

INTERNATIONAL MULTIDISCIPLINARY COMBINED EVENT
"ACTUAL PROBLEMS OF LANDSCAPE SCIENCES: ENVIRONMENT, SOCIETY,
POLITICS"

September 9-13, 2019, Tbilisi, Georgia, Ivane Javakhishvili Tbilisi State University

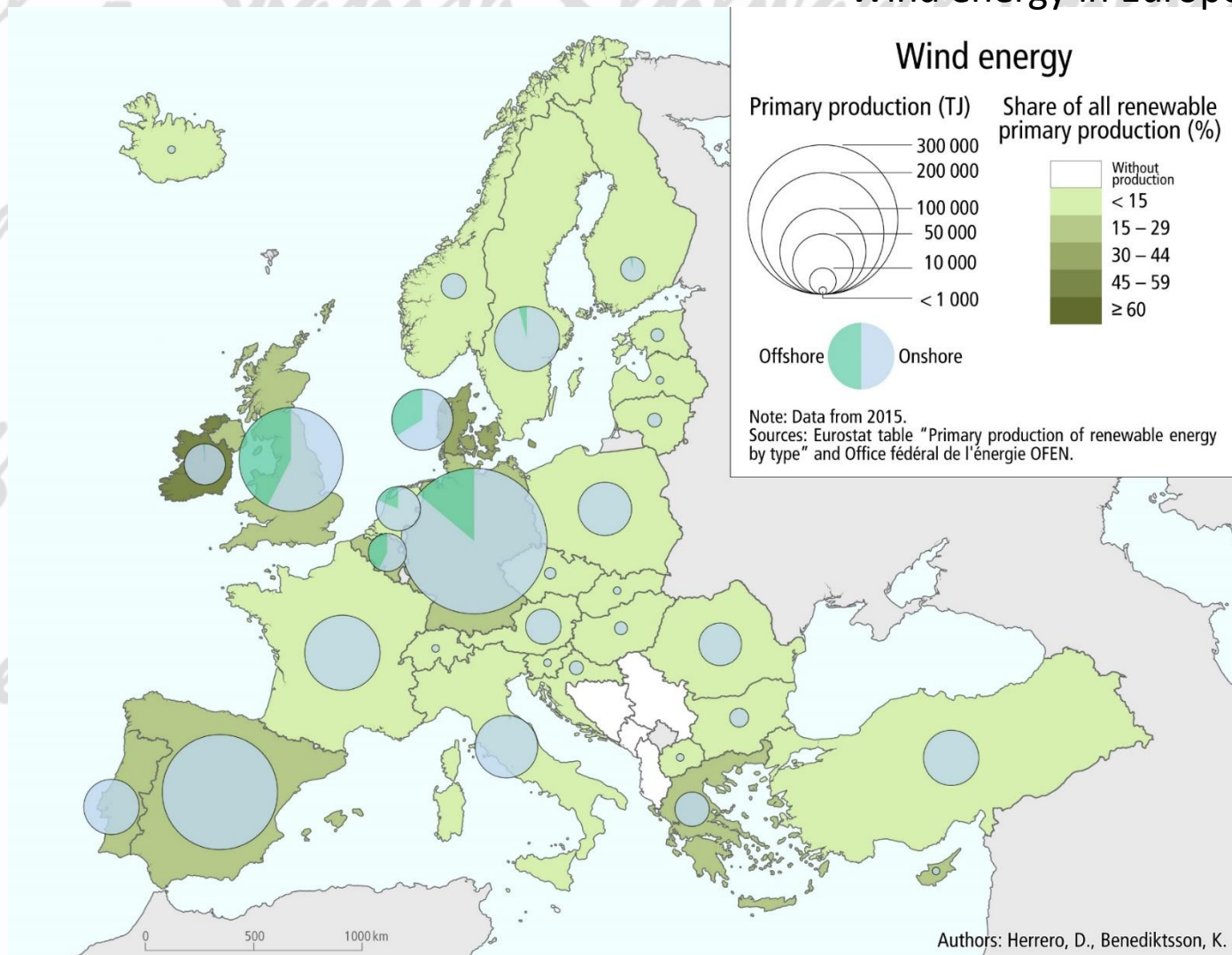
Wind power landscapes in Spain: social perception and spatial planning



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- By the end of May 2018, the Spain's wind-power installed capacity reached 23,178 MW.
- A target for 2020 is of 30,000 MW onshore and of 3,000 MW offshore (PANER, 2011).

Wind energy in Europe



Factors of rapid expansion of wind energy in Spain

- absence of conventional energy sources,
- energy dependence on exterior,
- diversity of resources in energy mix and availability of wide range of renewables, including wind energy,
- manufacturing costs worldwide,
- technological improvements,
- availability of land,
- economic incentives (feed-in tariff system),
- stable regulatory framework during the first decade of the XXI century,
- large scale developments.

Wind power capacity in Spain at the end of 2017 per autonomous communities



Daniel Herrero, data provided by Red Eléctrica de España

Principle characteristics of the renewable power development in Spain:

- Renewable power policy is based on quantitative targets and economic incentives (feed-in tariffs).
- The application of wind energy is governmental policy, but changing a zoning scheme is a regional political decision.
- Tendency to top-down, technocratic, hierarchical way of thinking about how the planning system has to be shaped.
- Limited role of local authorities in the decision-making processes on energy infrastructures.
- National policy has been keeping grass-roots initiatives at a distance in the formal decision-making process on Spanish renewable planning.
- In spite of essential changes due to application of the ELC (2000) landscape laws are still out of step with the development of renewable energy policies.
- Lack of strong and effective opposition to wind developments even in the autonomous regions which have landscape protection laws.

3. Landscape values and landscape policy in Spain

- Absence of specific legislation on landscape management and conservation of landscape policy in Spain up until the 2000's
- Absence of powerful landscape protection organizations rooted in socio-cultural traditions explain the fact that landscape concerns.
- Lack of strong and effective opposition to wind developments even in the autonomous regions which have landscape protection laws.
- New concerns for landscapes have entered energy policies in Spain as well as a result of developments at the European level (ELC).
- In spite of essential changes in landscape policies, they are still out of step with the development of renewable energy policies.
- In Spain there is no specific regulation of landscape questions in legislation relating to industrial installations in general and power plant installations in particular
- It has still not been possible to introduce landscape as a transversal element in Spanish energy policy either at national or regional level.
- Local authorities do not have capacity to introduce landscape impacts of wind farms as an substantial factor into decision-making process.

4. Wind energy landscapes: wind power negative impacts on landscape and their mitigation

- Considerable height (up to 160 m) of wind turbines
- Landscape and visual impact of WFs is strongly influenced not only by the size, design and layout of wind parks, but that also vary with the make and model of the turbine proposed.



- Cumulative impact of multiple WFs requires not only environmental impact assessment, but also strategic spatial planning.
- The appearance of wind energy landscape depends on how the wind turbine is positioned in the landscape, the type of landscape, the wind turbine's size, and the proximity of the observer to the wind turbine.

- Dynamic factors: night lights, shadow flicker and the stroboscopic effect produced by wind turbines.
- Hazards that WFs pose to birds and bats, noise pollution, and destruction and loss or degradation of natural habitats.
- Mitigation through appropriate site selection and the establishment of strategic planning processes.



5. Social perception

- Positions of support and objection are not constructed just from a lack of awareness of the benefits of wind power, skepticism of the technology or the location of specific proposals, but also reflect deeper values, wider cultural and institutional contexts.
- General public support for wind energy technologies is high in Spain: about 67% are in favour of the use of wind energy, with opponents amounting to only 2% of the people questioned.
- Although general attitudes towards wind power are very positive, attitudes toward wind farms can be completely different
- Arguments vary a great deal and often go beyond aesthetic considerations



- Aesthetic point of view: wind turbines can be perceived as sculptural elements in the landscape, evoke positive association by thematic relation to modern structures, and become associated with technological efficiency, progress, environmental cleanliness and utility.
- WFs, its acceptance is strongly affected by any prior experience of local residents with wind developments.



A tourist taking pictures in Lanjarón, Alpujarra.

One of teenagers teams participating in a local Carnival competition in Castilla y León represented a local wind farm with its turbines

- Agricultural and grazing exploitation in WFs are often generates positive impact in perception of these landscapes.
- Utilization of wind energy landscapes as educational centres and exhibition venues (e.g. Sotavento wind farm in Spain).
- Using wind turbines as observation towers with the aim of utilizing their tourist potential and to improve the awareness and image of RE, its integration in nature trail or for improving image of environmentally stigmatized areas (Frantál et al. 2018).

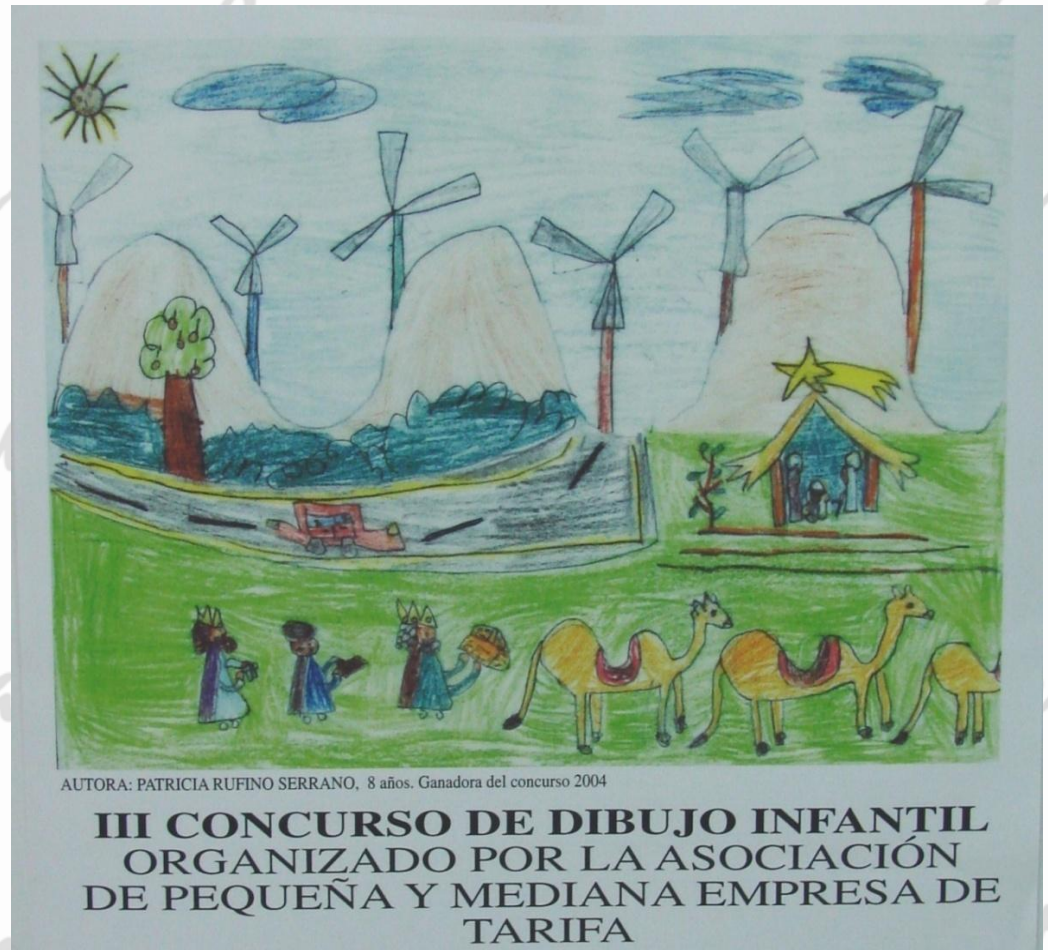


- Landscape relationship with these developments is not always conflictive.
- Wind power infrastructures are often seen as a way to increase local income and to raise economic activity.

Experimental wind farm in Sotavento (Galicia, Spain)

A winner of the local competition of children's drawings for Christmas in Tarifa (Andalusia, Cadiz).

For local children, as for many adults wind turbines have been making part of their landscape are the part of the local identity.



1. The institutional emergence of a “renewable energy landscape” in Spain is underway. Up to 2010 Spain’s renewable power policy has been developing very rapidly and the implementation of renewable power has been carried out in favourable political conditions. Although the evolution of landscape policy however has been rather slow.
2. The broad objectives of Spanish energy policy, which were linked to the fight against climate change, were not accompanied by any real assessment of the territory potential and landscape effects of the introduction of these kinds of energy system. This resulted in a fast, disorganized installation of renewable energy sources, which brought about an enormous transformation of the territory and the landscape.
3. There are a number of planning problems inherent in the ever wider spread of wind energy, which produce conflicts at different scales and between different social stakeholders, especially when the turbines are situated on the borders between territorial bodies with different territorial “interests” and “sensitivities”.

Conclusions

4. Spain has chosen the large industrial scale renewable development, which benefits big national and international companies, rather than local communities.
5. It's important to change a land planning scale for renewable projects, which has only regional and state levels in Spain.
6. The adequate land planning measures could be very useful for obtaining wind energy technologies integration in the rural landscape and its social acceptance.
7. It is desirable to revise the “agrarian paradigm” of rural environment in Spain in order to assume complementarity of its land uses.

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Thank you for your attention!

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