



# CLUSTER PORTUGAL MINERAL RESOURCES

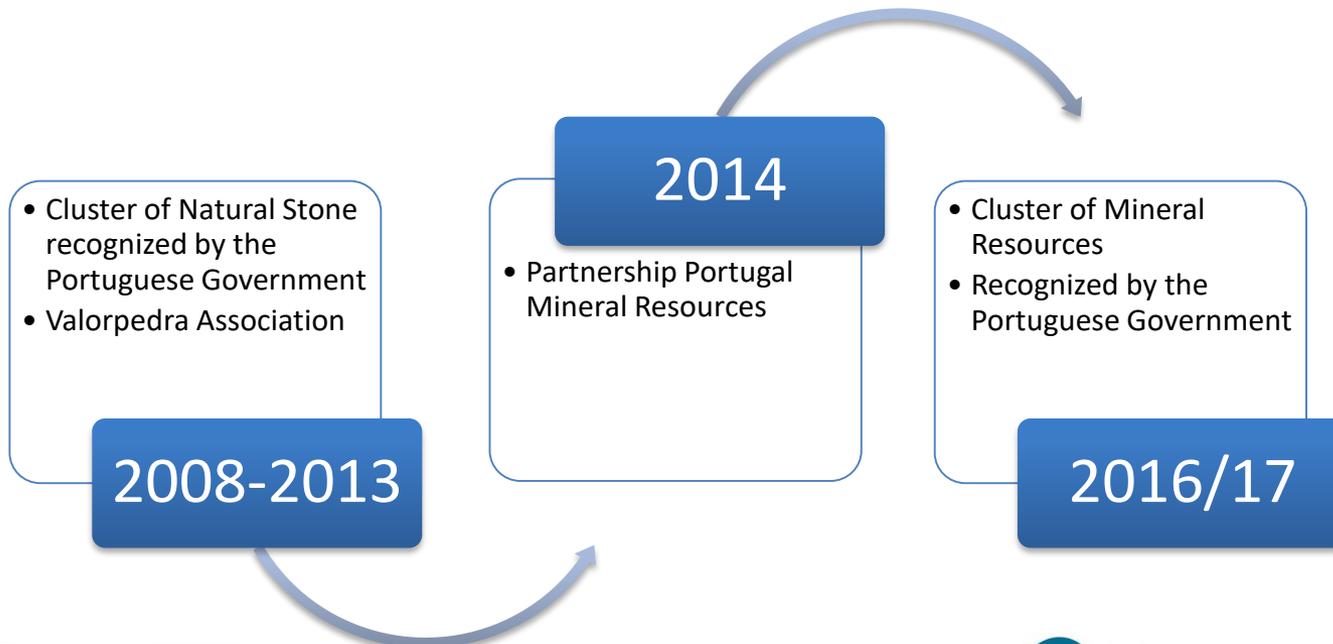
**The importance of clusterization: Portuguese examples in circular economy and in land use planning**

**REMIX meeting, Fundão, Portugal  
11<sup>th</sup> November 2018**



# BACKGROUND

## Cluster of Natural Stone Partnership Portugal Mineral Resources



# RESULTS

Investment = (5 years) = 54 M€  
More than 100 projects



## CLUSTER PORTUGAL MINERAL RESOURCES

Promote knowledge and sustainable economic value for mineral resources, boosting the export capacity and the added value.

Deepening knowledge of the economic potential of resources, promoting R & D + I, improving productive investment conditions and access to markets, as well as increase skills (technical, technological, management) and stimulate inter-company and inter-institutional cooperation.



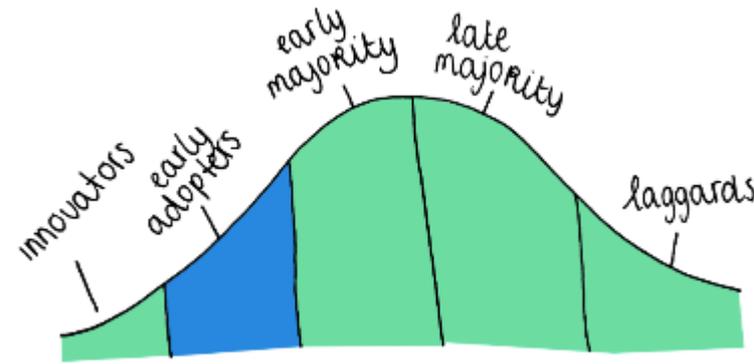
45 SMEs

2 SECTORIAL ASSOCIATIONS

10 UNIVERSITIES

2 I&D INSTITUTES

1 REGIONAL PUBLIC INSTITUTION



## ➤ Objectives - 2020

- Turnover +10%
- Gross added value +10%
- Volume of exports +25%
- Employment +1%
- R&DI +5%



Colaborando com



UNião Europeia  
Fundo Europeu de Desenvolvimento Regional



# The importance of clusterization: Portuguese examples



## THEMATIC AGENDA OF RESEARCH AND INNOVATION

### CIRCULAR ECONOMY

## The great challenges for the development of the Circular Economy in Portugal until 2030

A commitment for **sustainable management of resources** through: i) the sustainable **exploitation of critical and / or strategic raw materials** for our country (e.g. **lithium**) for greater self-sufficiency and resilience in face of external constraints; (ii) the **recovery of waste** and waste water; (iii) bio economics promoting the circular, integrated and sustainable use of biological resources; and iv) **eco-innovation** for the development, demonstration and optimization of more efficient processes and innovative products and technologies.

... the following **critical factors to promote R & I in the transition to CE**: Collaboration Networks and Clusters - multi-actors and cross-sectoral: networks and agendas to develop and transfer knowledge; **academia, the public sector, industry and small and medium-sized enterprises (SMEs); promotion of innovation clusters; international cooperation...**

## Area Diagnosis in Portugal

At the level of **sustainable management of resource cycles**, R & I in Portugal has been based on the development of ... studies on mineral resources in Portugal and Europe including **new exploration and processing techniques** (e.g. FAME, Real-Time- Mining, MINATURE 2020 projects); ...; in the **characterization of urban and industrial waste** (including **mining** and construction and demolition waste) ...

## Challenges and objectives for Portugal until 2030

...

- **increase domestic production of raw materials, contributing to the reduction of EU external dependence** (which is growing for an increasing number of elements), under penalty of irreversible **losses in critical programs** (e.g. **electric mobility, multi-scale energy storage**, petroleum products and nutrients);
- increase the lifecycle duration and number of uses of the products and implement the principles of value-for-use cascades.

## Challenges and objectives for Portugal until 2030

The main research areas to be developed in the present and future in the sub-area of sustainable management of resource cycles involve:...- analysis, evaluation and modeling of **resource life cycles** and their alternative uses;...Specifically, scientific research should contribute to creating knowledge and solutions for the following issues:- **Which primary mineral sources exist in Portugal capable of ensuring, in whole or in part, the present and future supply of critical and / or strategic raw materials, as well as the corresponding increase in their value chains?**

## Challenges and objectives for Portugal until 2030

- **How to map the flows of critical and strategic raw materials** in the Portuguese economy and its contribution to GDP? - present analysis and simulations for the future with impacts for example in: (1) **electric mobility**; (2) increased energy production through the mass use of technologically sustainable systems; (3) **development of digital technologies**; (4) **generalized rise in value chains of raw materials**; and (5) requalification of the labor market....
- **How can the sustainable use of primary resources and the search for alternative (secondary) sources of materials be promoted?:** - What is the most appropriate **mix of fonts** for each type of material? What are your most vulnerable flows? - how can they influence the **economic recovery of the country**, creating wealth and qualified employment, while preserving or recovering ecological balances?...

## Critical factors for future development

...- to promote strong **synergies between the main academic and economic actors enabling the results of RTD activities to be maximized and integrated into the major European networks** (e.g. SPIRE, EIP on Water and EIP Raw Materials, KIC Raw Materials), taking into account the existence of **several thematic clusters recently recognized by the Government** and that have these characteristics;...- improving the **continuing funding capacity of research groups** over time, whether in the business, academic or associative context, and the **capacity of the country's laboratories and research infrastructure**, on the other.



Brussels, 28.11.2018  
COM(2018) 773 final

**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN  
ECONOMIC AND SOCIAL COMMITTEE, THE COMMITTEE OF THE REGIONS  
AND THE EUROPEAN INVESTMENT BANK**

**A Clean Planet for all  
A European strategic long-term vision for a prosperous, modern, competitive and  
climate neutral economy**

EN

EN

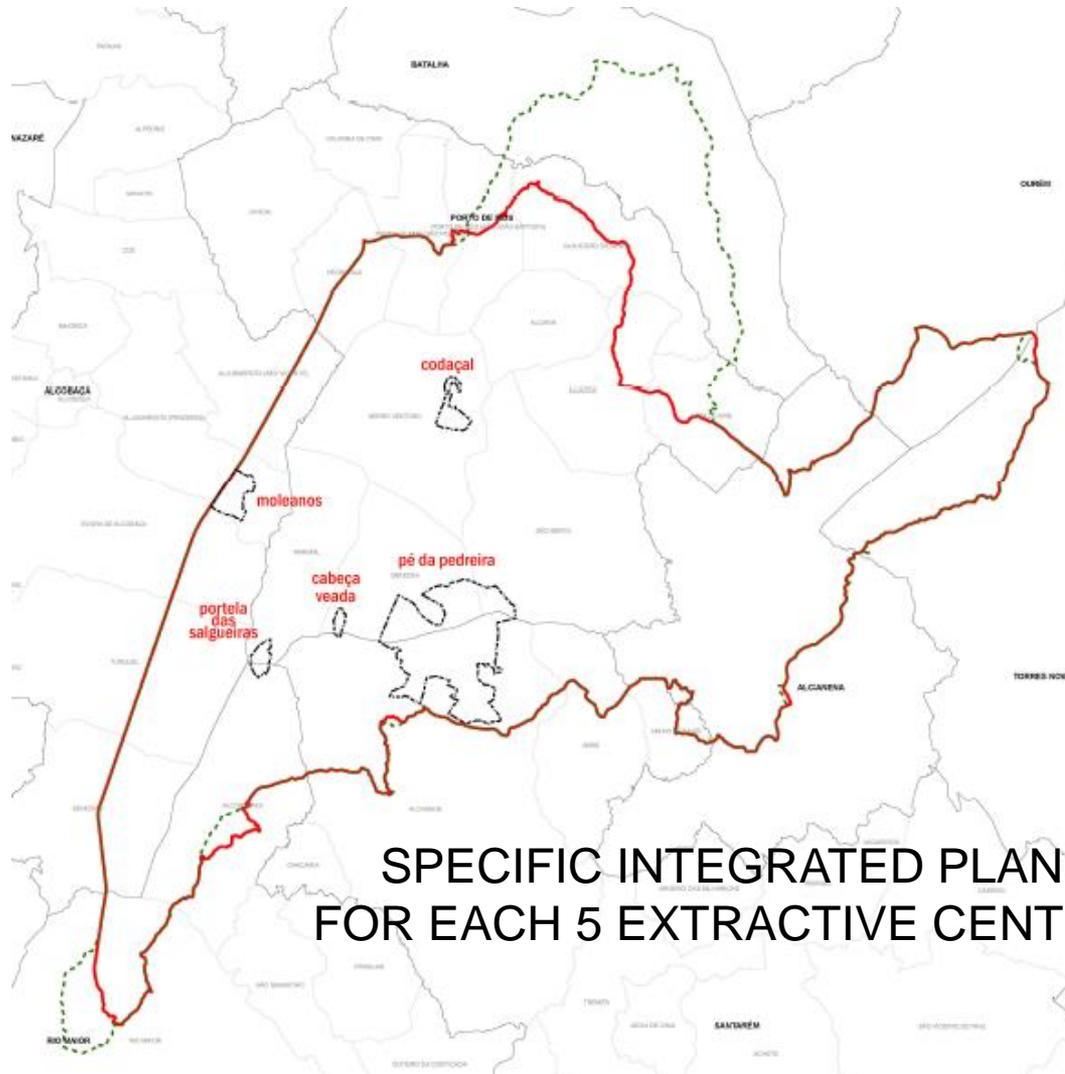
Erasmus+



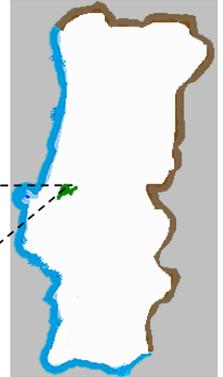
***Raw materials are indispensable enablers for carbon-neutral solutions in all sectors of the economy. Given the scale of fast growing material demand, primary raw materials will continue to provide a large part of the demand. But a reduction of materials input through re-use and recycling will improve competitiveness, create business opportunities and jobs, and require less energy, in turn reducing pollution and greenhouse gas emissions.***

***Sustainable and responsible mining and sourcing of raw materials approaches are needed to decouple climate objectives from negative environmental impacts associated with necessary technology materials.***

***Public acceptance in these areas will be key to ensure the competitiveness of EU industry as it transforms.***



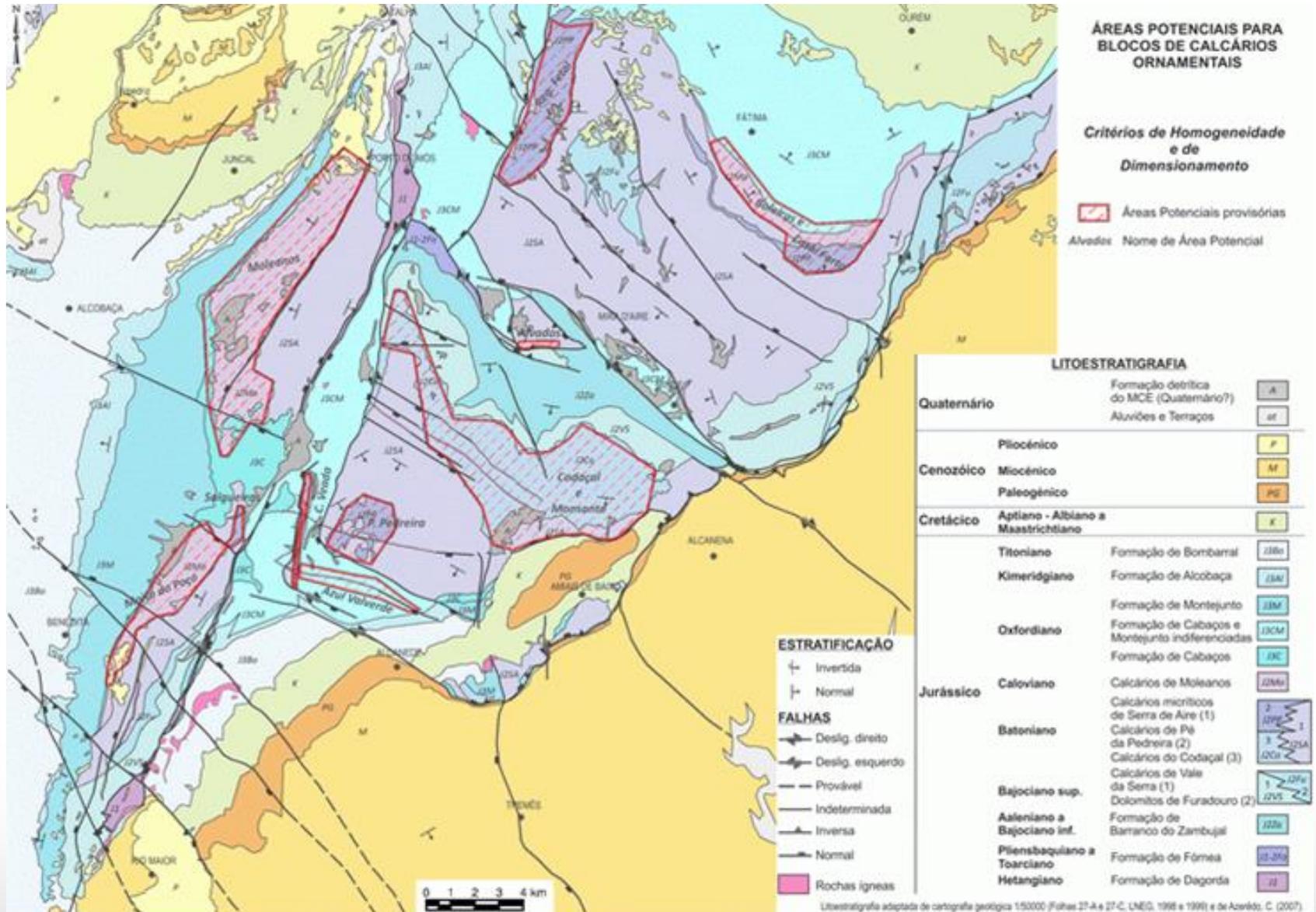
**SPECIFIC INTEGRATED PLANS  
FOR EACH 5 EXTRACTIVE CENTERS**



**EXTRACTIVE  
INDUSTRY  
ECONOMICAL  
DEVELOPMENT**

**NATURAL PARK  
NATURA 2000**

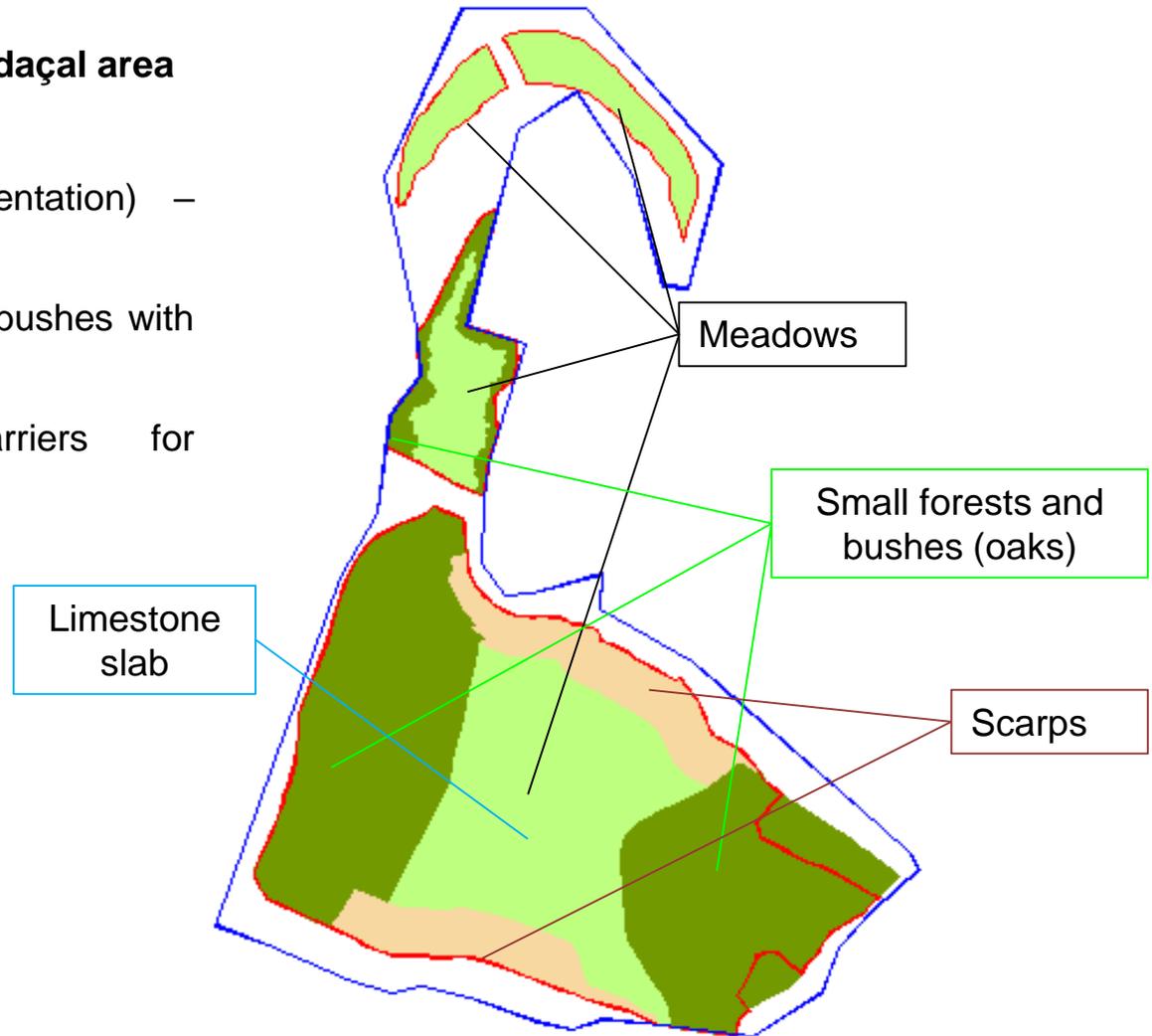
# The Geological Knowledge



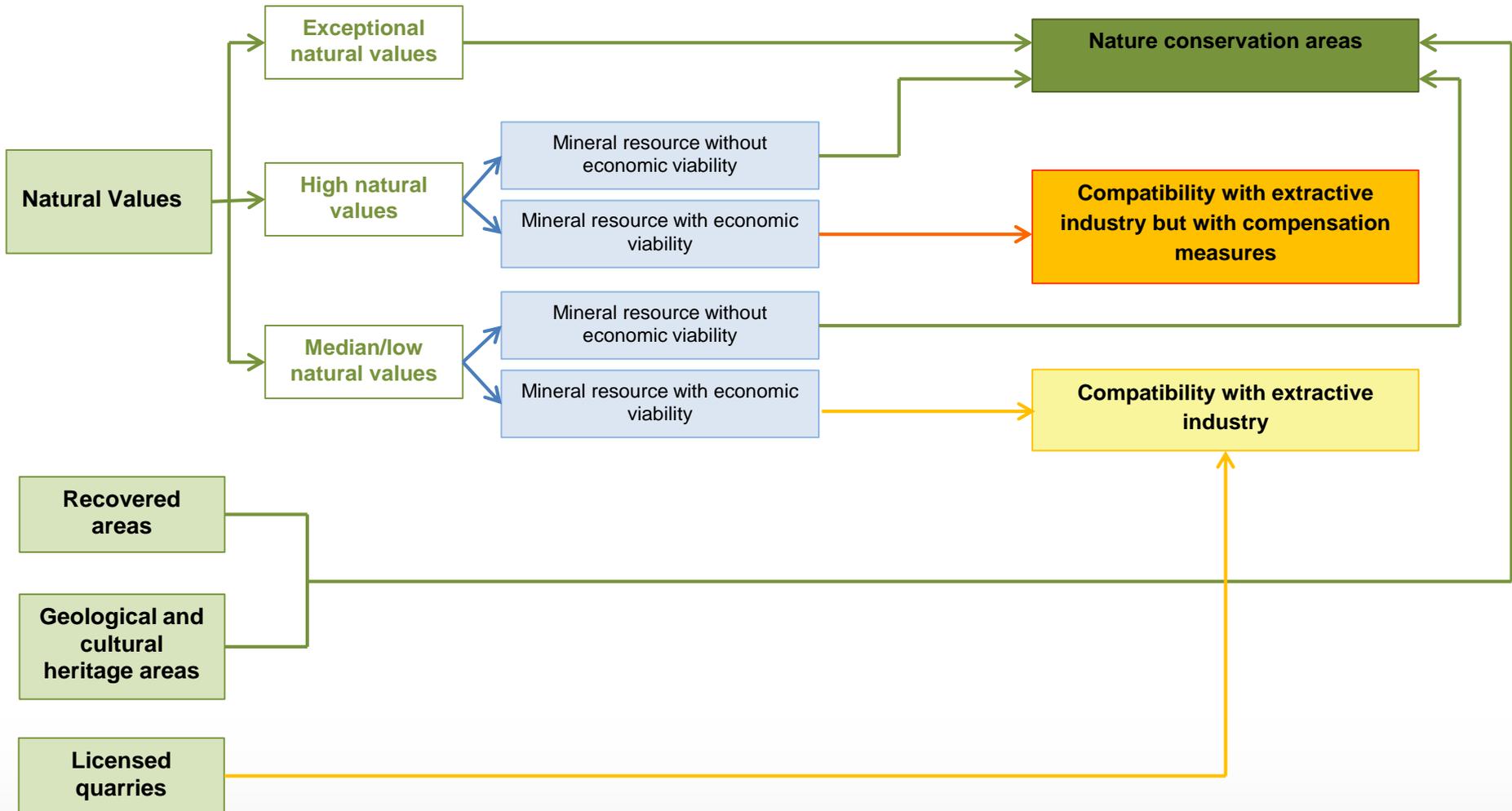


## Landscape rehabilitation plan – Codaçal area

- Meadow areas (birds alimentation) – Limestone slabs;
- Creation of small forests and bushes with autochthonous species;
- Creation of natural barriers for minimization of visual impacts;
- Scarps.



# The Methodology





## Main Objectives Achieved:

- **Guarantee the rational utilization of the mineral resource;**
- **Manage properly the use of the land during the extraction phase, allowing the reconversion of it for other land uses in the post-quarrying phase;**
- **Assure a correct management of the quarrying waste;**
- **Guarantee a proper management of the non-quarrying waste;**
- **Assure the best health and safety conditions of the quarries' workers;**
- **Minimize the environmental impact.**

- Definition of the correct exploitation methods;
- Definition of rules for articulation with contiguous quarries;
- **Definition of the most appropriate quarrying waste management;**
- Definition of an integrated landscape rehabilitation methodology;
- **Parity between mineral resources and the other natural resources;**
- Without economical development we cannot take care of our environment;
- **Involvement of all the stakeholders, especially the INDUSTRY (project developed with the industry and for the industry).**

# Partners

## *Project Promoters*



## *Integrated Project Promotor*



## *Technical Support*



biodesign

## *Counties*



## *Financial Support*



European Award



**EUROPEAN ENTERPRISE PROMOTION AWARDS  
2015**

**1<sup>ST</sup> PRIZE FOR SUPPORT TO ECOLOGICAL MARKETS DEVELOPMENT  
AND RESOURCE EFFICIENCY**





# PERSISTENCE, RESILIENCE, TEAM WORK!





***Civilization exists by geological consent,  
subject to change without motive***

*Will Durant*

(American writer, historian and philosopher,  
Pulitzer Price in 1968)

**THANK YOU!**

**MUITO OBRIGADO!**

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