

# TÜRKİYE RÜZGAR SANTRALLERİ ATLASI (TÜRSAT 2012/2)

## TURKISH WIND POWER PLANT ATLAS (TWPPA 2012/2)



TÜRSAT 2012/2 - TÜRKİYE RÜZGAR SANTRALLERİ ATLASI										
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Adana	Adana	Adana Rüzgar Enerji Santrali	...	...	...	...	...	...	...	...
Antalya	Antalya	Antalya Rüzgar Enerji Santrali	...	...	...	...	...	...	...	...
Bursa	Bursa	Bursa Rüzgar Enerji Santrali	...	...	...	...	...	...	...	...
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# Windfarms and biodiversity

Evidence to date indicates that appropriately sited and well designed wind energy developments are generally not a threat to biodiversity. However, there may be occasions where individual plans or projects can cause damage to protected wildlife and nature areas

# Windfarms and Biodiversity – main issues Turkey

- 1. No sensitivity mapping
- 2. very poor, inadequate EIAs
- 3. No real data on impact in country

# Windfarms & Biodiversity: Main Issues

1 – **Location, location, location!** Avoid sensitive locations

- a) Plan wind energy development strategically taking into account the risk to birds, bats and other biodiversity (Strategic Environmental Assessment - SEA)
- b) Develop national sensitivity maps to provide strategic guidance, and inform project level planning
- c) Avoid wherever possible the most sensitive zones in planning wind energy development

SEA, Environmental Impact Assessment (EIA), Appropriate Assessment (AA)

EIA for wind power projects assess adequately the risk to birds, bats and other biodiversity

# Windfarms & Biodiversity: Main Issues

2. **Design** - reduce impacts by sympathetic design, e.g. avoid steep slopes and ridges

Again, EIA instrumental

3. **Mitigation** (of any residual impacts). Should focus on species affected, and in the region, not on other species/areas.

4. **Compensation** (where significant impacts cannot be avoided). Should focus on species affected, and in the region, not on other species/areas.

# 1. Location. Strategic planning

*Planning wind farm developments in a strategic manner over a broad geographical area is one of the most effective means of minimising the impacts of wind farms on nature and wildlife early on in the planning process.*

*It not only leads to a more integrated development framework but should also reduce the risk of difficulties and delays at later stages at the level of individual projects.*

*EU requires SEA to be done*

# *1. Location. Wildlife Sensitivity Maps*

- Sensitivity maps can be developed for selected categories of species (eg species of birds, bats, marine mammals of European importance) or for valuable wildlife in general over a pre-determined area – for instance an entire region.
- wildlife sensitivity maps are then super-imposed over the wind capacity maps to identify areas of ‘low risk’ as well as areas of potential ‘higher-risk’

# Sensitivity Map - Scotland

- based on distributional data for a suite of sensitive bird species. Species included on the map are either listed on Annex I of the EU Birds Directive, and/or are species of conservation concern with known or suspected susceptibility to the effects of wind turbines
- The sensitivity map has been produced at a 1km square resolution, with each 1km square in Scotland being assigned one of three sensitivity ratings.
- These sensitivity ratings were assigned following reviews of literature and best available information for each species on foraging ranges, collision risk, disturbance distances and other relevant features of behavioural and population ecology, to develop 'sensitivity criteria' to determine appropriate buffering distances to apply to the distributional data for these birds.



Sensitivity ratings within tetrad:



Sensitivity rating



# Locational guidance/ mapping

0 25 50 100 Kilometers

0 30 60 120 Kilometres

Bright *et al.*, 2008;  
Bright *et al.*, 2009



## Προσδιορισμός και χαρτογράφηση των ορνιθολογικά ευαίσθητων στα αιολικά πάρκα περιοχών της Ελλάδας

Identification and  
mapping of sensitive  
bird areas to wind farm  
development in Greece

Ελληνική Ορνιθολογική Εταιρεία  
Ιανουάριος 2010



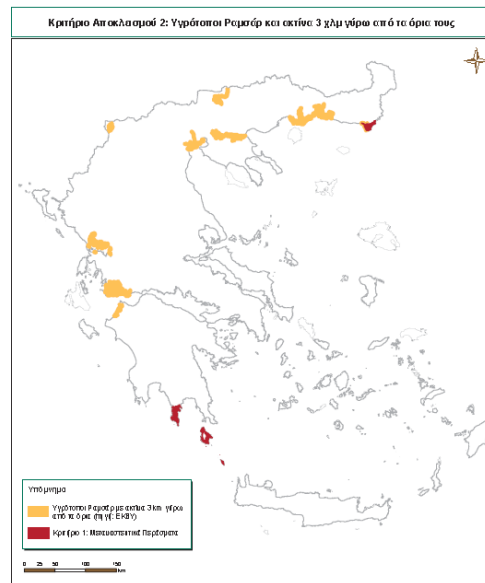
## Selection of ornithological criteria

- IBAs and SPAs that have been identified as migration-bottlenecks
- Ramsar sites with a 3km buffer zones around their limits
- IBAs and SPAs with qualifying (trigger) species most threatened by wind farms and major pelican flyways.
- For large raptors, breeding at sites not excluded by criteria I, II or III, a 5km buffer zone around nest sites was used to establish exclusion zones.
- For small raptors and seabirds, breeding at sites not excluded by criteria I, II or III, a 2 km buffer zone around nests and colonies was used to establish exclusion zones

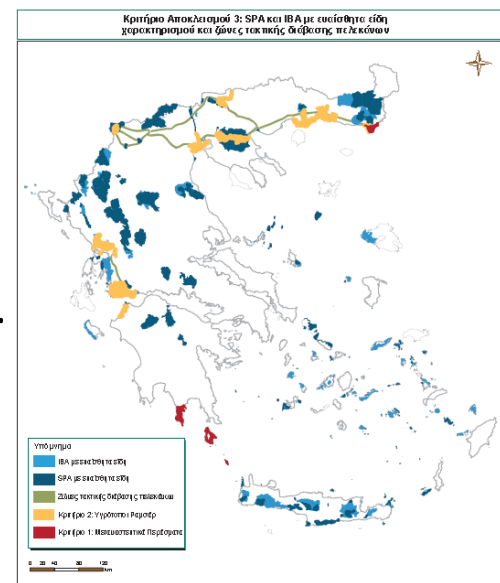
# Production of thematic maps



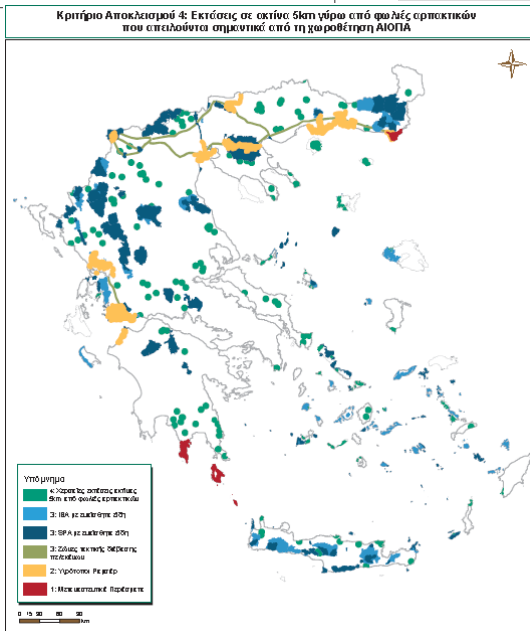
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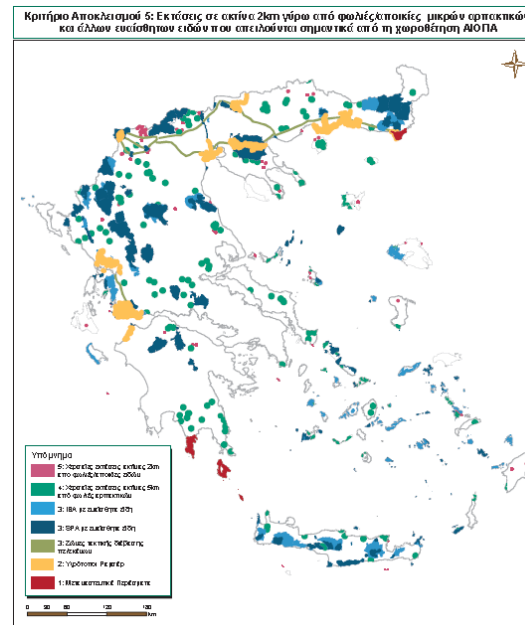
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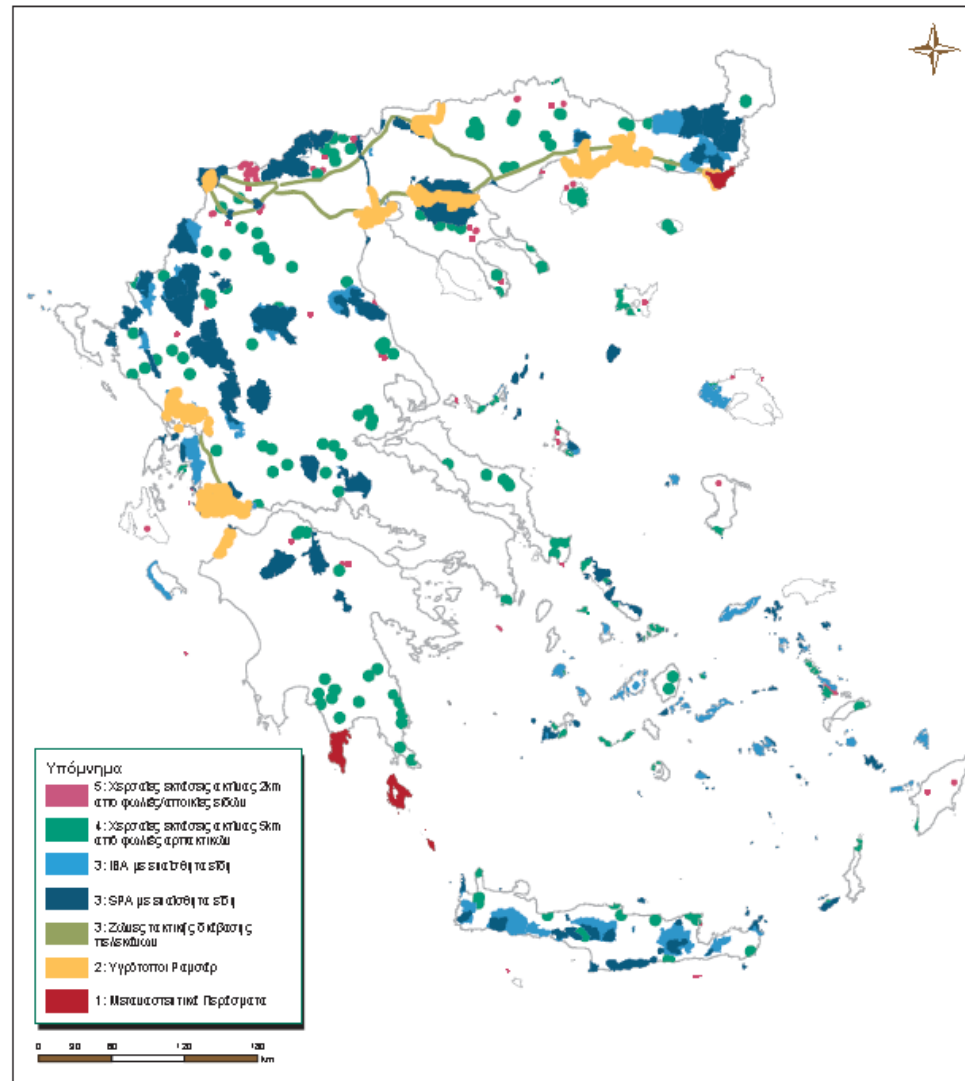


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# Production of the final map through the overlaying of thematic maps



# Sensitivity maps

- **Written guidance for species - Sensitivity criteria**
- **Golden eagle Sensitivity criteria**

“the territory was included on the sensitivity map. The mean nest location for the 10 years was taken as the territory centre, and the area within a buffer of 2.5 km around this classified as ‘high sensitivity’, with the area between this buffer and an outer buffer of 6 km classified as ‘medium sensitivity’. This is based on the RIN model, which suggests that golden eagles are likely to spend 50 % of their time within a 2 - 3 km radius ‘core range’, and 97 % of their time within 6 km of the territory centre (McGrady *et al.*, 1997, 2002)”

# 1. Location. Properly assessing impacts. EIA

- *Collision risk* (plus *barotrauma* caused by rapid air-pressure reduction near moving turbine-blades in the case of bats)
- *Disturbance and displacement*
- *Barrier effect*
- *Habitat loss or degradation*

# 1. Location-Properly assessing impact- EIA-Best Practice

- Survey effort need to reflect the risk posed.
- For example many applications for one or two small turbines away from sensitive areas only require a desktop review in the UK.
- However, for a full size wind farm a minimum of 1 year of data, gathered during the main period of risk (e.g. breeding season, and/or winter months etc.) is needed. However, data collected over more than one year is ideal



# 1. Location. Properly assessing impacts

- Two types of studies involved in assessing the - **general surveys** to find out what species are using an area and to give a idea of numbers of birds present and **targeted surveys which aim to give information on behaviour and activity levels of target/key species and quantify risk.**
- Important to bear in mind that these impacts may concern not just the wind turbines themselves, but also all associated installations such as access roads, site access (e.g. For maintenance works or during construction), anemometer masts, construction compounds, concrete foundations, temporary contractors facilities, electrical cabling (e.g. overhead wires) for access to the grid, spoils, and/or possible a sub-station, control building etc...
- Cumulative effects...

## **Developing Guidance on Ornithological Cumulative Impact Assessment for Offshore Wind Farm Developers**

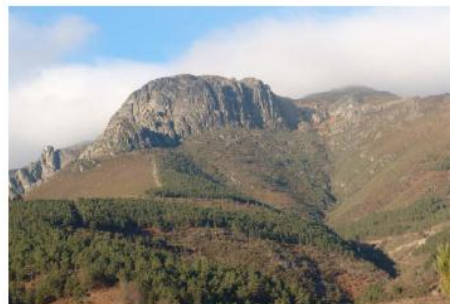


**Sue King, Ilya Maclean, Tim Norman and Andrew Prior**

June 2009

This report has been commissioned by COWRIE Ltd





## **A energia eólica e a conservação da avifauna em Portugal**

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# 1. Location. AA, species of conservation concern (EU)

*In and around Natura 2000 sites: any wind farm development that is likely to affect one or more Natura 2000 sites has to undergo a step-by-step Appropriate Assessment procedure and, where necessary, apply the relevant safeguards for the species and habitat types of Community interest*

*Anywhere within the EU: the Birds and Habitats Directives also require that Member States protect species of Community interest throughout their natural range within the EU . Thus any wind farm development must also take account of its potential impacts on species of Community interest (covered by the two Directives) outside Natura 2000 sites as well.*

# 1. Location. SEA, EIA, AA

- There are many similarities between the procedures for SEA and EIA, and the Appropriate Assessments carried out for plans or projects. But this does not mean they are one and the same, there are some important distinctions. Therefore, **an SEA and EIA cannot replace, or be a substitute for, an Appropriate Assessment as neither procedure overrides the requirement.**
- They may of course run alongside each other or the Appropriate Assessment may form part of the EIA/SEA assessment

## 2. Design

### **Adopting a micro-siting plan according to the behaviour of birds**

At a project level, micro-siting planning allows developers to identify areas which are likely to encounter major species or biodiversity impacts.

## 3. & 4. Mitigation and Compensation

- On species and areas affected.
- Monitoring : “Suitable pre- and post-development monitoring of impacts on birds must be carried out, using the Before-After Control-Impact (BACI) approach. Details of the monitoring programme must be set out in the wind energy project EIA. Monitoring feedback will inform whether further mitigation measures are required in the operational phase of the project concerned, if outcomes differ from those predicted by the EIA. Additionally, this information will help inform future wind energy development. Post-construction monitoring needs to continue for long enough to distinguish short- and long-term effects and impacts, and to enable these to be satisfactorily addressed”



# Windfarms and Biodiversity – main issues Turkey

1. No sensitivity mapping
2. Very poor, inadequate EIAs
3. No real data on impact in country – no or little post-construction monitoring

