

# Installed and planned wind projects in protected areas in Greece Successes and challenges

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Wind Energy Development • Current situation • 2030 targets





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# Total installed wind capacity (end 2019)

# 3.576 MW

### Still we have a long way to go...





### The new National Climate & Energy Plan, 2030







### The new National Climate & Energy Plan, 2030



# Licensing milestones & Legislation framework

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## Wind Energy Development in Greece



# A complete legislation framework ...



# Spatial Framework for RES (1)



- Approved after Strategic Environmental Assessment
- Approved by the Council of State in plenary session (Dec.1422/2013)
- Legal basis for several decisions of the Council of State
- Main characteristics:
  - Strict rules and restrictions (exclusion zones, min. distances etc)
  - Transparency and equal treatment for every project

# Spatial Framework for RES (2)





- A dynamic framework
- Its consequences are continually adjusted to the application of the legislation for the protective areas
- Indicatively, the legislation foresees the process for new NRs and Strict NRs, which –according to the Spatial Framework- are exclusion areas

# Thorough environmental investigation

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### **Appropriate design of wind energy projects**

- application of Spatial RES criteria
  - exclusion zones
  - carrying capacity
  - min. distances from other land uses
  - visual impact assessment, etc.
- updated specs for EIA study (MD 170225/2014 with very analytical specs for all categories of environmental, ecological, bird studies)
- Special Bird Assessment for projects inside SPAs –IBAs (Special Framework for RES)
- Special Ecological Assessment for projects inside N2000 (Law 4014/2011)
- field works (MD 170225/2014)
- Monitoring and reporting obligations

### **Exclusion zones**









- ✓ EC, Wind energy developments and Natura 2000,
  October 2010 case by case approach
- ✓ Greek legislation: Exclusion zones (among others):
  - Nature Reserves & Strict Nature Reserves (Biodiversity Law)
  - Core area of National Parks, aesthetic forests (Biodiversity Law)
  - Priority Habitats (Dir. 92/43/EEC)
  - Ramsar wetlands
- New a priori exclusion zones is an extreme measure which should be taken after thorough analysis including the impact on development

# Special care for avian fauna (SPAs-IBAs)





#### MD 37338/2010 & 8353/2012

#### Special measures for 207 SPAs & 196 IBAs

- Criteria for characterization species
- Exclusion zone of 3 km from the borders of a Ramsar wetland when this zone is inside an SPA
- **21 priority species** for which buffer zones from their nests are determined
- Underground cables inside SPAs
- Automated system that stops WTGs inside migratory bottlenecks
- Removal of dead animals around WTG platforms



- EIA study is the appropriate tool which secures the golden balance between the effective protection of the environment and the necessity not to block the development
- The quality of the EIA study is crucial. The high quality is secured by the existing legal framework as well as the knowledge which has been built by the sector.
- The current framework empowers the administration to secure the quality of the EIA:
  - adequate depth of analysis
  - adequate extent of the area under examination
  - adequacy of the primary data collected
  - effectiveness of the assessment of the cumulative impact

## Case study





- 34 X 850 kW (28,9MW)
- next to SPASCI & Ramsar wetland
- Pelicans' corridor (20% of the global population)
- Automated collision avoidance system
- No collision incidents



Οδηγός Καλής Πρακτικής για τον μετριασμό των επιπτώσεων των αιολικών πάρκων στη βιαποικιλότητ με χρήση σύγχρονων τεχνολογιών



Source: www.windfarms-wildlife.gr

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# Natura 2000 & Windy energy



## Natura 2000 network





- Expansion of network (version 30, Dec.2017)
- 32 new sites (mostly marine)
- >27% of the terrestrial area



\* 26 sites are both SCIs & SPAs

Source: www.ypeka.gr & OG 4432B/2017

### Natura 2000: a closer look



# focus on altitudes above 500 m\* 37,1% of land area covered by N2000

\* avg. altitude of oper. WTGs: 720 m

## Wind Energy & Natura 2000 (operating projects)



Source: HWEA, RAE, 2/2020

# Wind Energy & Natura 2000 (operating projects)





24,5% inside N2000 (operating)

 A critical mass of wind parks inside N2000

- Monitoring applied
- Reporting reviewed by the competent authorities
- An important data base of actual experience

Area	Parameter	Operating	Installation License
All country	Capacity (MW)	3.560,95	1.024,65
	Nr. of WTGs	2.411	595
Inside Natura 2000	Capacity (MW)	870,87	579
	Nr. of WTGs	680	203 🔱

Source: HWEA, RAE, 2/2020

Anthropogenic Climate Change

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Latest findings



# Anthropocene and how to prevent Hothouse Earth



Source: Will Steffen et al. PNAS 2018;115:33:8252-8259, Academy of Science of USA

Already global warming of 1<sup>o</sup>C

(extreme weather events, rising sea level, diminishing of Arctic sea ice)

- Threshold of **1,5<sup>o</sup>C** to prevent irreversible impacts
- **-45%** CO<sub>2</sub> until <u>2030</u> (compared to 2010)
- Net zero CO<sub>2</sub>until <u>2050</u>

We have **only 10 years** for **rapid and far-reaching transitions** in land, energy, industry, buildings, transport and cities



### Global Warming of 1.5°C

An IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty



## Strategic long-term vision: climate neutral Europe by 2050

- 7 main strategic blocks to a net-zero GHG economy
- All pathways converge that power generation should be fully decarbonized by 2050
- >80% share of RES in EU's electricity
- Large scale **electrification** of the energy system



**Source**: A European strategic long-term vision for a prosperous, modern, competitive, and climate neutral economy, European Commission, 28 November 2018

### UNEP Emissions Gap Report 2019 (1)



*"Renewables* and energy efficiency, in combination with *electrification of end uses*, are key to a successful energy transition and to driving down energy-related CO2 emissions"

2030 emissions



The 1.5°C goal is on the brink of becoming impossible:

We are facing emissions reductions so increasingly steep, it may soon be impossible to achieve 1.5°C.



 29-32 GtCO<sub>2</sub>e emissions gap (for 1,5°C target)

 "Renewables are currently the cheapest source of new power generation in most of the world"

### UNEP Emissions Gap Report 2019 (2)



*"Renewables* and energy efficiency, in combination with *electrification of end uses*, are key to a successful energy transition and to driving down energy-related CO2 emissions"

#### 2030 emissions



- 29-32 GtCO<sub>2</sub>e emissions gap (for 1,5°C target)
- "Renewables are currently the cheapest source of new power generation in most of the world"

#### The 1.5°C goal is on the brink of becoming impossible:

We are facing emissions reductions so increasingly steep, it may soon be impossible to achieve 1.5°C.

Today, we need to reduce emissions by 7.6% every year.

Today, even the most ambitious national climate action plans are far short of a 7.6% reduction.

The world now needs a five-fold increase in collective current commitments. The cuts required are ambitious, but still possible.

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2010



### UNEP Emissions Gap Report 2019 (3)



*"Renewables* and energy efficiency, in combination with *electrification of end uses*, are key to a successful energy transition and to driving down energy-related CO2 emissions"

#### 2030 emissions



- 29-32 GtCO<sub>2</sub>e emissions gap (for 1,5°C target)
- "Renewables are currently the cheapest source of new power generation in most of the world"

#### The 1.5°C goal is on the brink of becoming impossible:

We are facing emissions reductions so increasingly steep, it may soon be impossible to achieve 1.5°C.





- A robust and EU compatible legislative framework
- RES Spatial Framework and Strategic EIA approved by the Council of State
- Adequate know-how built by the sector
- EIA quality has been secured
- N2000 areas should not be a priori no-go zones
- 37,1% of land at H>500m covered by N2000
- 24,5% of installed wind capacity inside N2000

# Wind Energy and wildlife can co-exist

Change our perspective, not our planet

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# Σας ευχαριστώ!