

**Rediam** ●●●

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Projet cofinancé par le Fonds Européen de Développement Régional (FEDER)  
Project cofinanced by the European Regional Development Fund (ERDF)



# Enerscapes' experience Regional Ministry of Agriculture, Fisheries and Environment (Andalusia)

*International Final Conference  
24<sup>th</sup> of May 2013  
Corinthia Marina Hotel. St. Julian's, Malta.*



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Who we are and where we are?



Surface: 87,600 km<sup>2</sup> (+/- like Portugal or Ireland)  
Inhabitants: 8,5 millions (35% in the litoral área, 1.100 km of coast)  
In front of Morocco (: biodiversity, natural and cultural heritage, mix of culture)  
Mediterranean climate  
High level of self-government (autonomus region)

Regional Ministry of Agriculture, Fisheries and Environment

































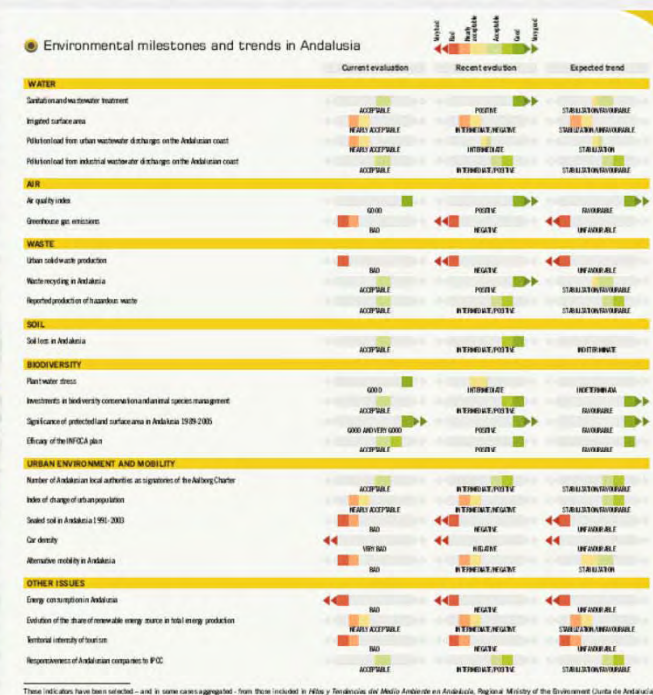
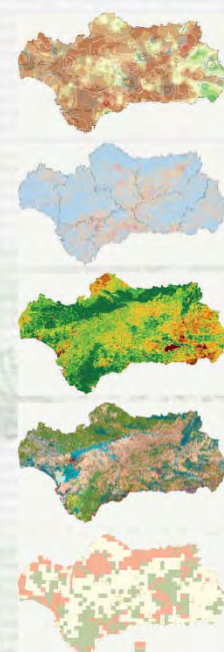






...and what we do?

The Environmental Information Network of Andalusia (REDIAM), created by [Law 7/2007, of July 9, on Integrated Environmental Quality Management \(GICA\)](#), aims to **integrate all environmental information in Andalusia** generated by different centers that produce environmental information in the Autonomous Community of Andalusia.



[http://www.juntadeandalucia.es/medioambiente/site/rediam/REDIAM\\_EN/](http://www.juntadeandalucia.es/medioambiente/site/rediam/REDIAM_EN/)





## System of Shared Information on Andalusian Landscape (SSIAL)

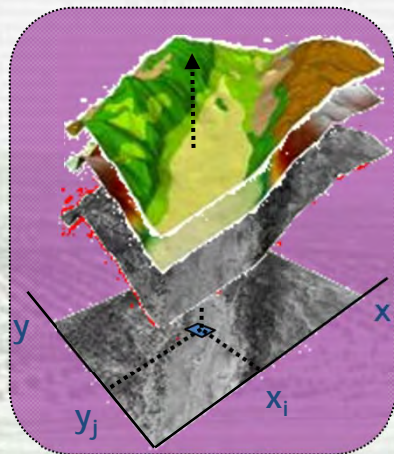






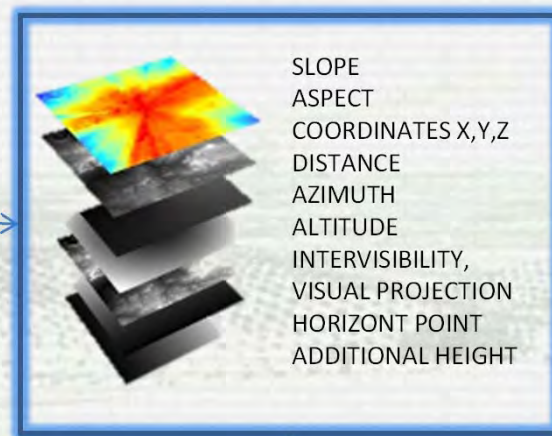
## Visibility System of Andalusia (VSA)

### THEORY



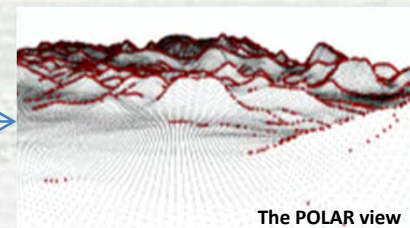
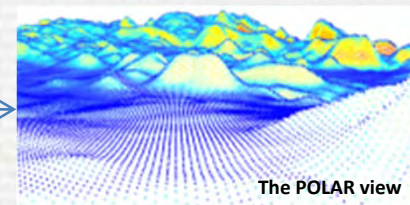
Mathematic characterization  
of visual relationships

### PARAMETERS



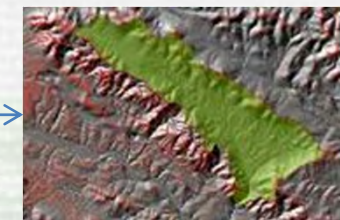
id	x	y	z	slp	asp	d	az	alt	both	hor	vis
0	232710	4183790	488.263006	14.971813	177.862385	1.267468705	312.551921	0.067657	-4.838549	1	0.172951
1	232710	4183810	485.453012	13.400863	177.222635	1.3586228201	312.614205	0.081052	-5.158064	1	0.155301
2	232710	4183830	478.043088	11.630769	178.388028	1.3861773205	312.676055	0.08868	-4.717638	1	0.139903
3	232710	4183850	472.673013	8.700886	181.183294	1.3815344285	312.737932	0.021807	-3.758250	1	0.101438

### RESULTS



### PRODUCTS

(examples)



Viewshed



Intervisibility

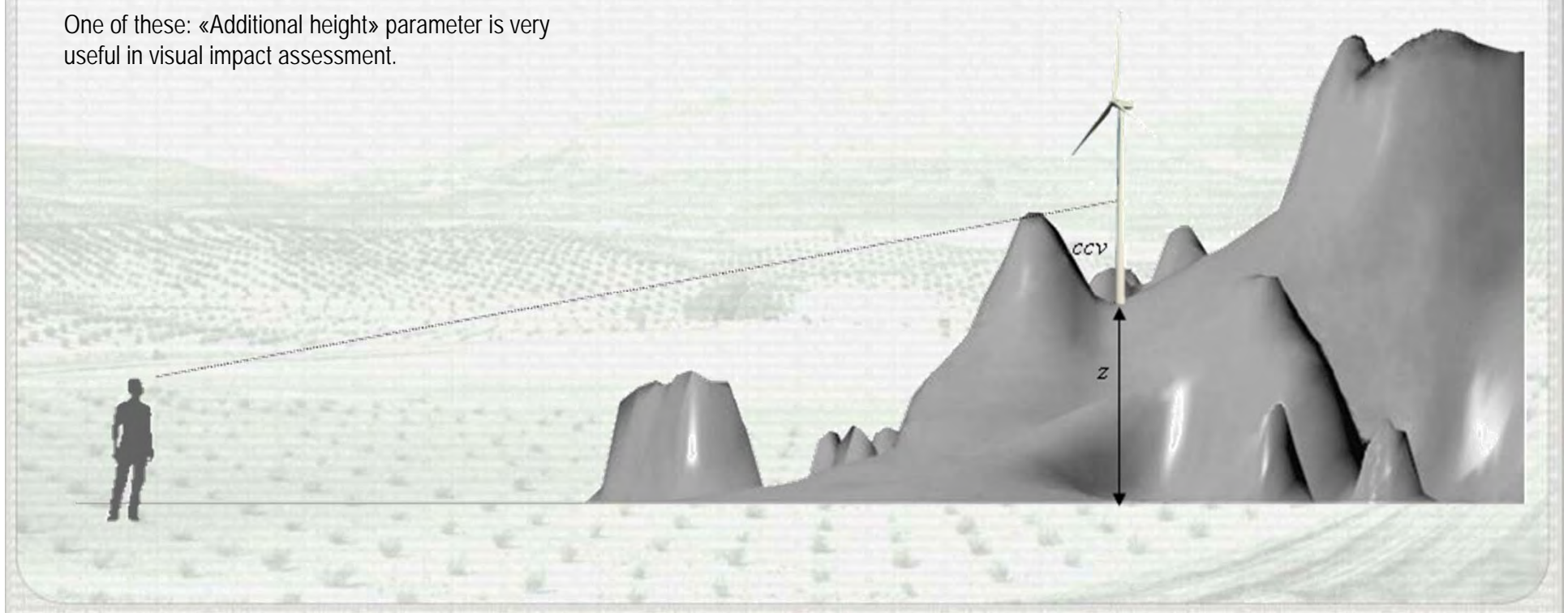




## II. Case Study: Visibility System of Andalusia (VSA)

The model can calculate the visual parameters for "viewed areas " as well as "unseen areas".

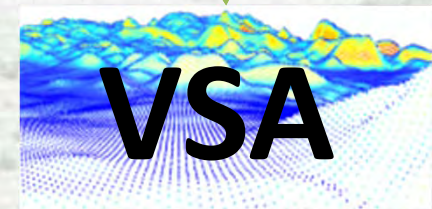
One of these: «Additional height» parameter is very useful in visual impact assessment.







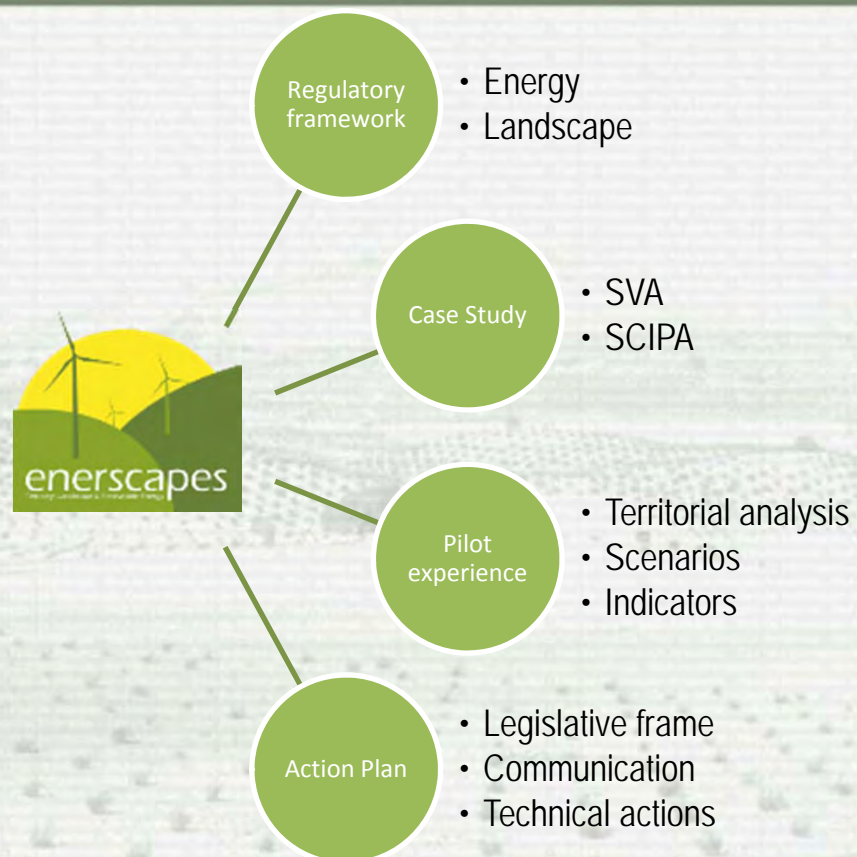
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## Enerscapes project





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## Landscape impact: an introduction



The strait of Gibraltar  
97.900 ha and 180.045 inhabitants





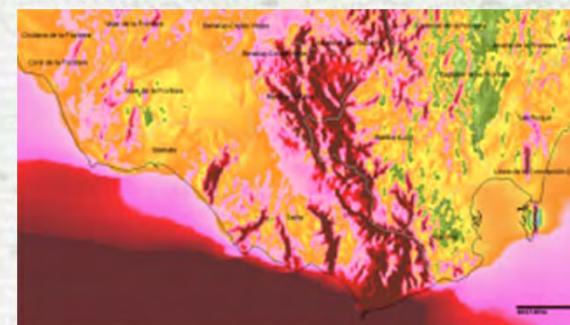
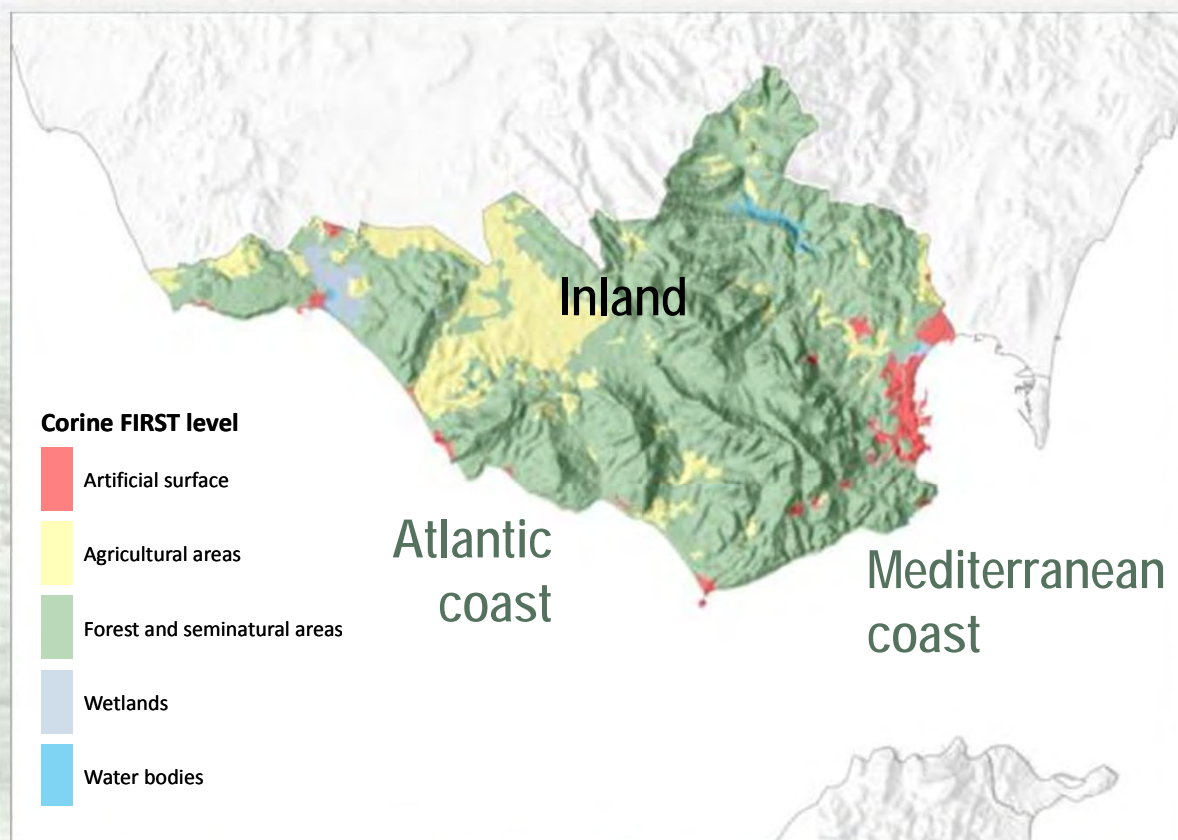
## Landscape impact: an introduction







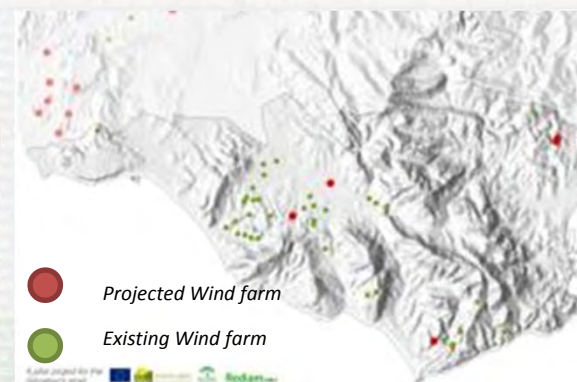
## Landscape impact: an introduction







## Landscape impact: an introduction

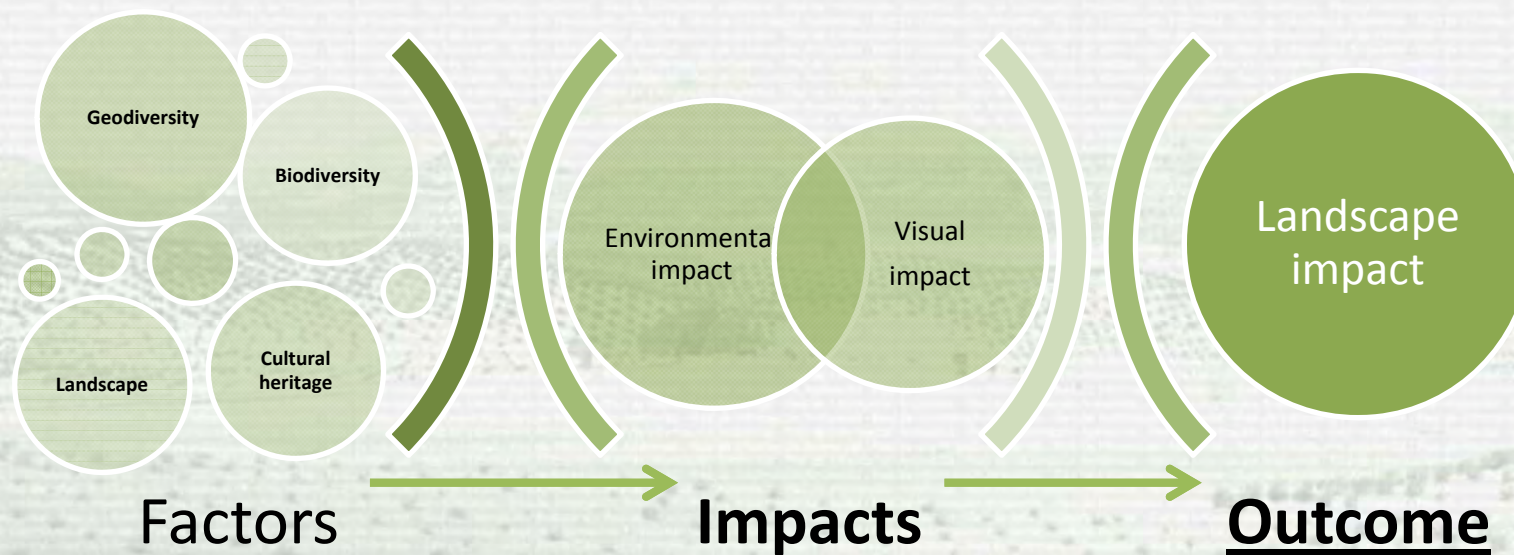


EXISTING WIND FARM	
36	583.26 MW

PROJECTED WIND FARM	
5	84,27 MW



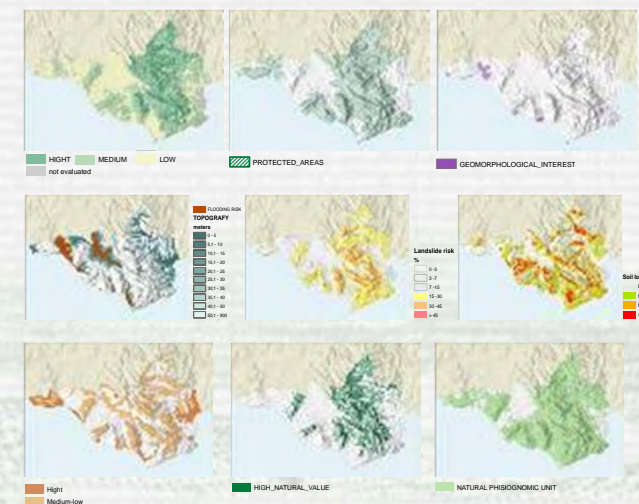
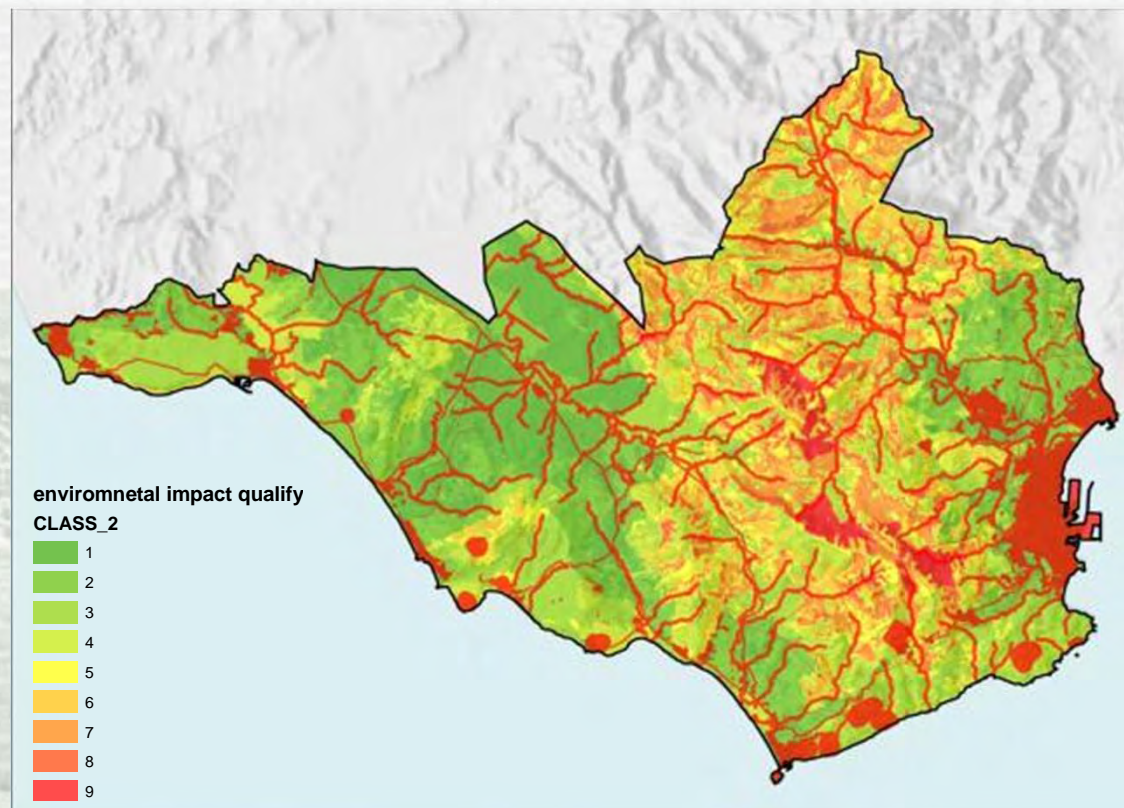
## Landscape impact: methodology







## Landscape impact methodology: environmental impact

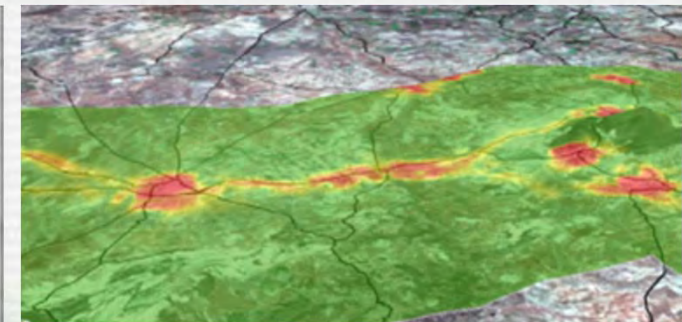
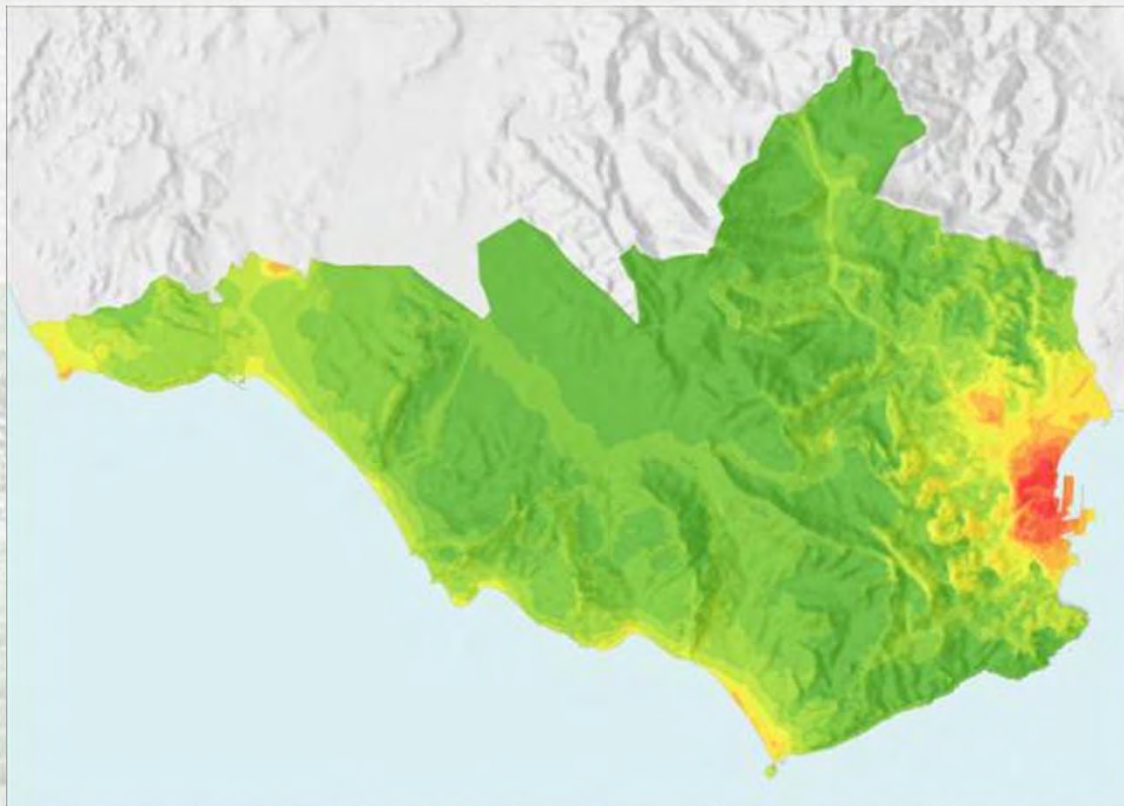


Environmental impact +





## Landscape impact methodology: visual impact



Depending the number of observer they  
are in the territory

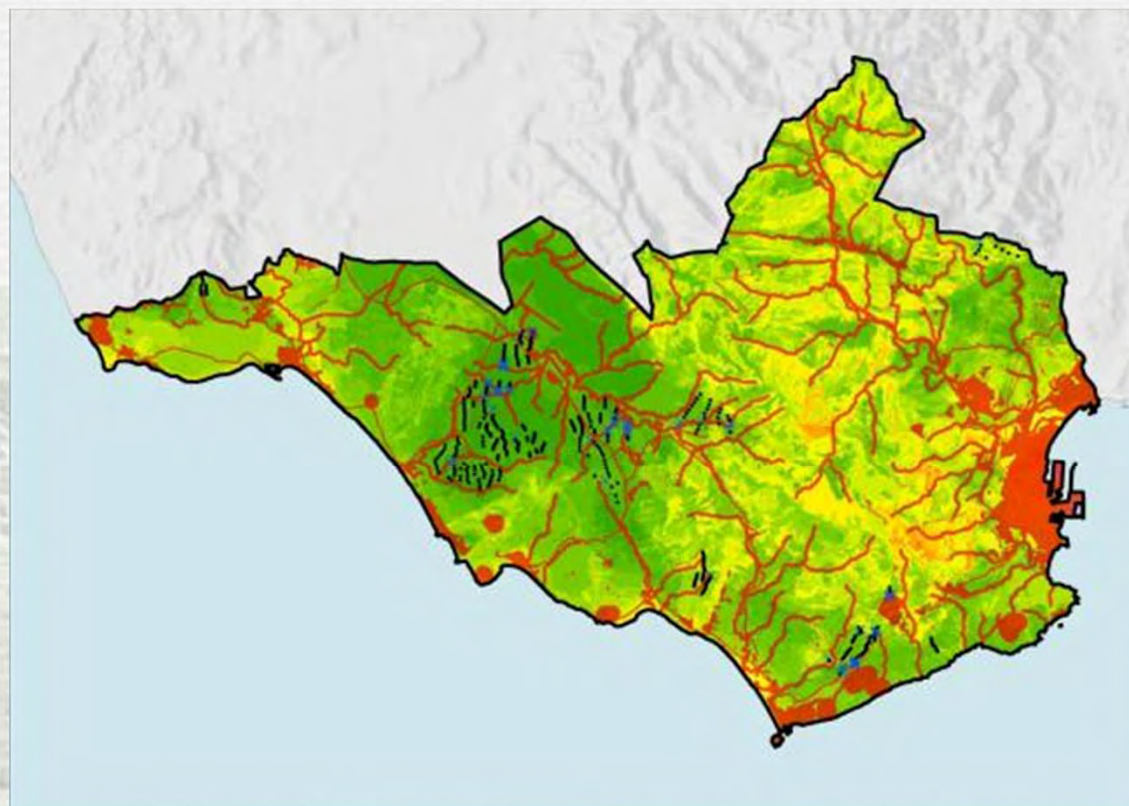
visual impact classify



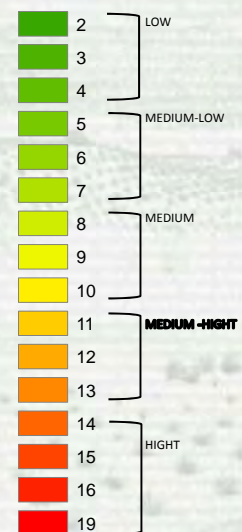




## Landscape impact methodology: landscape impact



### Impact



### Aerogenerators

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×

no

no



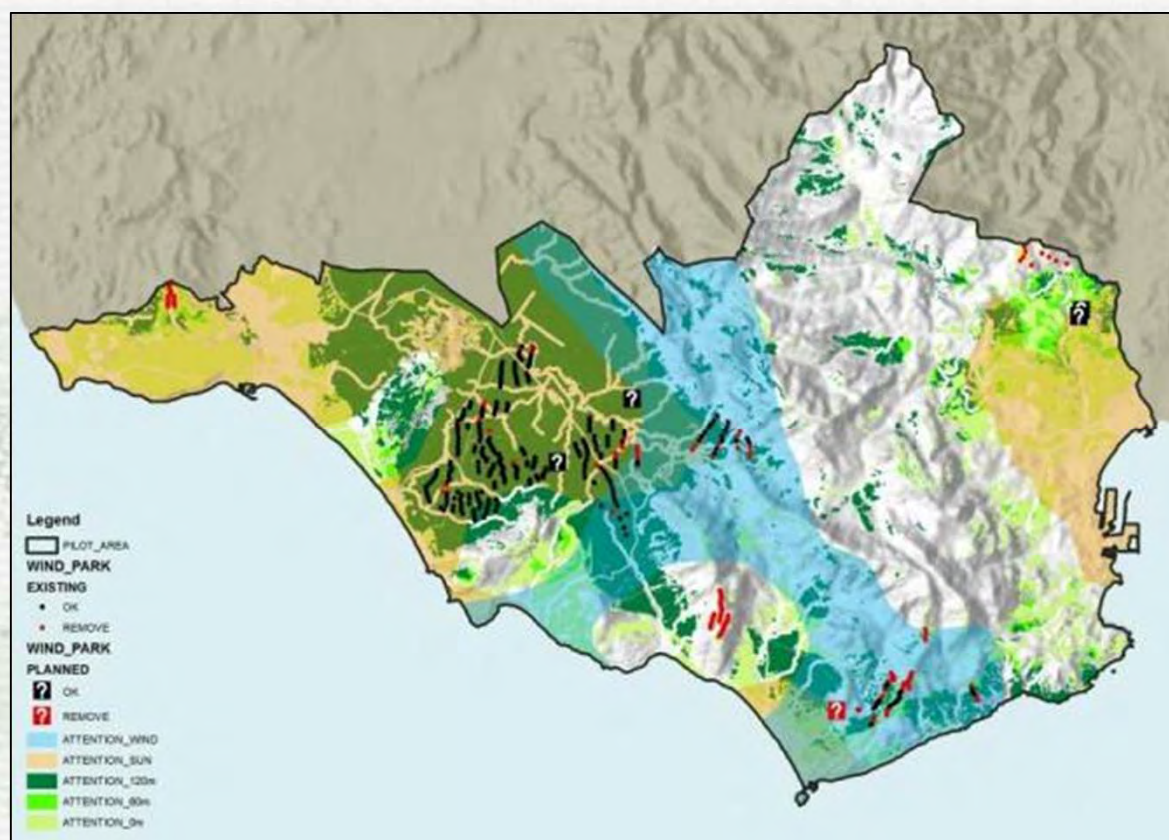


## Most important action connected with landscape impact

### Renewal of operating licenses

The renewal will be depending on landscape impact (based on chosen scenarios). Incentive programme for the relocation.

- Incentives for relocation those wind turbines which are in an "exclusion RES zone" in another available zone. Incentive example: permit an increase in power installed, tax break, etc.
- Operating licenses will not be renewed for those Wind Park with higher landscape impact than allowed, and those located in easements areas.







## Action plan: most important actions

### Renewal of operating licenses

The renewal will be depending on landscape impact (based on chosen scenarios). Incentive programme for the relocation.

### Incentives

for the relocation of high landscape impact wind turbines

### Managements criteria

Drafting a guidelines about Wind Farm's landscape impact

### Monitoring commission

A non-binding advisory body whose membership will be on voluntary basis to be heard in relation to new projects of renewable energy facilities and consisting of interested stakeholders in territorial management.

### AWARENESS CAMPAIGN

### Integration in other territorial planning

Extension of "Special Plan at supramunicipal level on infrastructure planning of wind resources in the region of "La Janda" (Cadiz)." to the other three municipalities that comprise the pilot area

### RES zoning regulation

Extension of "Special Plan at supramunicipal level on infrastructure planning of wind resources in the region of "La Janda" (Cadiz)." to the other three municipalities that comprise the pilot area

### Promoting knowledge

landscape's catalogue, technical study....

### Promoting best practice

landscape recovery and improvement/ PV plants in business and industry parks or in remote areas/ energy efficiency...



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## Outcomes

### Promoting knowledge

landscape's catalogue, technical study....

- - ENERSCAPES' methodology it will integrated into the SSIAL ("System of Shared Information on Andalusian Landscape") to freely available to any citizen, through the REDIAM channel ("Environmental Information Network of Andalusia").

- The creation of the "Visibility System of Andalusia" (VSA), integrated into the REDIAM, and of their results for the wind farms visual impact calculation.

### Managements criteria

Drafting a guidelines about Wind Farm's landscape impact

- - The publication of "The Landscape integration of wind farms in Andalusia: criteria, tools, and the case study of Enerscapes". A **scientific publication**, the first one in Spanish language, that will be useful to support the reflections and knowledge that have begun to be acquired in the framework of the project, as well as for showing the methodological experience of the project.

The capitalization of the project for Andalusia, in the framework of our competence, concerning the integration of the Landscape Impact in the Wind Farm Environmental Impact Assessment.





## Capitalization opportunities

In our opinion, the implementation of a similar tool like the Visibility System of Andalusia (VSA), - aiming to objectify the landscape impact of planned territorial actions (or restoration of existing actions)- it is a good practice that should be implemented in any territory.

In many cases, visual criteria do not apply in Environmental Assessment because it lacks a viable tool to calculate its impact together with other impacts. And when they are, the procedure followed is "trial and error", not knowing exactly whether the decision is really optimal. Power lines, wind turbines, roads, buildings, etc., are necessary for economic and social development. However, such actions could distort, trivialize or simplify the landscape, impoverishing the life's quality of citizens, and what needs to be avoided.

A tool like VSA permitting the real integration of visual impact in environmental assessment.

# A good practice to improve one of the most important impact on the landscape



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Ministerio de  
Industria, Comercio  
y Turismo



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**Thanks  
for your  
attention**

