their expenses, protect the environment, and promote innovation.

Offshore engineering confronts a harsh environment for building, operating, and maintaining. The weather conditions dictate access to the turbines, which might delay technical dysfunctions. Given the context: shallow waters and short distance to the coast, the conditions were favorable for the level of engineering progress of those times. Overcoming the austere sea conditions was exchanged for stronger winds and better power sourcing.

Nonetheless, proof of feasibility and the wind farm's effects on the surrounding wild-life was mandatory. Reports have proven that the concrete foundations in the sea bed would possibly create new environments for mussels and algae that might very well colonize the habitat. Moreover, if it is the case, former forging stations can be given new functions to support the heavy propellers. From a different perspective, fishing activities will be taken away from the perimeters, which would improve the coast line's fauna. On the other hand, there are chances of disturbing the ecosystems when digging the deep foundations. The sound is rather disturbing for the underwater life. Aside from this, the general shifting sound would not be conducted under water. Calming local concerns, the sounds would not reach the sandy recreational area.

Plans were set, authorizations given, and the action began. The construction process was delayed by only three months due to small accidents and winter storms. Ever since, the production numbers have grown in the annual reports and new stations are setting their foundations in the Baltic Sea. Ambitious targets are set by 2020 to reach 50% clean energy through advanced wind “catchers.” When achieving surplus power, the extra watts are sent to neighboring countries like Germany, Sweden, and Norway in exchange with hydropower for less windy days.

Source: http://www.globalsiteplans.com/environmental-design/middelgrunden-wind-power-plant-copenhagen-major-player-in-the-40-share-of-annual-energy-consumption/