

# Strategic Heritage Assessment for Wind Power

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## Abstract

The paper shows that the selection of methodology for heritage assessment in two cases of strategic wind power planning corresponds with international principles for such an adaptation, and that competent authorities approve of these methods. Further, we argue that these methods accommodate for subsequent impact assessment on project level. Finally, we also find that these methods feed back to the discussion on the overall principles for the selection of impact assessment methods in Strategic Environmental Assessment (SEA).

## Introduction

The paper presents a case-based investigation of the methodologies for strategic cultural heritage assessment of wind power development in Norway, both at sea and on land. In this context, the term Cultural Heritage includes marine and terrestrial archaeology, historic areas, buildings and landscapes. We consider these assessments to fall under the definition of a Strategic Environmental Assessment (SEA), which is the collection and presentation of information about the potential impacts of a plan or strategy undertaken at an earlier stage than project level Environmental Impact Assessment (EIA).

Four research questions are addressed: (1) what are the principles behind the selection of the methods as an adaptation to this decision-making tier, (2) are they perceived by central actors to produce a sufficient decision-making basis, and (3) how do the methods accommodate for subsequent project impact assessment (4) how can these cases of heritage assessment feed back to the overall principles of an adaptation of assessment methodology to such planning?

Our approach is to reference the relevant academic literature, to study the application and description methodology in case documents, and to interview central actors.

## Principles for the adaption of impact assessment methodology to a strategic level

The theory on the adaption of topic-directed impact assessment methodology to the strategic level is in its earliest stages of development. We can judge that from its level of specificity, which is not impressive, but growing.

Wood and Djeddour for example (1991, in Therivel et al. (1992:143)) suggest that many tasks are identical but that many EIAs and SEAs will differ in degree of detail and level of specificity. Street (1992, in Therivel et al. (1992:143)) sees SEA being more “broad-brushed” than EIA, and Therivel even suggests that if this distinction is not observed, SEA could get “lost in the welter of detail” giving a “meaningless” result (Therivel 2006:76).

Others call attention too much of the same. Hvidtfeldt and Kjørnø (2003: 29), suggest that SEA of municipal plans – in contrast to project-EIA – should “provide an overarching description of the

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anticipated environmental consequences that follow from ... the plan". Terms like "indicative" and "qualitative" are also used about SEA. Environmental assessments for wind power suitability analyses should, in Statkraft/Grøner's (2003:117) words, be "broad spectrum", while the World Commission on Dams speak of "low-intensity appraisal" of options assessments related to strategic impact assessments (WCD 2000:296). Many environmental impacts of development projects cannot be detected in a strategy plan, according to UK Department of the Environment, because assessments depend in the long run on actual planning decisions. SEA should therefore devise an environmental risk management framework (DoE 1992:3).

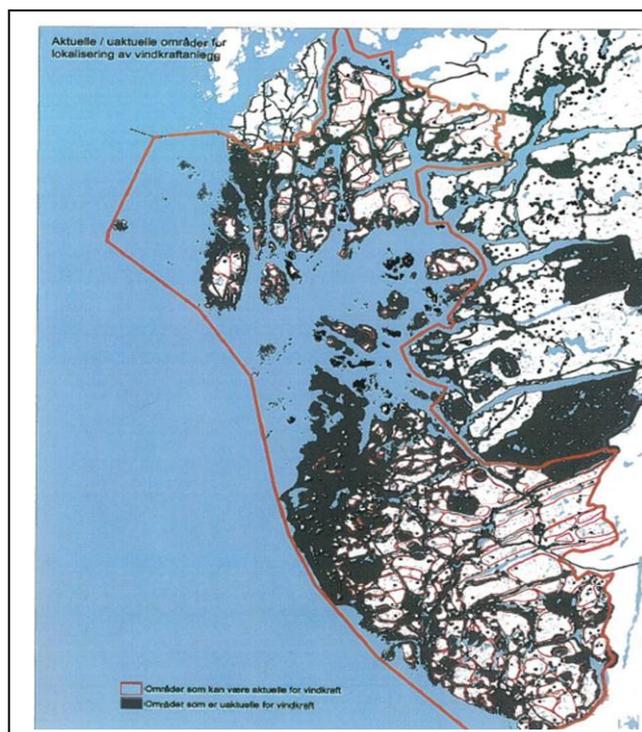
These contributions seem to emphasise the lack of compatibility between SEA and EIA with a special emphasis on the properties of data. However, the similarities and mutual benefits are apparent, and should be explored more by research and practice. Nootboom (1999:5, 32) says that "SEA can be used to refine the scope of assessment at lower tiers", when "aspects", "issues" or "impacts" are represented on both levels when project EIA is subsequent to SEA. In our view, all of this opens up a field, which we take on exploring here.

### Cases

Our two cases are the ongoing impact assessment of two large (app. 2000 and 3500 km<sup>2</sup>) areas in the North Sea, right north of the Dogger banks (which is again located between the north of England and the south west coast of Norway). This has been named 'Havvind' (Ocean wind). What are being planned are installations of wind turbines standing on the sea floor. Their exact locations are not determined through this plan, only the feasibility of proceeding with installations within the planning area is determined.

The other is the planning of possible wind power development for a Norwegian county, Rogaland (9,378 km<sup>2</sup>, and approximately half of the county is included). The plan considers 218 areas in 17 municipalities in the western part of the county, following where wind-resources are available. Figure 1 shows the part of the county which is included in the plan (with a thick red line), and the specific areas (with thin red lines). Darker patches indicate areas not considered viable for wind power. The purpose is to consider the viability of all these areas with regard to wind power development. Various impacts are assessed and form the basis for the recommendations (Rogaland fylkeskommune 2007a).

Figure 1



### Methodology in cases

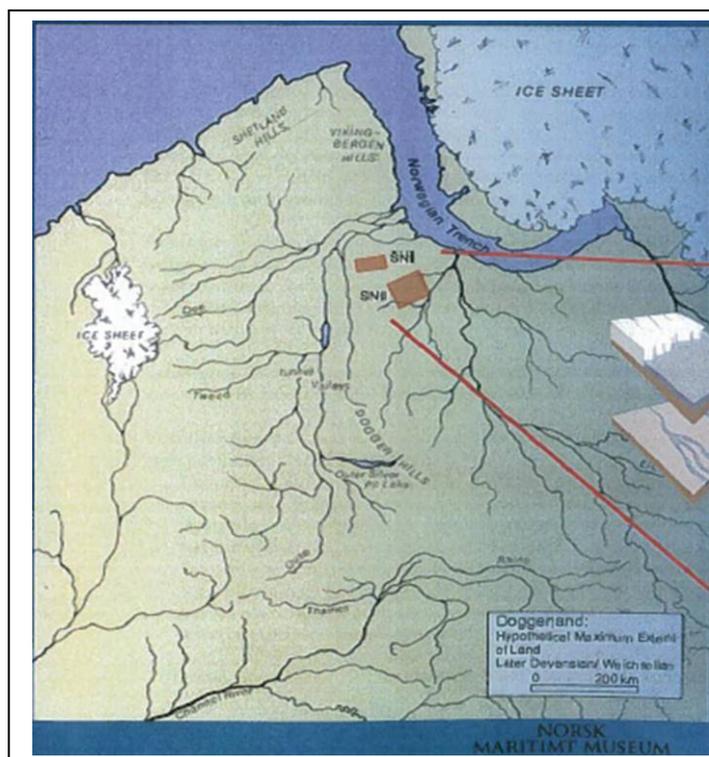
Since no exact locations are proposed within the wider area covered by the plan, to be doing on-site marine archeology would not make sense. Therefore, broader based techniques are used. After having excluded visual impacts from land of Havvind, we are looking at SEA-methods that have very different natural circumstances in the two cases, giving us a wider range of methods to consider.

### *Havvind*

The possible threat to heritage from the turbine installations at sea, in this case, is damage from mounting them on the sea floor. This relates to the human made objects and environs which were part of the land-based life there many thousand years ago. Direct impact can happen by damaging, destroying, removing over covering over of objects or environs. This case IA-method is based on the impacts of external factors on the elements of the landscape. These elements are typically connected to the landscape in a pattern which reflects the exchanges between cultural practice, natural recourse, land-use, and the historical development.

Two methods, which can be seen to come early in any impact assessment procedure, have been applied. They are, firstly, developing prognosis for where one is likely to find heritage. These are based on mappings, and developing the understanding, of landscapes now submerged (Norsk Maritimt Museum 2012). Such maps show landscape features that form the basis for understanding where stone age people might have lived, and left their remains. Figure 2 shows the location of the two areas and a model of the landscape in question.

Figure 2



Furthermore, the value of these possible findings is estimated. This will serve two SEA purposes: (1) such an analysis is enough to base the planning decision in question on, and (2) it provides a basis for further archeological studies in a subsequent EIA for projects.

In doing this, there should also be the involvement of 'significance'-criteria, according to guidelines (Ministry of Petroleum and Energy 2011:5). In choosing which impacts that are the most significant, one should consider which are the most relevant for the subsequent EIA for projects (ibid:5). Also, one signals what should be a priority at the strategic level when there are limitations with regard to the fullness and depth of the IA.

The second method selected is 'vulnerability-analysis' for the part of the sea floor directly affected. Vulnerability can be seen as the "degree of sensitivity of habitats, communities and species to environmental change" (Nilsson et al 1995, in Kværner et al 2006:415). An estimate of value is put on places based in the prognoses, and 'direct conflict' is applied to determine their vulnerability. This is put into four categories: no, little, medium and large vulnerability.

Also, vulnerability-analysis provides a basis for project EIA, in that it not only suggests areas to be avoided, but also to estimate the magnitude of the impact if projects are proposed on the site.

#### *Rogaland county plan*

For the case on land, the county plan, the method, firstly, combines a value-judgment of cultural environments with the visual impacts of the turbines. This determines a level of conflict, visually.

Secondly, it is to determine the extent to which there will be direct damage to objects or environs is considered (Rogaland fylkeskommune 2007a: 45), which also determines conflict.

We want to argue the 'conflict' is only a starting point for project-EIA, in that it is only 'indicative' and 'low-intensive' (see above) of impacts, and that on project level requirements would go further. This would, amongst other things involve more detail. This latter point is directly addressed in a background document, stating that 'less detail' than on project level is required (Rogaland fylkeskommune 2007b:4).

All 218 areas have been classified with regard to their 'conflict level' (Rogaland fylkeskommune 2007a, and Ministry of Petroleum and Energy and Ministry of the Environment 2007:16). So, for heritage, the 'visual effect on the valued character of the place', as well as the 'possible physical damage to sites from installations' are put in 'conflict' terms, which correspond with 'less detail'. This is as far as it goes, with regard to strategic heritage assessment.

Also, the result of these methods benefit EIA for projects: you move from 'conflict' into the more sophisticated 'impact', and you add more detail.

### Conclusions

The study shows a principled adaption of impact assessment methodology on heritage to the strategic levels of decision-making that Havvind and Rogaland regional plan for wind power development represents. It follows the international recommendations for SEA that we have presented, which are not developed especially for heritage.

We also find reason to suggest feedback from the chosen assessment methodologies in the cases back to principles about the adaption of such methods to SEA in general. These relate to the concepts of 'prognosis', 'vulnerability' and 'value', which we find to be more operational approaches to several principles, such as 'detail-reducing', 'indicative' and 'low-intensive'.

These methods are considered to deliver enough impact assessment for a planning decision on this level, by the highest competent authorities in approving of these methods: The Ministry of the Environment for the Rogaland plan and The Ministry of Petroleum and Energy and The Norwegian Water Resources and Energy Directorate for Havvind.

Finally, we also point to how each of these methods in their particular way benefits the subsequent work on EIA for projects.

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