

The impacts of green energy policies on the transformational processes in Spain's rural landscapes

Presented by:

Marina Frolova

Ph.D. Lecturer, University of Granada
mfrolova@ugr.es

Daniel Herrero Luque

*Ph.D. Student: Universities of Valladolid (SP)
and Nancy2 (FR)*
danielherreroaluque@gmail.com

Wind power in the Autonomous Region of Andalusia - Alpujarra and Valle de Lecrín
M.Frolova and B. Pérez Pérez

Integration of photovoltaic power plants in Andalusian landscape.
M. Mérida, R. Lobón, M^a.J. Perles

Wind energy in Andalusia.
M^a.P. Díaz Cuevas

Renewable energy and landscape in Castilla y León
E. Baraja and D. Herrero

1. 2. Spain's planning regime and financial support system

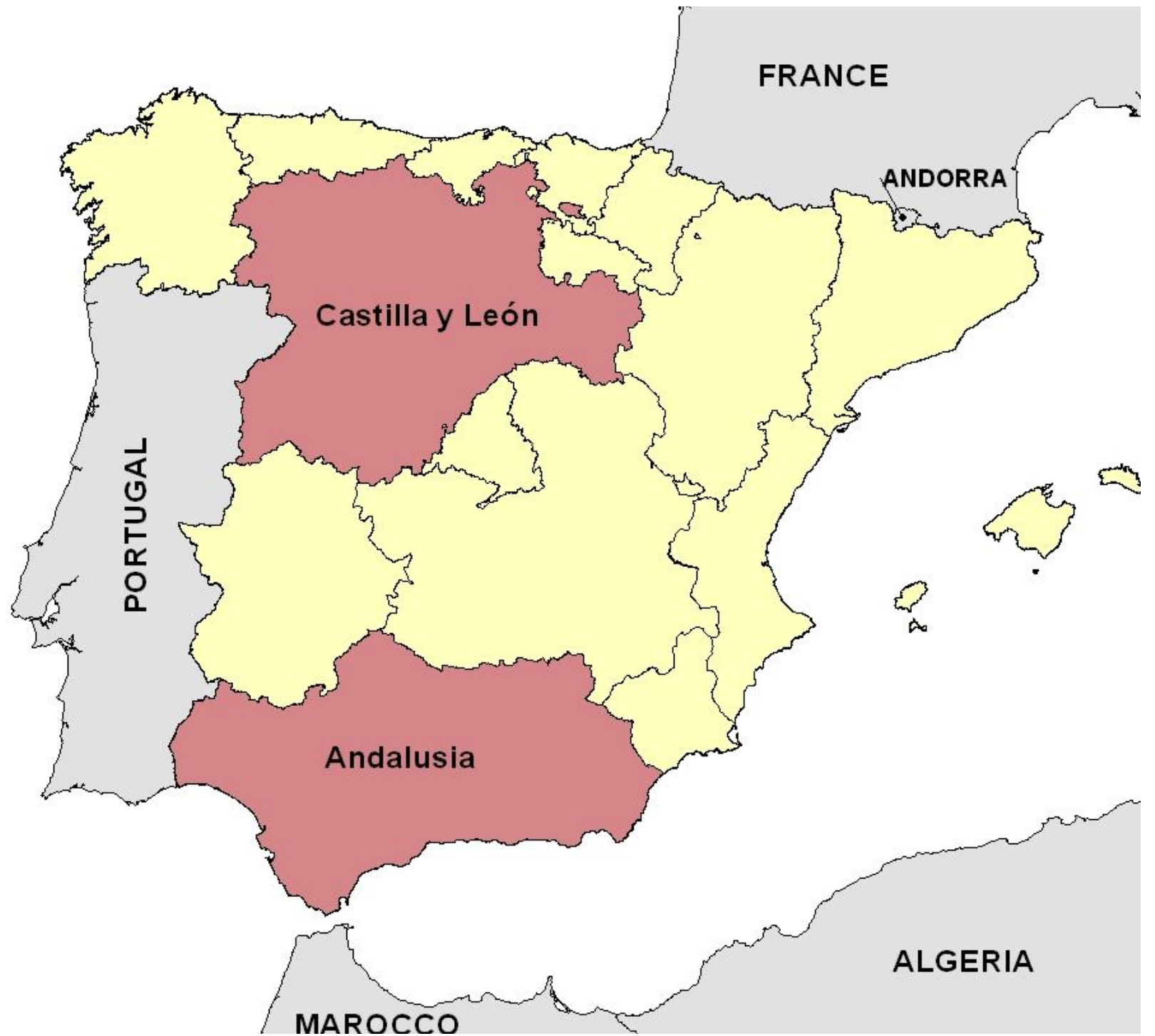
- Spanish renewable power policy is based on quantitative targets and economic incentives (feed-in tariffs).
- The application of wind energy is governmental policy, but changing a zoning scheme is a regional political decision.
- Tendency to top-down, technocratic, hierarchical way of thinking.
- At local level wind power promoters should respect regional and local land-use plans.
- Limited role of local authorities in the decision-making processes on energy infrastructures.

1.3. Public participation

- Tendency towards a top-down, technocratic, hierarchical way of thinking about how the planning system has to be shaped.
- National policy has been keeping grass-roots initiatives at a distance in the formal decision-making process on Spanish renewable planning.
- Very limited role given to the opinion of local stakeholders and of nature protection organizations in the formal decision-making process

1.4. Landscape values and landscape policy

- Absence of specific legislation on landscape management and conservation of landscape policy in Spain up until the 2000's.
- Absence of powerful landscape protection organisations rooted in socio-cultural traditions.
- Lack of strong and effective opposition to wind developments even in the autonomous regions which have landscape protection laws.
- Landscapes impacts of wind power infrastructures are hardly taken into consideration in the Spain's energy policies.
- In spite of essential changes due to application of the European Landscape Convention (2000), which encouraged several autonomous regions to incorporate landscape as an important issue in land use regulation, they are still out of step with the development of renewable energy policies.



Case 1. Wind power in the Autonomous Region of Andalusia - Alpujarra and Valle de Lecrín (M.Frolova and B. Pérez Pérez)

Marina Frolova
Belén Pérez Pérez

University of Granada (SP)



Aarhus, October 5th 2011



1. Wind power in the Autonomous Region of Andalusia - Alpujarra and Valle de Lecrín (M.Frolova and B. Pérez Pérez)

2.1. Geographic and socio-economic data

Total Andalusia's installed wind power capacity of 3000 MW by 2011.

The Comarcas of Alpujarra and Lecrín Valley (Andalusia, Spain) consist of 38 municipalities with a population of 52 thousand inhabitants.

Traditional agrarian character.

Exceptional landscapes and natural, ethnological and cultural resources.



Study area



There are seven wind power plants in the study area, and a few other projects under development.

Typical landscape of Alpujarra locality

Material and method

- Field observation and in-depth interviews with the different stakeholders involved in the development of a wind power project (10) (farmers, experts, local city councils, local tourism promoters, representatives of the Natural and National Park of Sierra Nevada ...).
- The interview centred on five main issues: the relationship between the interviewee and the territory being studied, the perception of renewable energies, their attitudes towards the wind farms that had been installed, the relationship between wind power and other business activities in these areas and lastly, their attitudes towards the emerging wind power landscapes.



Preliminary conclusions

- We have not detected a clear opposition to the renewable energy systems installed so far in this area
- Although there are certain doubts about a possible excessive proliferation of such projects.
- The local people do not want their region to become identified with wind-power landscapes.

Case 2. Solar photovoltaic power plants in the landscape: Impacts classification and principles of landscape integration.

Matías Mérida Rodríguez
Rafael Lobón Martín
María Jesús Perles Roselló
University of Málaga (SP)

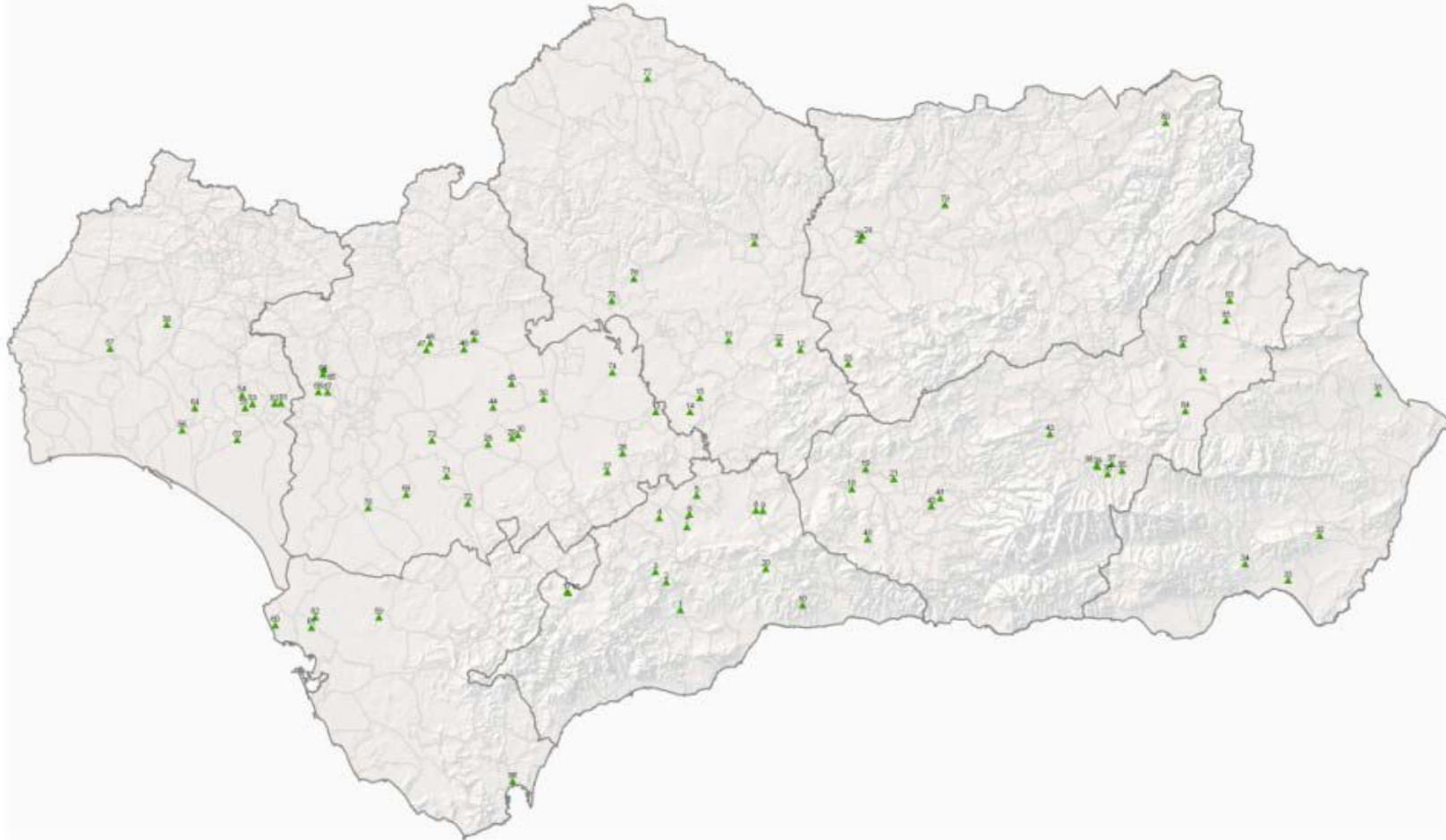
Landscape **characterization** of solar PV plants in Andalusia
Landscape **impacts** of solar PV power plants



Landscape **integration** of solar PV infrastructures

Solar photovoltaic power plants in Andalusia

The Guadalquivir valley and its "campiña" (open-fields)
The Intrabético depressions and Altiplanos (high plains)



Photovoltaic impacts on the rural landscape

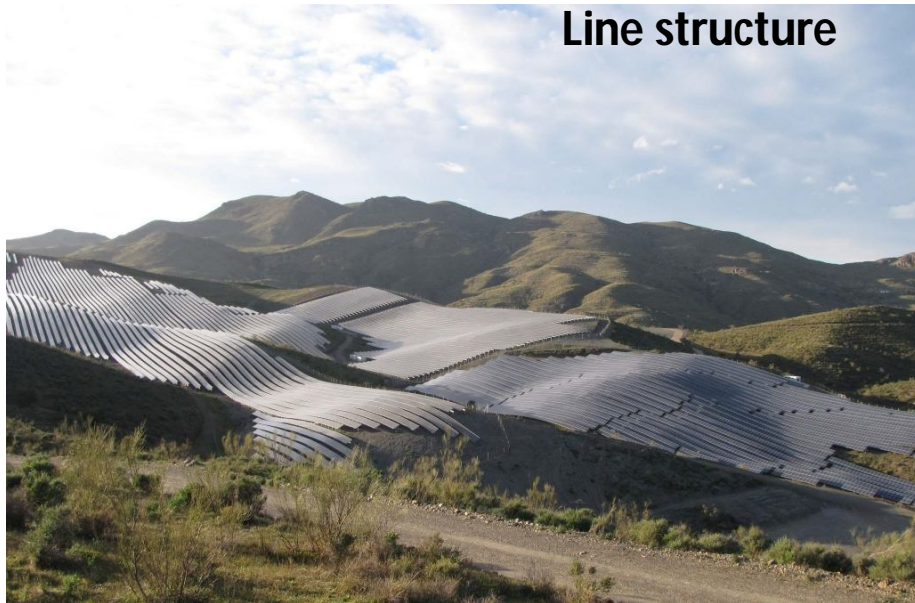
The location of solar PV power plants is adapted to certain landscapes and to nearby elements



Solar PV power cells



Line structure



Tracker



M. Mérida, R. Lobón, M^a. J. Perles

Aarhus, October 5th 2011



Greenhouses and solar PV power landscape



Industrial landscapes



M. Mérida, R. Lobón, M^a. J. Perles

Landscapes of marshes and flood zones with solar PV farms



Landscapes of irrigation with solar PV farms





Infrastructures of transport and solar PV plants





M. Mérida, R. Lobón, M^a. J. Perles

Conventional energy and solar PV power landscapes



Renewable landscapes

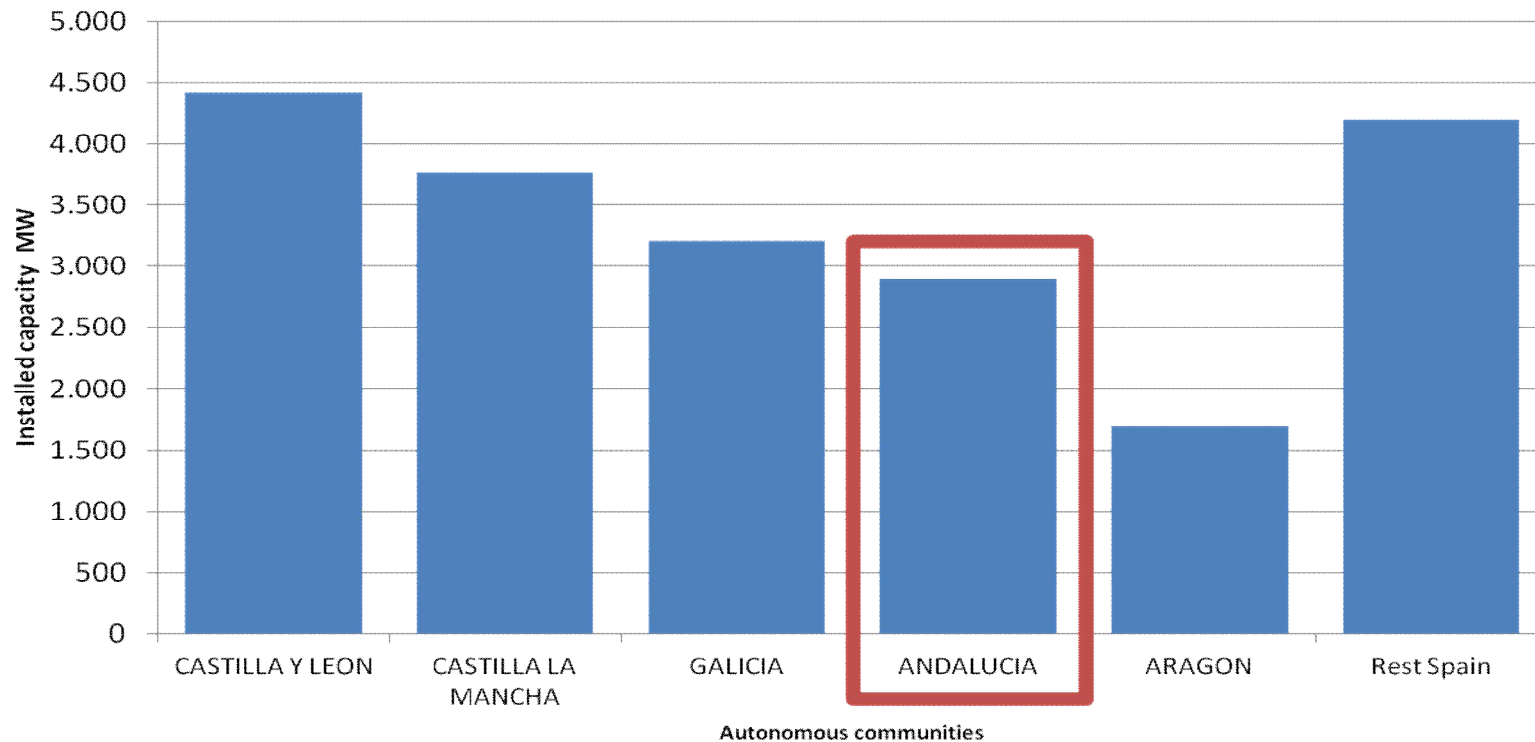


M. Mérida, R. Lobón, M^a. J. Perles

Case 3. Wind power in Andalusia

M^a del Pilar Díaz
University of Sevilla (SP)

Spatial distribution of Installed windpower capacity in Spain
(September 2011).



Regional energy policy



2006

Andalusia's Land-use Law

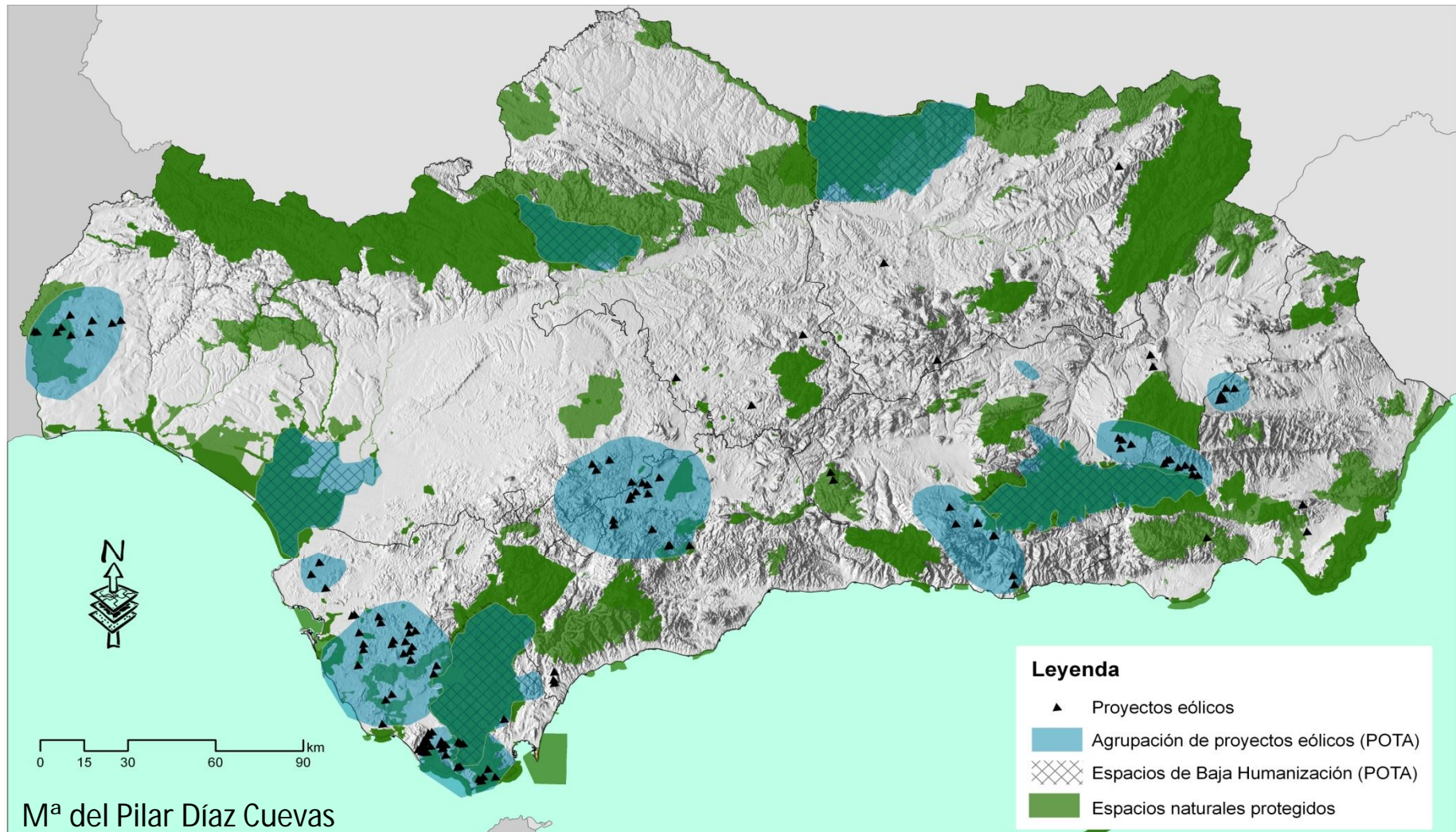
2007

Andalusia's Law on Savings and Energy Efficiency

2008

Andalusia's 2007-2013 Sustainable Energy Plan

Andalusia Land-use Law (POTA, 2006)



Distribución de la potencia instalada en energías renovables (2010), en los espacios naturales protegidos.

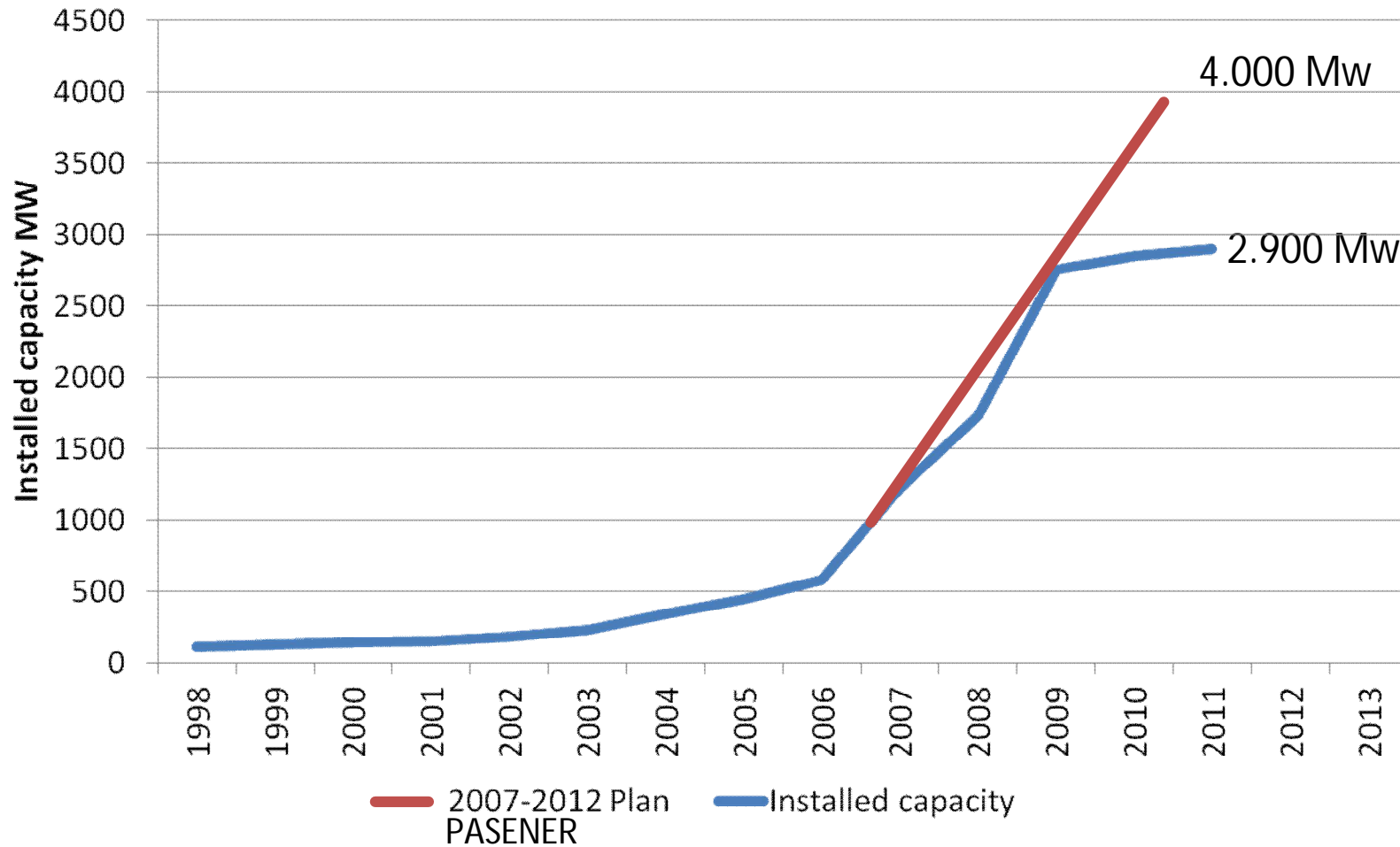
Tipos de fuentes	Nº de instalaciones
Eólica	18
Solar fotovoltaica	24
<u>Minihidráulica</u>	13

Fuente: Elaboración propia a partir de Agencia Andaluza de la Energía y Consejería de Medio Ambiente.

Law on Energy Savings and Efficiency

Article No. 11 the need to identify potential areas suitable to install infrastructures for renewable energy generation and processing

The Andalusia's 2007-2013 Sustainable Energy Plan PASENER



Subregional level



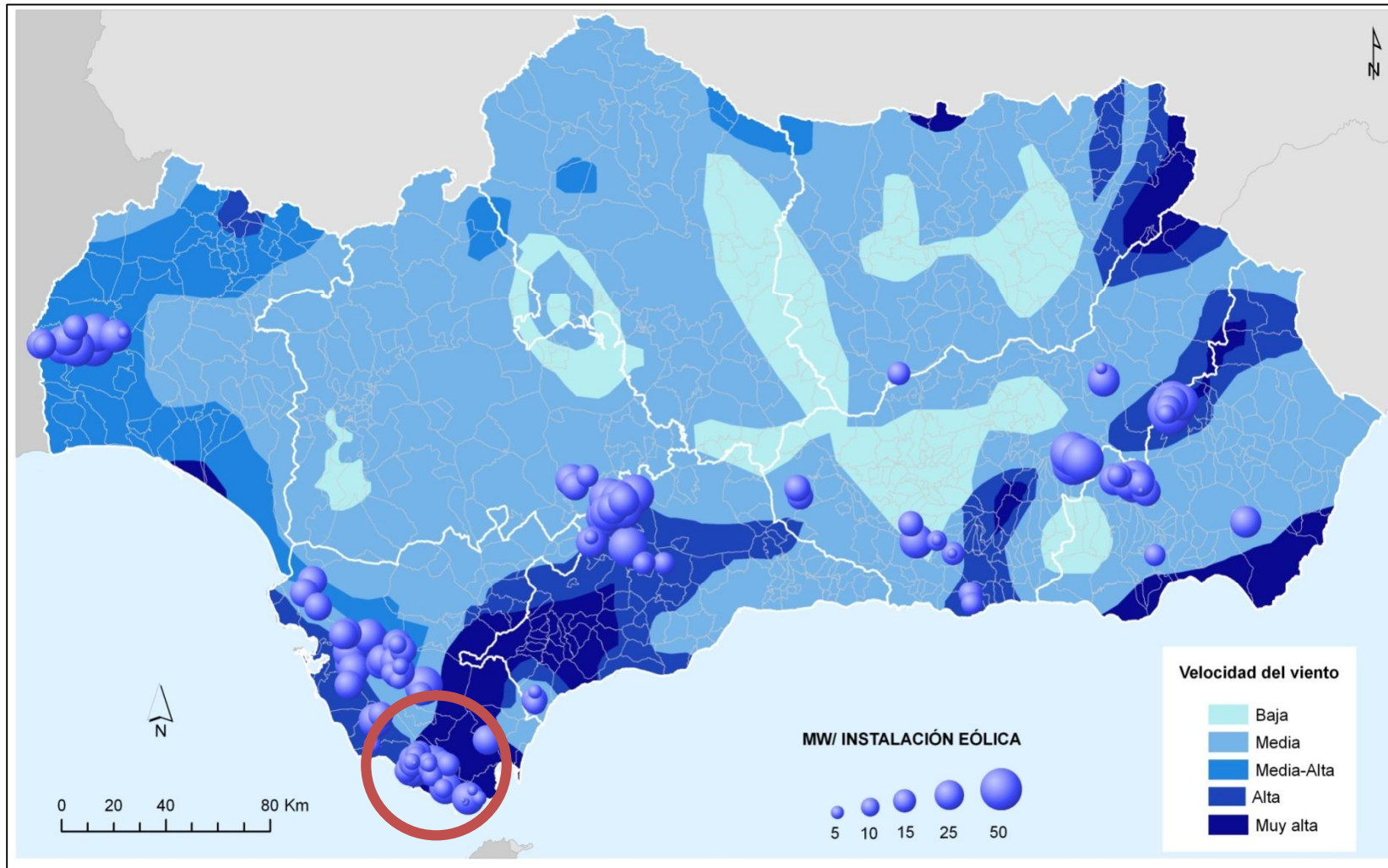
Aarhus, October 5th 2011

Subregional level

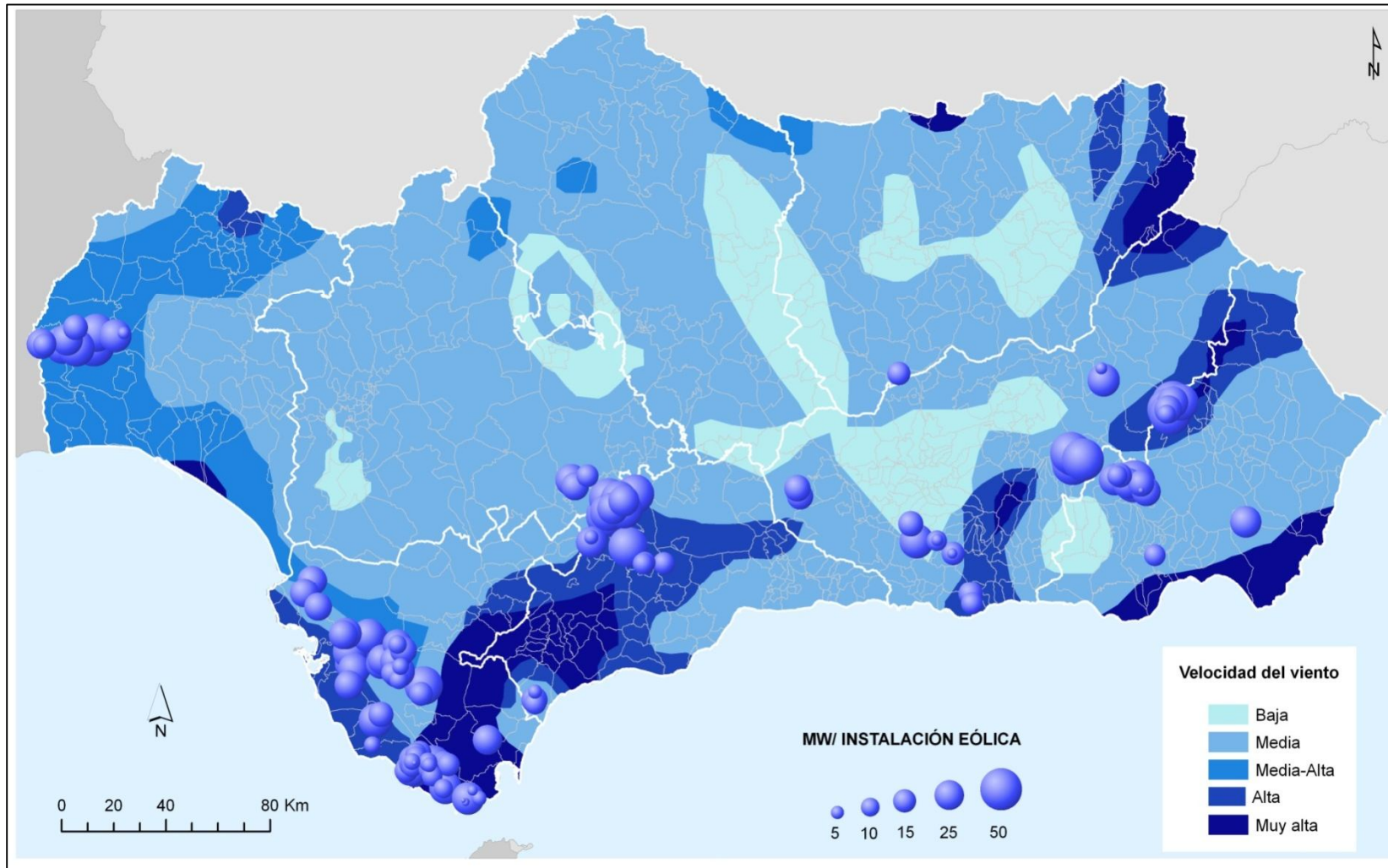
Municipality of Tarifa



Tarifa: 60% of the Andalusia's total installed capacity

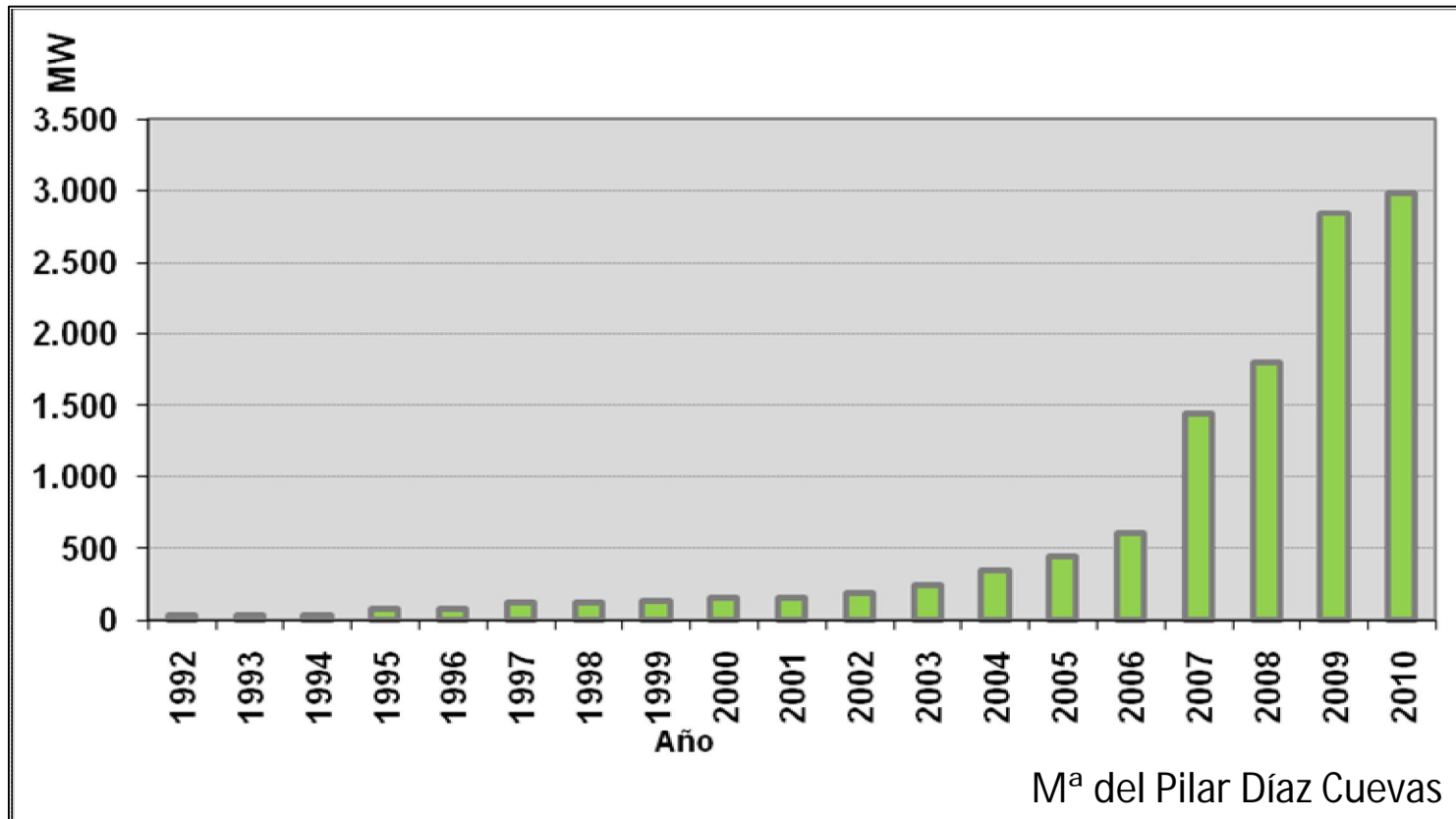


M^a del Pilar Díaz Cuevas



M^a del Pilar Díaz Cuevas

The Andalusia's installed wind power capacity. 1992-2010.



Una protesta contra los parques eólicos en Tarifa provoca retenciones en la N-340

C. ROMAGUERA - Algeciras - 02/04/2006

Vecinos de las barriadas de Almarchal y La Zarzuela, en Tarifa (Cádiz) provocaron en la mañana de ayer importantes retenciones en la N-340 a su paso por las zonas de Zahara de los Atunes y Tahivilla. Protestaron contra la instalación de nuevos parques eólicos en el término municipal.

Los manifi-
que "ésta
Por su par
zona de m
desarrollo

Protests against wind farms in Tarifa causes traffic delays.

sentante de los vecinos del Almarchal, aseguró
ás parques eólicos".
pero está claro que tampoco hay que saturar la
nizando esta protesta estamos a favor del

La caravana formada por los vecinos contó con unos 200 coches que provocaron cerca de siete kilómetros de retenciones en la N-340. La marcha partió a las 11.45 horas de Zahara de los Atunes, en un manifiesto. Según fuentes de la Guardia Civil, la protesta

Ba
es
En
fut
co

MEDIO AMBIENTE

Protesta contra los parques eólicos

Vecinos de La Zarzuela, Almarchal -en el término municipal de Tarifa- y de Zahara de los Atunes acudieron ayer al Ayuntamiento tarifeño a protestar contra la ubicación de más parques eólicos, porque creen que perjudica a la zona, según informaron a Europa Press fuentes de la Plataforma para la Defensa del Medio y Desarrollo Sostenible. / E. P.

y la calidad de vida de estas poblaciones, hipotecan su
por las distintas administraciones "que deciden sin contar

Protests against wind farms

Case 4. Renewable energy and landscape in Castilla y León

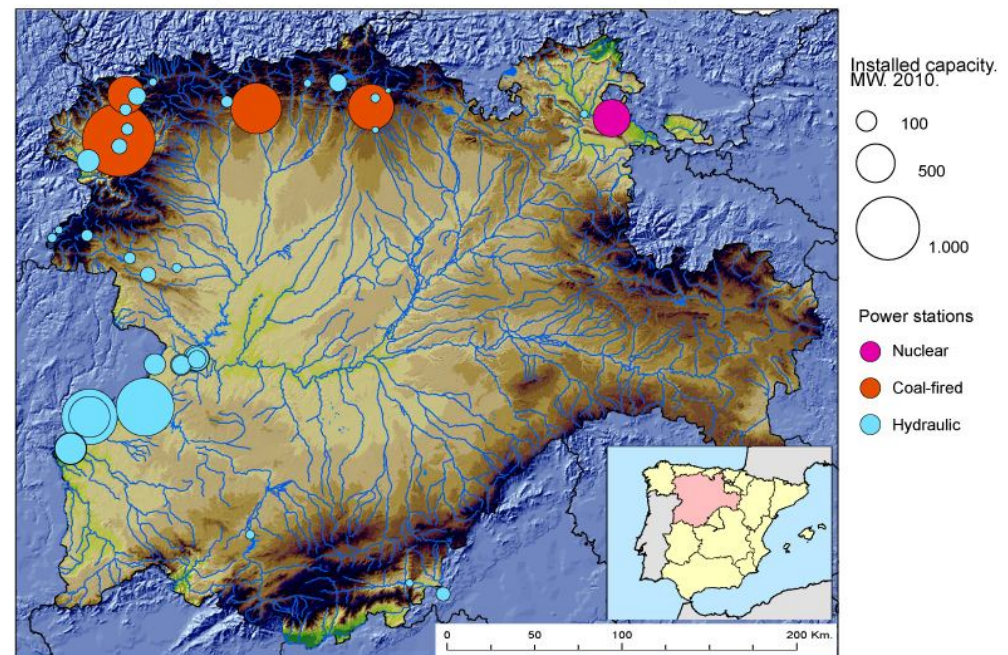
Eugenio Baraja
University of Valladolid (SP)

Daniel Herrero
University of Valladolid (SP) and Nancy2 (FR)

The third largest region in
European Union

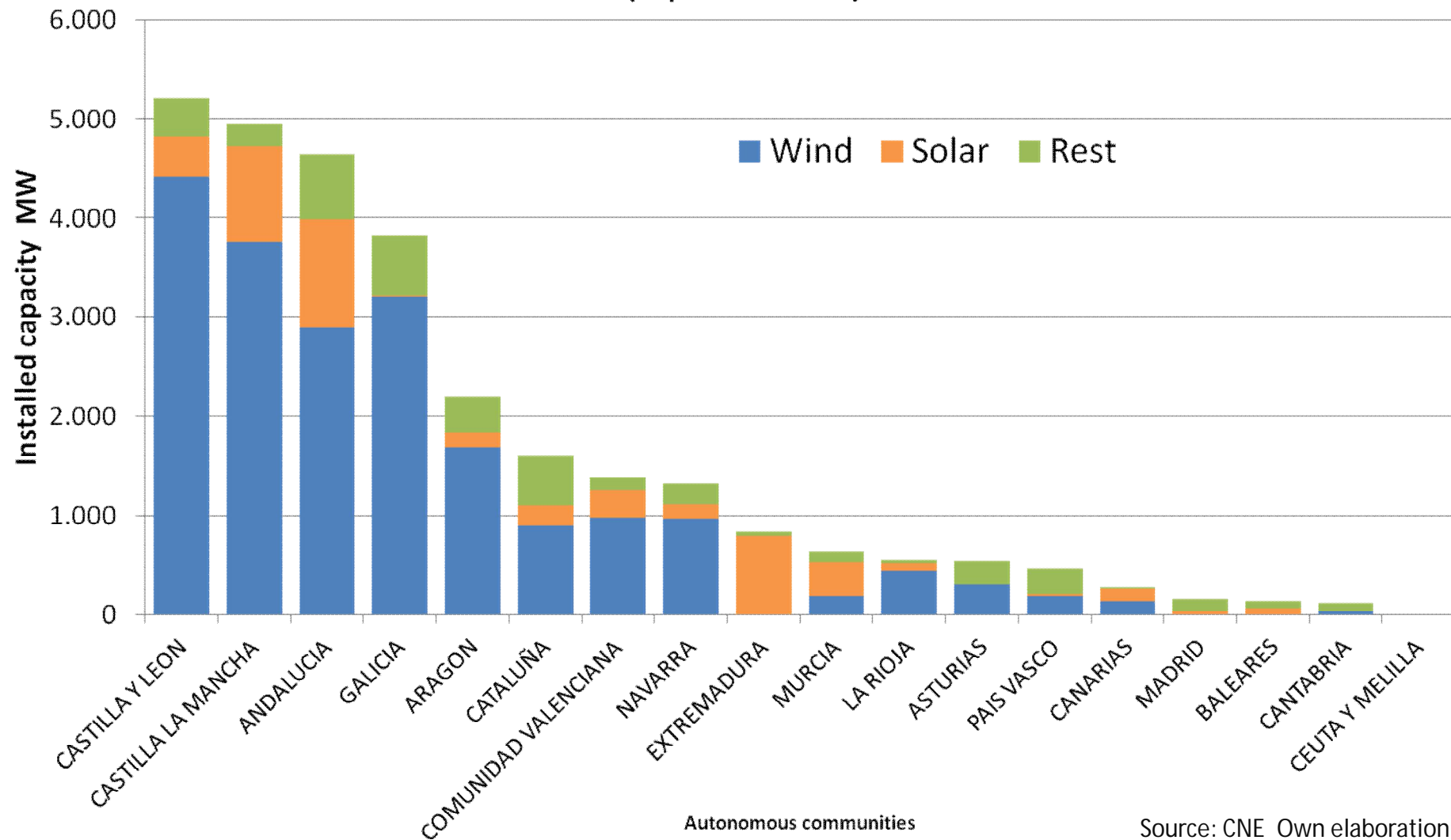
The region is characterized by low
population density: 26 inh/km²

Installed capacity of conventional power stations in Castilla y León.

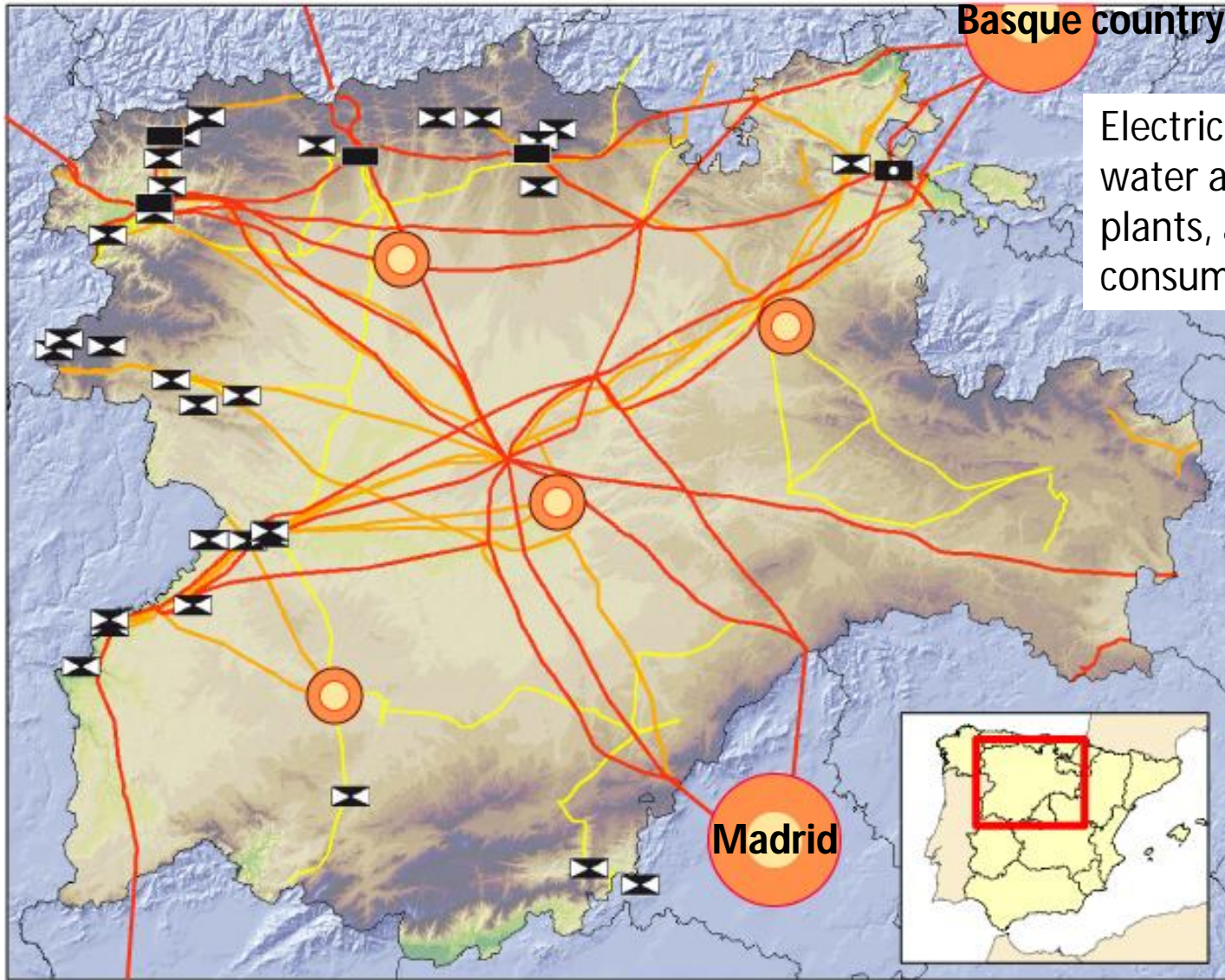


Source: EREN, CNE. Own elaboration.

Spatial distribution of installed renewable capacity in Spain (September 2011).



Source: CNE Own elaboration



Source: EREN, REE Own elaboration

Power stations

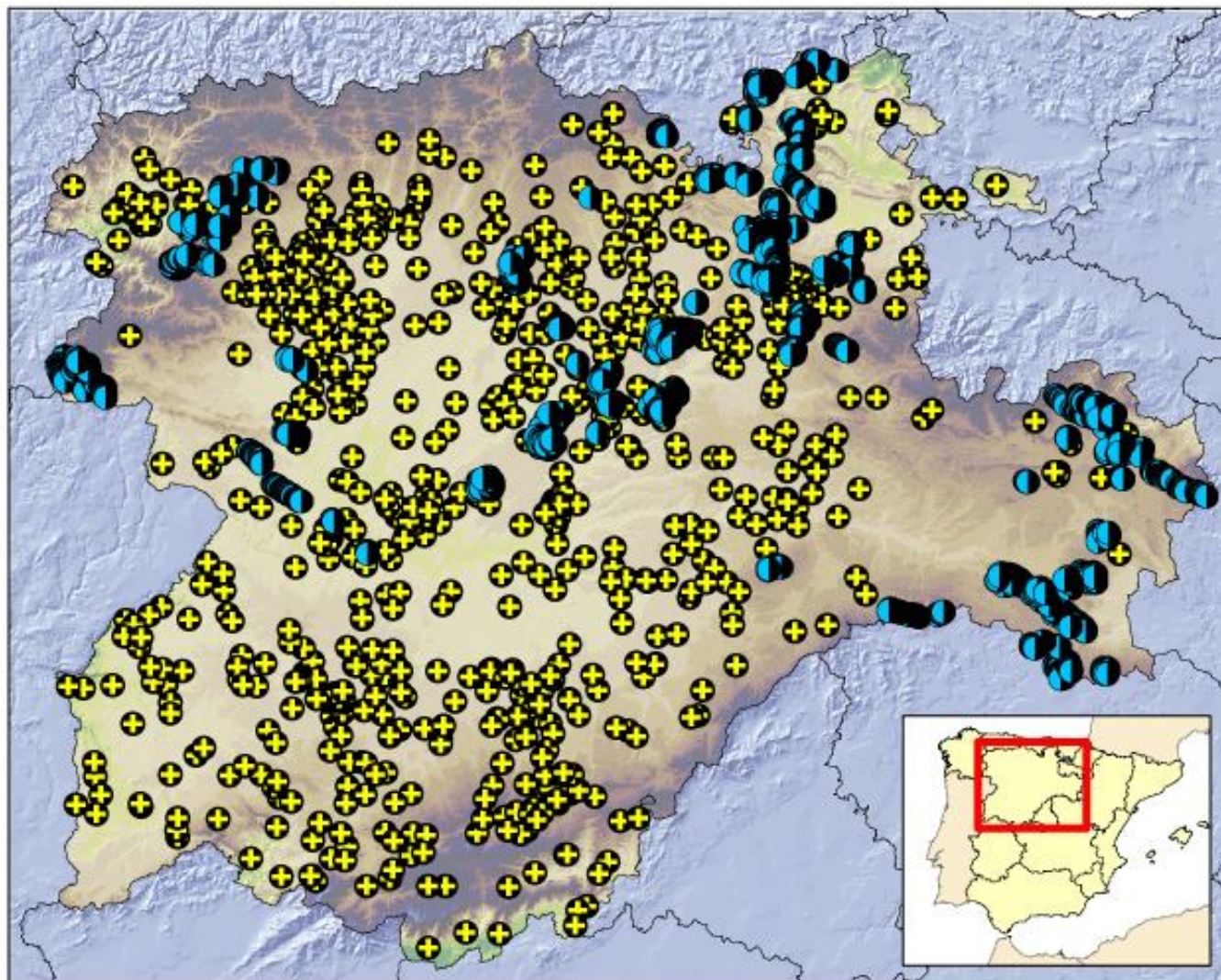
-  Nuclear
-  Gran Hidráulica
-  Termica
-  Nuclear

Electric Transmission Lines

-  400 Kv
-  220 Kv
-  132 Kv



The central areas are now becoming the protagonists in the renewable development



- Windmill
- ⊕ Photovoltaic power plants

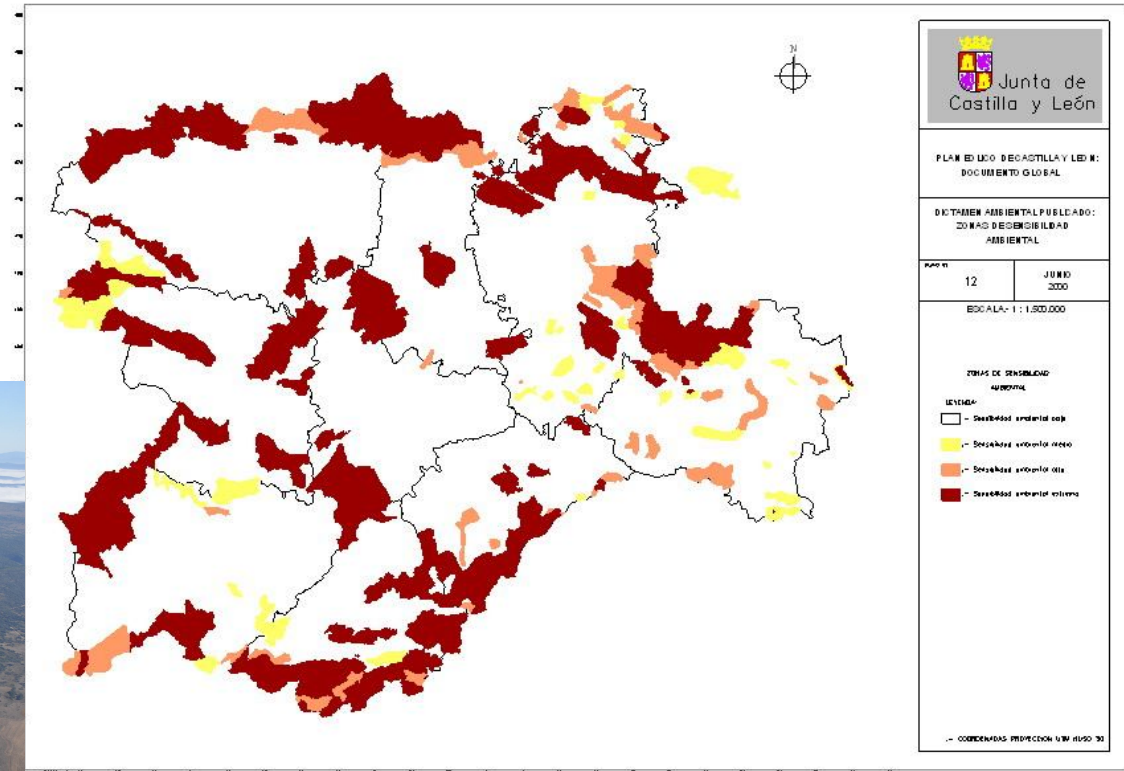
Own elaboration

The territory expansion of the energetic function: Wind and solar photovoltaic power

1. Wind power as a true “manna” in rural areas

Environmental sensitivity areas. Wind power plan of Castilla y León.

42 windmills are placed in the Nature Reserve of Ebro and Rudrón Canyons.
127 windmills if we extend its perimeter to 2 more kilometers.



Aarhus, October 5th 2011

Ampudia village. 609 inhabitants

Cultural and tourist development of a little village



5 Rural cottages
2 Inn
5 Restaurants

Religious art Museum
Medical Museum
Sociocultural center
Sport center
Municipal nursery
Retirement home
Multi-purpose room

Incomes: 137 windmills in municipal and private lands



Windmills are compatible with farmland. Rural land owners are energetic producers. E.g. San Lorenzo farm

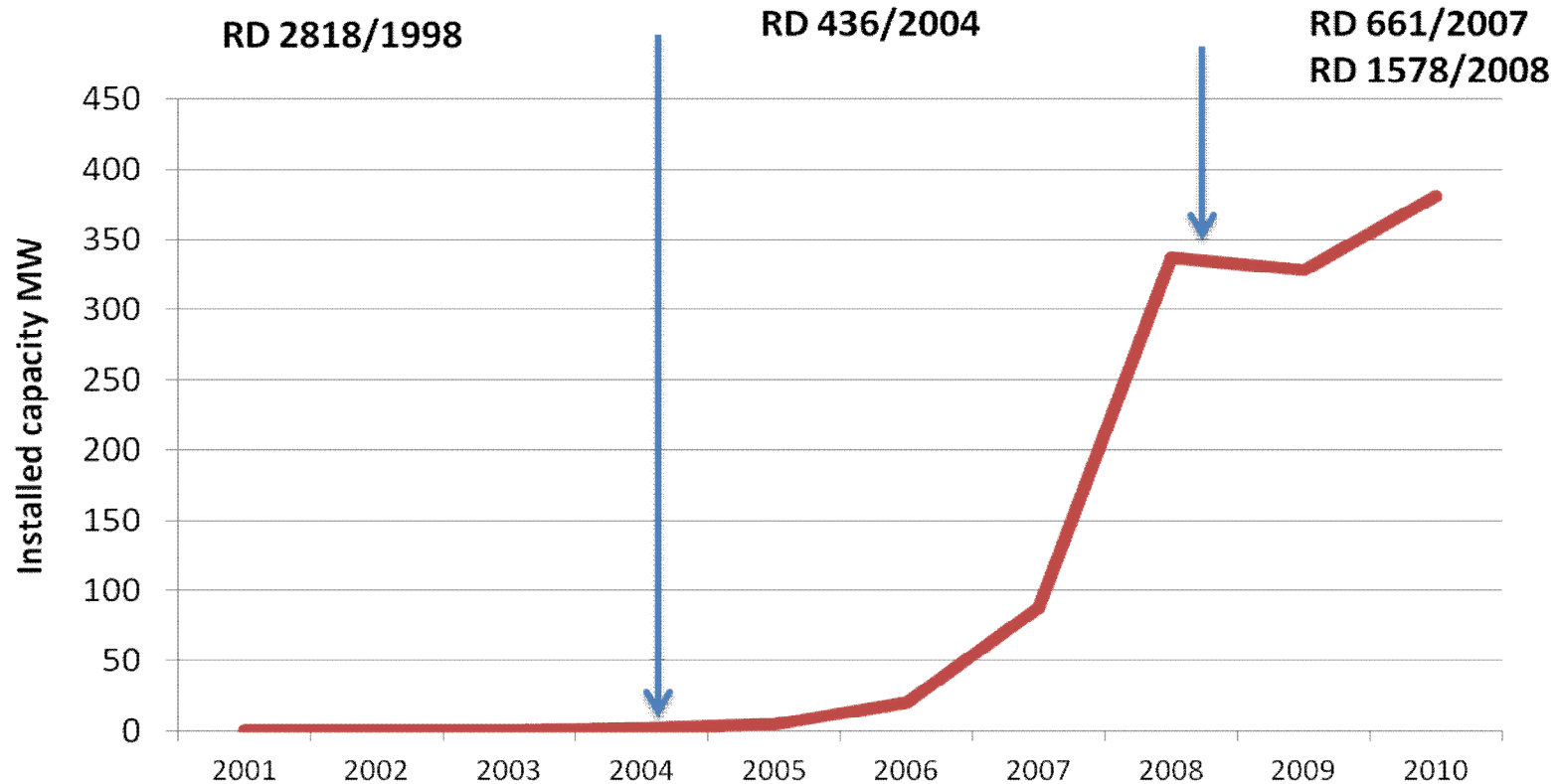


A very strong visual impact, and a key factor of landscape change.

Energy production is a reasonable and valued alternative.

The territory expansion of the energetic function: Wind and solar photovoltaic power

2. Photovoltaic power: The “solar farm” as a new agrarian “landscape” of plains



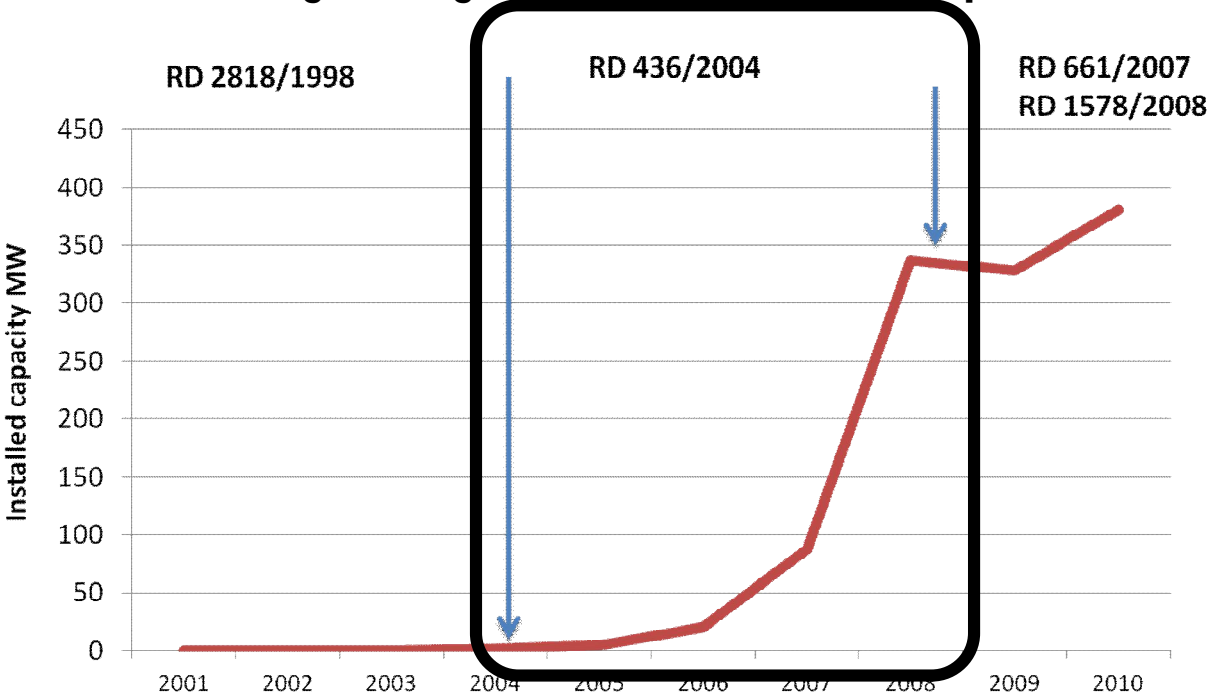
Fuente: CNE -Informe mensual de ventas de energía del régimen especial. Diciembre 2009-.

The first phase of development. Initially small infrastructures: from farmer to energetic businessman



D. Herrero

The second phase of development. The energetic "agriculture" of speculative profile



Fuente: CNE Informe mensual de ventas de energía del régimen especial. Diciembre 2009-



E. Baraja



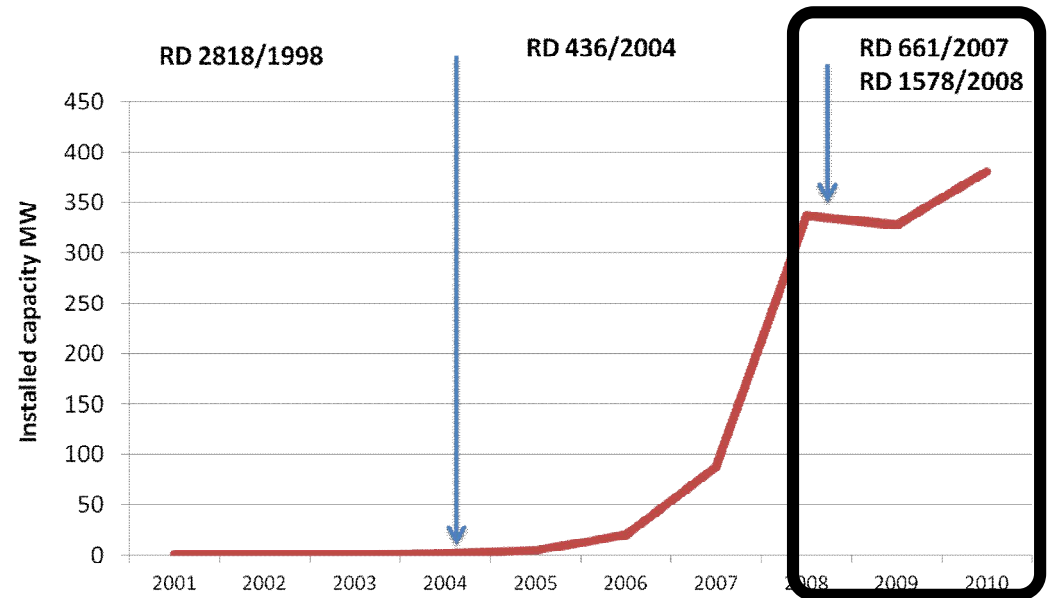
E. Baraja



Aarhus, October 5th 2011



The third phase of development. Spatial model of large energetic companies



Fuente: CNE -Informe mensual de ventas de energía del régimen especial. Diciembre 2009-.



Aarhus, October 5th 2011



The strong development of wind power plants in the highlands, and solar plants in the plains, make them the most dynamic elements of the rural landscape transformation in Castilla y León



Conclusion (I)

- The institutional emergence of a “renewable energy landscape” in Spain is underway.
- Spain’s renewable power policy has been developing very rapidly and the implementation of renewable power has been carried out in favourable political conditions. The evolution of landscape policy however has been rather slow.
- While in many other European countries a new sensitivity towards landscape questions has become one of the main barriers to the development of renewable energies, in Spain relatively limited resistance to a massive expansion in renewable power made it largely unnecessary for government to direct local siting processes.

Conclusion (II)

- Spain has chosen the large industrial scale renewable development, which benefits big national and international companies, rather than local communities.
- The important target for Spain is to look for a different model of renewables development, on a smaller scale, which may bring major benefits to the local population in rural areas and may help to maintain small farmsteads and raise the rural areas economic activity
- It is important to change a land planning scale for Spanish renewable projects, which has in Spain only regional and state levels.
- The adequate land planning measures could be very useful for obtaining renewable technologies integration in the rural landscape and its social acceptance.

Presented by:

Marina Frolova

Ph.D. Lecturer, University of Granada
mfrolova@ugr.es

Daniel Herrero Luque

Phd. Student: Universities of Valladolid (SP) and Nancy2 (FR)
danielherrero luque@gmail.com



Spanish renewable energy and landscape network

<http://reserp.jimdo.com>



Aarhus, October 5th 2011

