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Wind energy investments and Natura 2000 sites: To what extent has the conservation effectiveness of Natura 2000 been evaluated at local, regional, national and European scales for wind power projects?

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ABSTRACT

Given the relatively new and emerging nature of the wind energy technologies coupled with the existence of a not lenient enough regulatory framework and policies uncertainty, demands a dedicated research to assess, predict and manage the impacts of large wind energy plants on Natura 2000 sites. This document investigates how an effective and efficient assessment of the Habitats Directive can be best applied through adaptive and collaborative management mechanisms to reconcile the increasing demand for wind energy plants and biodiversity conservation in these vitally important environmentally protected areas. In so doing, this document - via an online survey - challenges the strict clarification of the precautionary principle which has been preserved by the EU judiciary under the regime of Article 6 (Article 6 of the Habitats Directive) in an effort to halt the loss of biodiversity and the degradation of ecosystem services in the EU and suggests community engagement, knowledge sharing and adaptive management as a recommended strategy to improve the outcomes of the strategic environmental impact assessments and ROI. This research aims to promote the development and dissemination of solution-focused method before the Not in My Backyard Phenomenon (NIMBY) it truly becomes a significant barrier for the wind energy investors.

1. Introduction

Natura 2000 is the cornerstone of EU nature and biodiversity conservation policy framework. It has been developed under the Birds Directive (1979) and Habitats Directive (1992) with main scope to establish ecosystem stability and develop new strategic priorities, methods and practices to protect endangered and threatened wildlife species and habitats.

Natura 2000 is a massive network of 26.000 environmental protected areas in all the 27 Member States of the European Union and covers an area of more than 750.000 km^2, which occupy 18% of the EU land area and hold more than 90% of all the European protected wilderness locations. One of the most important and interesting parts of Natura 2000 is that although the network will certainly include nature reserves, most of the land is likely to continue to be privately owned and the emphasis is on ensuring that future management is sustainable, both ecologically and economically.

Wind energy investments in such areas, however, can raise serious environmental concerns, and development versus conservation conflicts can arise, because wind turbines can have several adverse environmental impacts, including noise disturbance and modification of local weather

Generally speaking, wind energy installations do not represent a threat to wildlife but when the potential project has poor siting strategies perspectives and design deficiencies the negative impact on vulnerable species and habitats of the ecosystem is more than certain. This is the main reason that an environmental permit will not hold in EU courts when the EU directives and regulations are not respected from investors and developers.

Acknowledging the importance of cumulative effects of potentially harmful development projects, such as wind farms, the European Union (EU) has formulated a relevant legislative framework. New wind farm proposals should accord with the Strategic Environmental Assessment (SEA) Directive, calling for sustainable spatial planning at a broad, often national, scale.

Furthermore, they should be subject at a site-specific level to Environmental Impact Assessment Studies (EIAs) requiring cumulative impact assessments, after another EIA Directive. Additionally, when wind farm developments may potentially affect interests protected by the Natura 2000 network of classified sites, Appropriate Assessments are often required to ensure that it is beyond scientific doubt that they will not adversely affect the protected interests. A recent review [Wind farms and birds: An updated analysis of the effects of wind farms on birds, and best practice guidance on integrated planning and impact assessment] has concluded that such legislation is often ignored in practice.

Despite the fact that there are several official guidelines and approaches that can emphasize the process of the zoning areas characterization, the effective identification of these areas and the probability of possible significant effects to Natura 2000 sites has been ignored.

In this context “possible” refers to the presence of uncertainty with regard to the absence of significant effects and “significant” means not unimportant, trivial or inconsequential but an effect that has the potential to undermine the site’s conservation objectives. In other words, any effect during the entire life-cycle process of a wind energy project which would compromise the ecological functionality of landscapes and viability of an ecosystem, and interfere with achieving

the conservation objectives of the site, would constitute a significant effect.

Our study area in Kafireas, South Evia (our Euboea), Greece recognized as a priority area for bird conservation in hosting many Special Protected Areas (SPAs) within the Natura 2000. Much of it, however, is also designated as a wind farm priority area, (the Regulatory Authority for Energy accounting more than 12,500 MW nominal capacity in the mainland, more than half of the applications refer to the windy areas of Evia).

Our research illustrates an emerging generic conflict of industrialized wind energy development in ecologically sensitive areas, as evinced by the sharp increase of developers' interest in future wind farms in our study area, when the currently operating wind farms alone account for a significant hazard to the local ecosystem.

Moreover, accommodating and operating innovative wind power technologies and managing their potential impacts on dynamic and poorly understood ecosystems is a source of long-term 'legal disruption' that can jeopardize the economic viability of the wind energy investment as a whole. Consequently, we are now in a paradoxical position where transition to renewable energy may be slowed down because of the violation of the Habitats Directive Rulings and the associated conflicts.

Applying the precautionary principle, the European Court of Justice (CJEU) has steadfastly held that national licensing authorities may authorize new wind energy developments only 'if no reasonable scientific doubt' remains as to the absence of threats to the integrity of adjacent Natura 2000 sites. Such a high "before the event" approach does not apply easily with the emerging challenges associated with deploying wind energy projects in these areas. There are indeed, critical gaps in our understanding of how complex and dynamic marine ecosystems interact with wind power technologies. Uncertainty and lack of knowledge is not limited to interactions of devices with the receiving environment but also pertain to the fundamental biology of the local flora and fauna. However, addressing scientific gaps cannot be a developer's or investors' responsibility; it demands a multi-directional response from governmental authorities, local societies, academia and industry all interacting and exchanging information together.

NATURA 2000 sites have been found to be important pillars of biodiversity conservation, providing a so-called 'umbrella benefit' for a wide range of listed and non-listed animal species. The purpose of this study is not therefore to sabotage the development and integration of wind energy facilities in NATURA 200 sites but to promote better coherency and knowledge sharing between developers, operators, local societies and authorities to encourage wind energy investments and biodiversity conservation.

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