

OFFSHORE WINDFARMS

Introduction

1. The world's energy is mainly provided by the combustion of fossil fuel. As the world's energy consumption increases, the supply of energy from fossil fuels is decreasing. The burning of fossil fuels contributes to pollution of the air and possible climate change. A global movement towards the generation of renewable energy is therefore underway to help meet the increased energy needs. One form of renewable energy is wind energy. Single windmills or windmill parks are now found throughout the world.

2. In Europe and in the Bonn Agreement area, authorities working in close cooperation with commercial entities, are building or planning to build these parks. Electrical power from offshore windfarms will make an important contribution to future energy and climate policies in the EU. Average wind forces at sea are high enough to promise an enormous potential in energy. Therefore many coastal states intend to build large wind energy parks, so-called windfarms, in their waters – after having considered the environmental impact of the planned windfarms infrastructure and having evaluated the risk for shipping prior to granting permission.

3. These windfarm constructions could however leak hydraulic oil, although according to the latest technical information the risk is limited. The constructions could also be threatened by a floating oil slick drifting into the park. Response authorities need to be prepared for incidents resulting in oil slicks drifting into sea areas where windfarms are located.

Legal framework

4. With regard to the legal situation, windfarms are dealt with in similar way as offshore installations (oil and gas production installations)¹. The owner is responsible for taking appropriate measures to avoid leakage of hazardous and noxious substances, including oil, from his property. In the event of a leakage from a construction, the owner is held liable and will be asked to recover the spilt oil and clean up the pollution. If as a result of another incident e.g. a collision between two ships, oil is discharged that drifts into the sea area where the windfarm is located, the owner of the windfarm may hold the ship-owner liable and require him to clean up or claim reimbursement for costs should the ship-owner (the polluter) not follow-up. This is in accordance with the “polluter pays” principle.

Risk analysis

5. Before permission to build a windfarm is granted, the relevant authorities working closely with the owners of shipfarms should ideally first study the possible effects of the proposed windfarm on shipping. Under the Safety@sea project these studies have been conducted for North Sea areas. Where windfarms are proposed in the vicinity of existing shipping lanes, the impact of drifting ships (loss of propulsion) and the risk of collision should be anticipated. Although there will be safety zones around each single pole and around the park, a collision when a “dead” ship drifts into the park is a possibility.

Construction of the windmills

6. In general, a windmill consists of one pole with one turbine in which case a large steel tube is drilled into the soil (monopole). It may be stabilised by means of gravity foundation (e.g. a large, partly buried box filled with sand). Another method is to lay rock or concrete blocks around the pole. This arrangement would allow oil particles to enter and stick to the construction and the oil could then wash out some time after an incident.

¹ The legal framework is quite extensive depending on the topics to be included. UNCLOS articles 56 and 60 refer to the sovereign rights of coastal states. The International Environmental Policy and Energy Policy deals with sustainable energy resources. Nature Conservation Policy, under which OSPAR deals with *inter alia* bird protection (habitat). SOLAS plays a role as does the Bonn Agreement (in relation to response to pollution). Finally, national legislation and regulations can be referred to.

Tiered preparedness and response to drifting pollution

7. In some countries the windfarm owner has the responsibility to have a limited, 'Tier 1' level of preparedness and response (in Belgium, this has even led to the participation of the owner in response means in order to raise the level of preparedness of the Belgian authorities for marine pollution). In this case he is obliged to have a 'Tier 1' Contingency Plan, which contains specific information concerning rescue and pollution combating operations.

Mechanical recovery

8. Assuming a 'mystery' slick of considerable dimensions is drifting towards a windfarm and response authorities decide to initiate a combat operation, the question can be raised about what special measures need to be considered, e.g. would it be feasible to contain the oil by deploying booms or could the park be protected by deploying booms around the park to deflect the floating oil? If the oil drifts into the park and floats between the poles, recovery vessels should be allowed to enter for mechanical recovery operations. However, the turbines must then be switched off even if there is sufficient space between a rotor-blade and the ship.

Dispersants

9. Another response option is the application of dispersants, depending on the type of oil and the sea conditions. It is likely that dispersant spraying could be done from a vessel, whereas a spraying aircraft would not be allowed to apply dispersants to an oil slick in a windfarm.

Mariculture

10. In the discussions about the development and building of wind energy parks at sea, be it in coastal zones (shallow water) or at more remote places in the EEZ, a recurring subject is the possibility of introducing mariculture (mussels etc.) to the windfarm area. This may require special measures in order to protect the area against a drifting pollution. With regard to claims for the loss of production in cases where spilt oil reaches the mariculture area, it is stressed that this is a private matter between the polluter and the owner of the park or the fishfarm.

Preventive measures

11. Several preventive measures can usefully be taken, mainly based on navigational requirements. These are for example: the definition of a safety zone around the area, use of mist horns, signalisation of all structures at all time for nautical and aerial purposes, installation of oil retention tanks, list-keeping of all ships operating on behalf of the owner of the windfarm, numbering of structures, early warning of the authorities for all park-related activities in the shipping routes, the organisation by the owner of (multi-) annual simulation exercises on various subjects such as nautical emergencies, towing or pollution response, and the obligation on the owner (to be determined case-by-case) to follow the requirements of the competent authorities with regard to navigational requirements and safety.

Communication

12. It is recommended that a communications system be established between the Focal Point (24 hrs centre) of a coastal state and the operational centre of the owner of the windfarm so that the turbines can be switched off in case of emergency. The procedures for response to pollution should be included in the Emergency Handbook (contingency plan) of the windfarm.