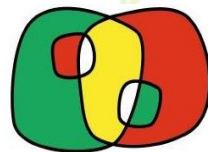




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PROGRAMA  
COOPERAÇÃO TRANSFRONTEIRIZA  
ESPAÑA ~ PORTUGAL  
COOPERAÇÃO TRANSFRONTEIRIÇA



Observatório Territorial e Ambiental Alentejo Extremadura Centro  
Observatorio Territorial y Ambiental Alentejo Extremadura Centro

## 24th APDR CONGRESS UBI

Intellectual Capital and Regional Development

New Landscapes and Challenges for Planning the Space

COVILHÃ, 6 - 7 July 2017

# Sustainability Indicators in the Southwest of Iberian Peninsula. Highlighting the Euro-region EUROACE: The OTALEX-C Project.

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**WHAT IS OTALEX C?**



**TERRITORIAL OBSERVATORY OF  
ALENTEJO-EXTREMADURA-  
CENTRO**





**2 COUNTRIES, 1 TERRITORY**



# WHERE IS LOCATED?

■ OTALEX C – PHYSICAL SPACE

- SOUTHWEST EUROPE
- IBERIAN PENINSULA
- PORTUGAL AND SPAIN
- REGIONS:
  - ALENTEJO-EXTREMADURA-CENTRO



# OTALEX C GOALS

- TERRITORIAL OBSERVATORY;
- CROSS-BORDER COOPERATION;
- TERRITORIAL COHESION;
- SPATIAL PLANNING;
- SUSTAINABILITY ISSUES;
- ENVISIONING THE FUTURE

# ALENTEJO – EXTREMADURA – CENTRO



<b>ALENTEJO</b>	<b>PORTUGAL</b>
<b>CENTRO</b>	<b>PORTUGAL</b>
<b>EXTREMADURA</b>	<b>SPAIN</b>





# PROJECT BACKGROUND

COORDSIG	PLANEXAL	GEOALEX	OTALEX	OTALEX II	OTALEX C
1997 – 2001	2003 – 2005	2004 – 2006	2006 – 2009	2008 – 2011	2010- 2013
Coordination of GIS and tools of earth monitoring.	Addressing joint planning strategies on both sides of the border.	Creation of common cartography for Alentejo - Extremadura.	Creation of the Territorial Observatory of Alentejo - Extremadura.	User services update / development of the OTALEX.	<b>Integration of Centro Portugal Region; Development of sustainability indicators.</b>
INTERREG II-C	INTERREG III-A	INTERREG III-A	INTERREG III-A	POCTEP	POCTEP

# PROJECT PARTNERS

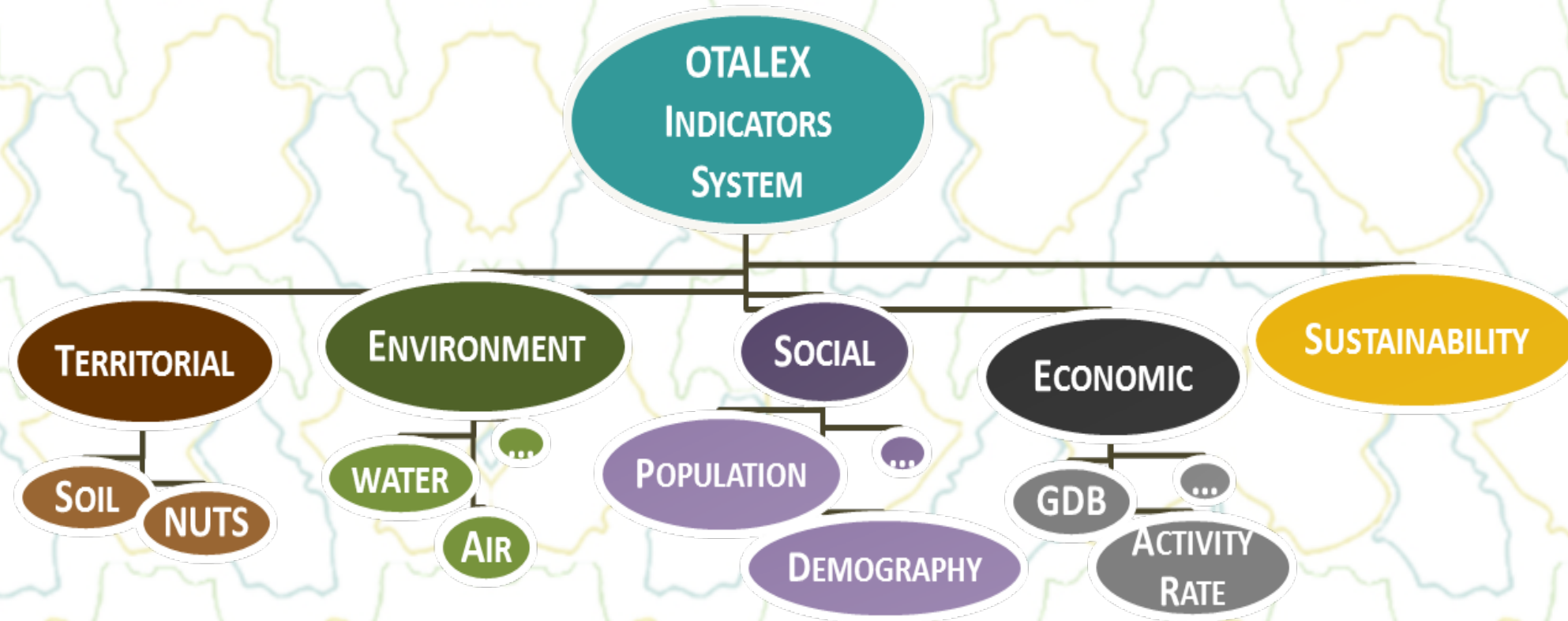
COORDSIG	PLANEXAL	GEOALEX	OTALEX	OTALEX II	OTALEX C
1997 – 2001	2003 – 2005	2004 – 2006	2006 – 2009	2008 – 2011	2010- 2013
IPCC AMDE JE MMA GA	AMDE JE	IGP AMDE JE IGN CCDRA AMNA DB GRCE	IGP AMDE JE IGN CCDRA AMNA DB GRCE UEX Uévora EDIA	IGP CIMAC JE IGN CCDRA CIMAA DB GRCE UEX Uévora EDIA	IGP CIMAC JE IGN CCDRA CIMAA DB GRCE UEX Uévora EDIA Dip Cáceres IPCB
INTERREG II-C	INTERREG III-A	INTERREG III-A	INTERREG III-A	POCTEP	POCTEP



# **SUSTAINABILITY ANALYSIS**



# VECTORS



# TERRITORIAL ANALYSIS

VECTOR	THEME
<b>TERRITORIAL</b>	WEATHER
	GEOLOGY AND GEOMORPHOLOGY
	HYDROGRAPHY
	SOILS
	ADMNISTRATIVE STRUCTURE

# ENVIRONMENTAL ANALYSIS

VECTOR	THEME
<b>ENVIRONMENTAL</b>	AIR
	WATER
	WASTES
	CONTAMINATIONS SOURCES
	LAND USE
	ENVIRONMENTAL PERFORMANCE OF URBAN AREAS
	URBAN SPACES
	NOISE
	ENERGY
	NATURE CONSERVATION
	LANDSCAPE






# SOCIAL & ECONOMIC ANALYSIS

VECTOR	THEME
<b>SOCIAL</b>	POPULATION DEPENDENCY
	EDUCATION FACILITIES
	HEALTH CARE
<b>ECONOMIC</b>	UNEMPLOYEMENT




# INDICATORS SUMMARY

	INDICATOR	RATING
ENVIRONMENTAL SUSTAINABILITY	1. Air quality	ideal
	2. Water reserves (dams)	ideal
	3. Water consumption	negative
	4. Rainwater treatment plant	ideal
	5. Waste water treatment plant	ideal
	6. Biologically productive area	ideal
	7. Area protected by law	acceptable
	8. Area protected by Red Natura 2000	ideal
	9. Area protected by Geopark	ideal
	10. Area protected by RAMSAR	acceptable

-  ideal
-  acceptable
-  negative

# INDICATORS SUMMARY

	INDICATOR	RATING
ENVIRONMENTAL SUSTAINABILITY	11. Burned area	negative
	12. Protected burned area	negative
	13. Urban solid waste (index)	ideal
	14. Recycling index	negative
	15. Electric power consumption	ideal
SOCIAL SUSTAINABILITY	16. Population dependency index	acceptable
	17. Educational facilities	ideal
	18. Health care	ideal
ECONOMIC SUSTAINABILITY	19. Unemployment index	negative

-  ideal
-  acceptable
-  negative

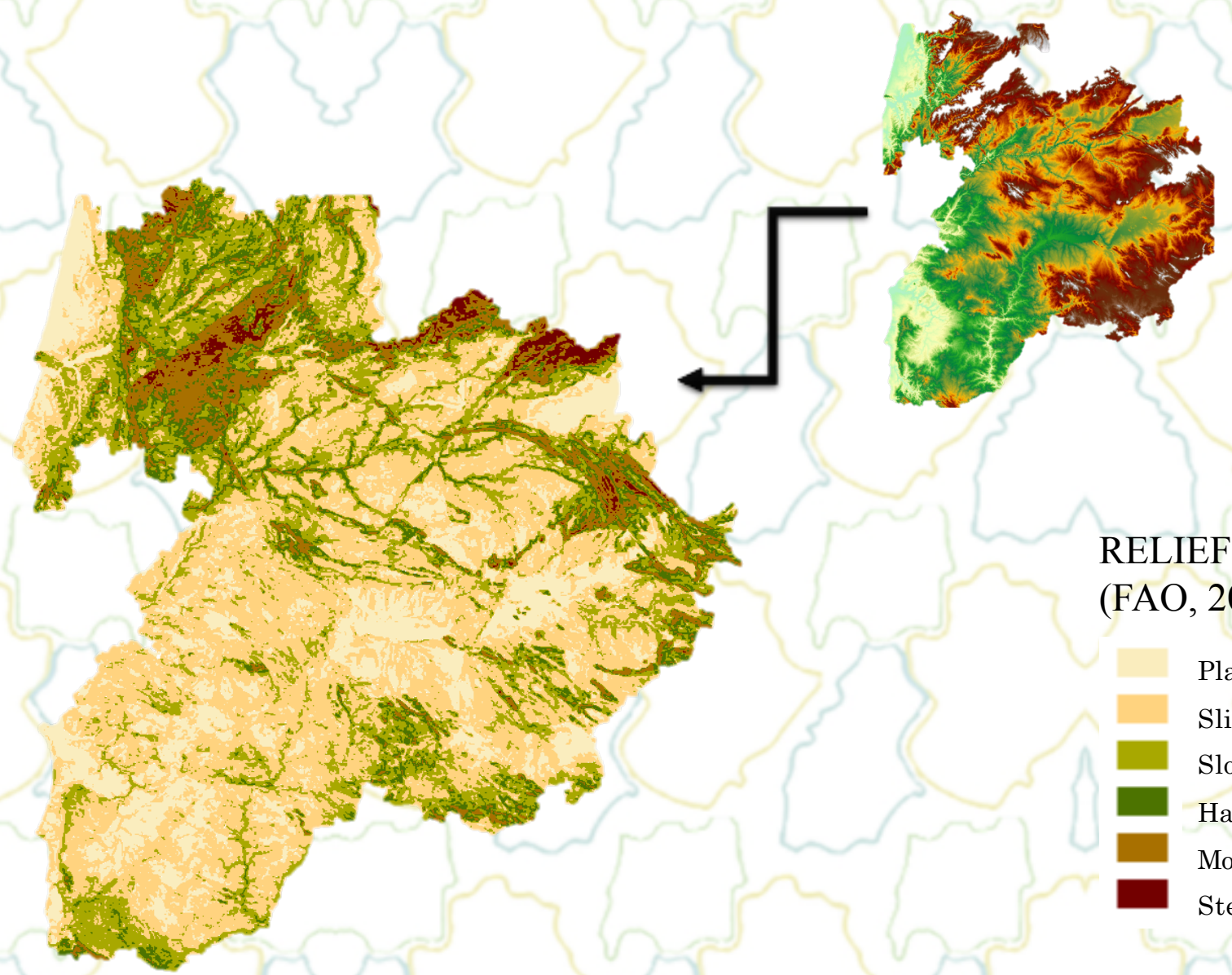


# **SUSTAINABILITY INDICATOR**

**CO<sup>2</sup> RETAINAR**



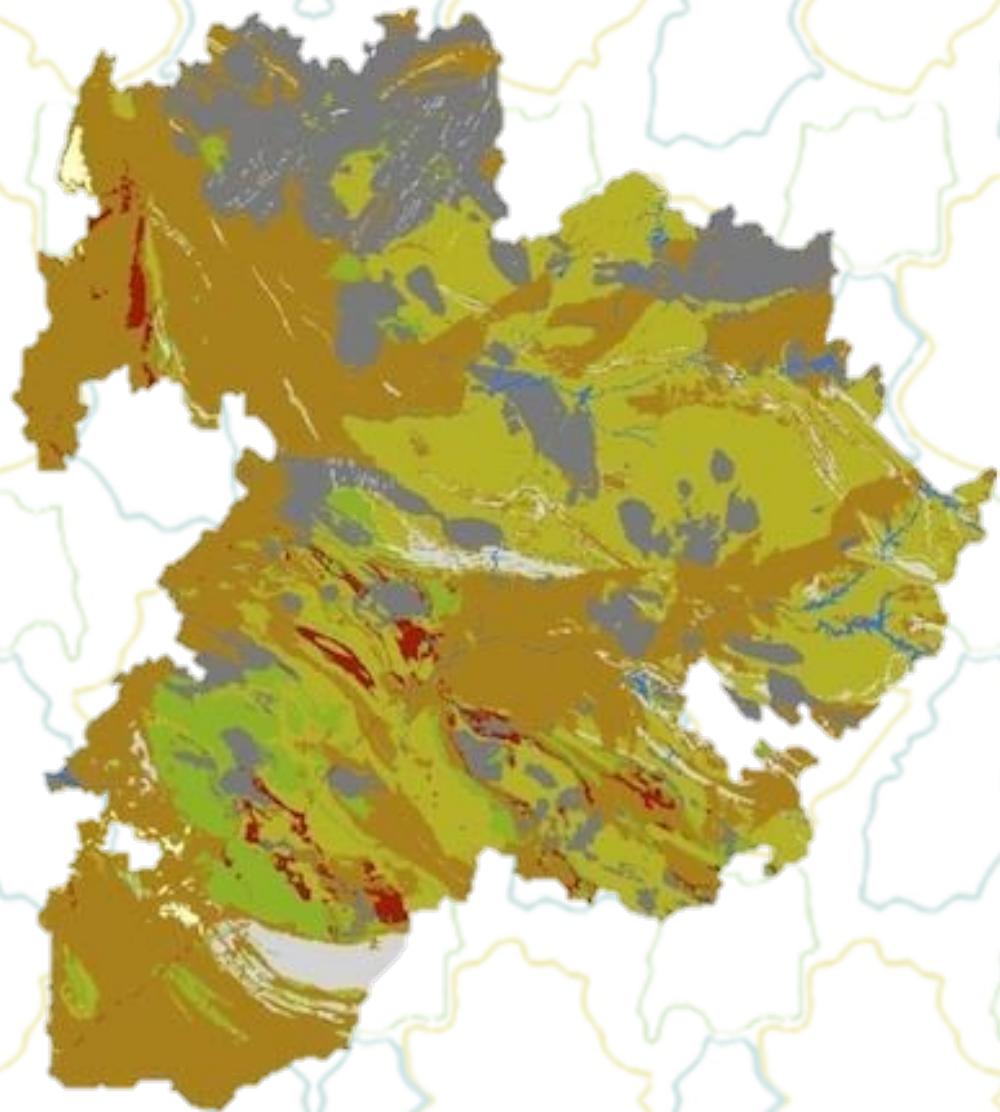
MDT



RELIEF CLASSES  
(FAO, 2009)

- Plain
- Slightly sloping
- Sloping
- Hard sloping
- Moderately steep
- Steep

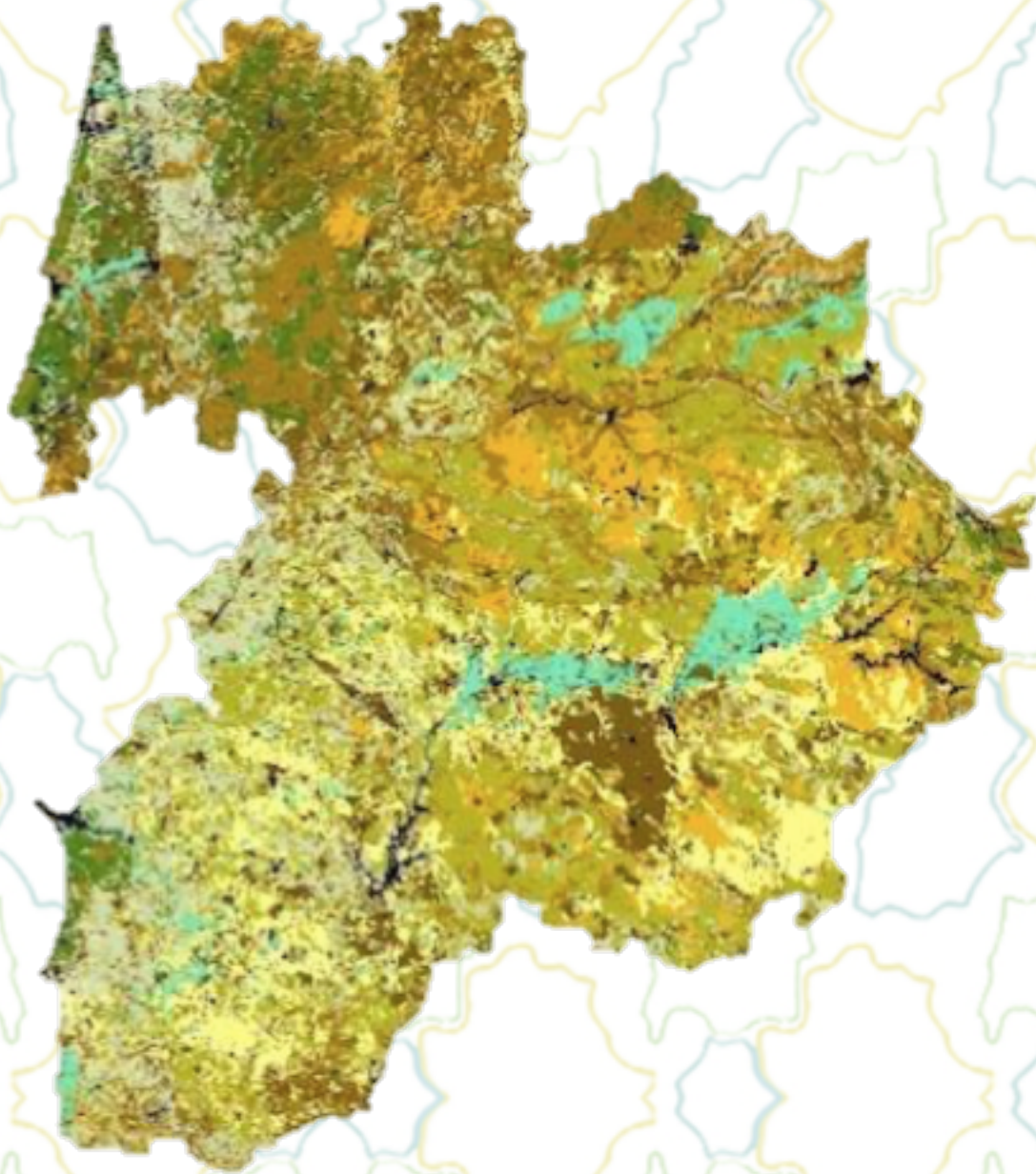
# BIOPHYSICAL UNITS



- Alluvial and colluvial
- Limestones
- Quartzites
- Dunes
- Granites
- Slates
- Plutonic and igneous rocks

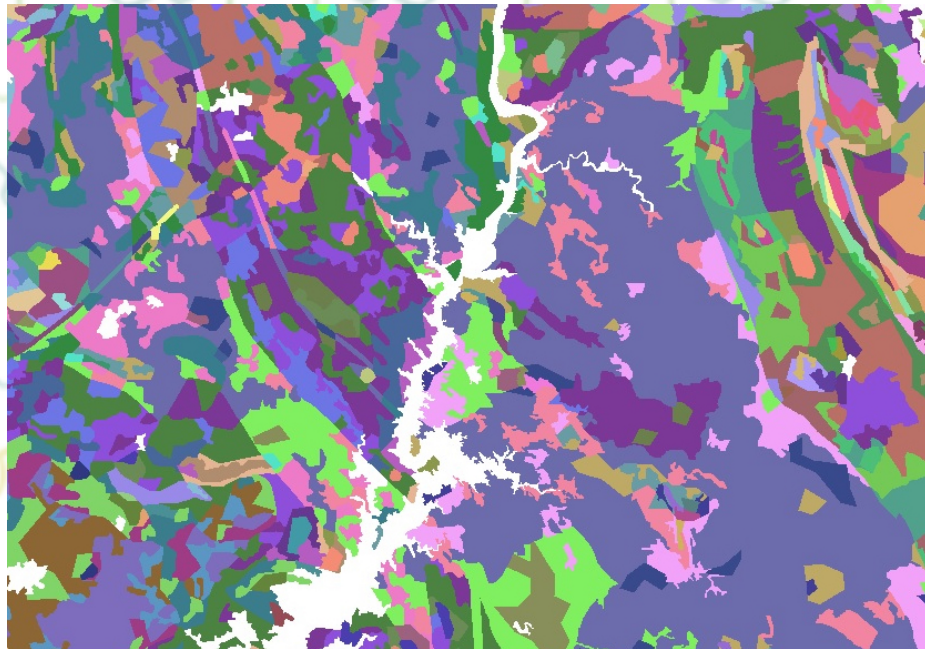
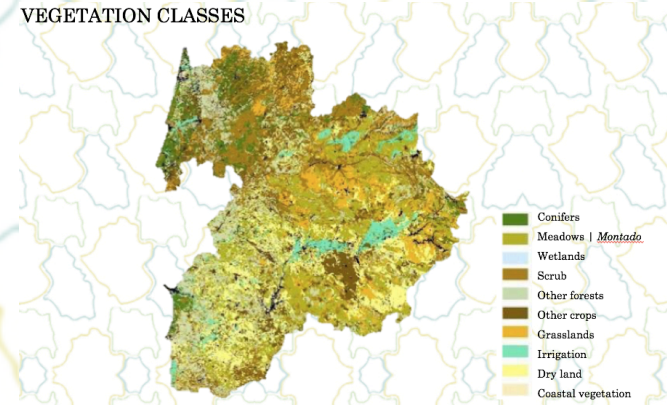
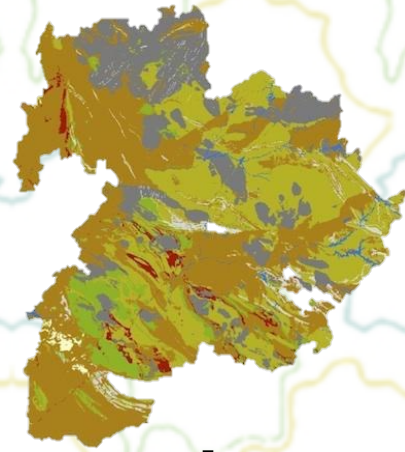
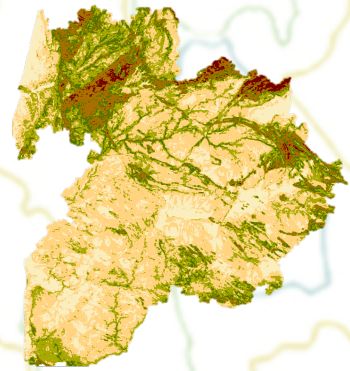


# VEGETATION CLASSES



- Conifers
- Meadows | *Montado*
- Wetlands
- Scrub
- Other forests
- Other crops
- Grasslands
- Irrigation
- Dry land
- Coastal vegetation





Environmental Units

Field and Laboratory  
Sampling



Carbon Retaining



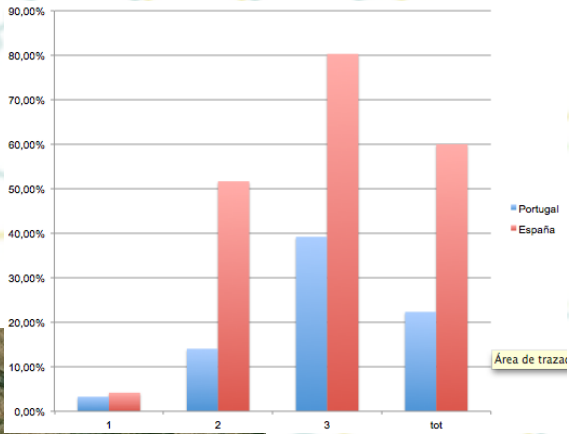
## BIOPHYSICAL UNITS

The most abundant unit is *Montado* on slates in hard sloping, representing **5%** of the territory with a **low** degree of fragmentation.





# CERAMBYX SP.





**R & D APPLIED TO THE  
OTALEX C AREA**





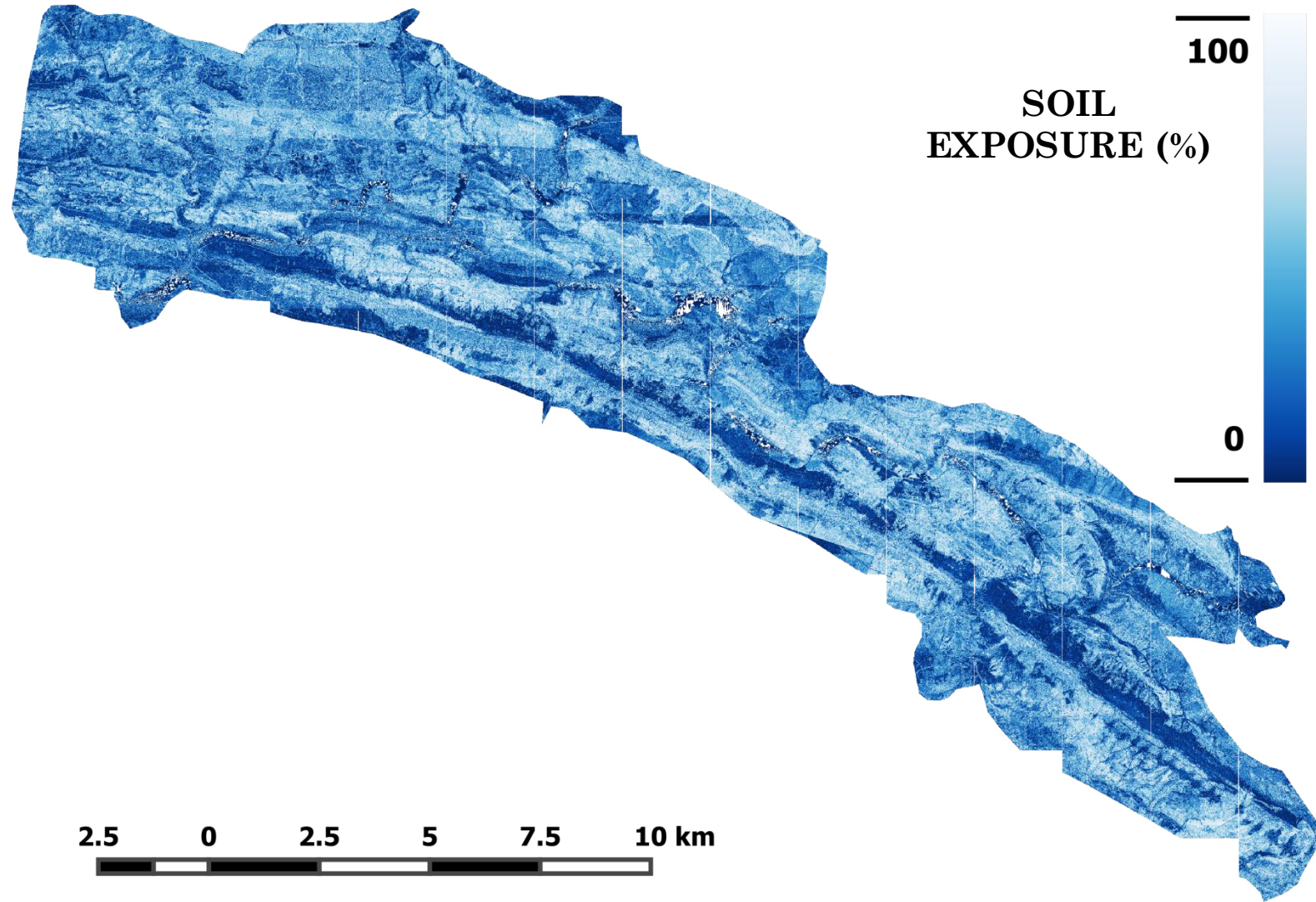
**LIDAR ANALYSIS WITH OPEN  
SOURCE TOOLS IN PILOT AREAS**



# LIDAR ANALYSIS

- LIDAR allows to deal with information about the vegetation of a protected area, adapting its conservation measures.
- The Total Vegetation Density is an index derived from the number of vegetation points with respect to the rest.
- LIDAR able to identify environmental risks.
- Soil Exposure is an index derived from the percentage of vegetation cover and bare soil.

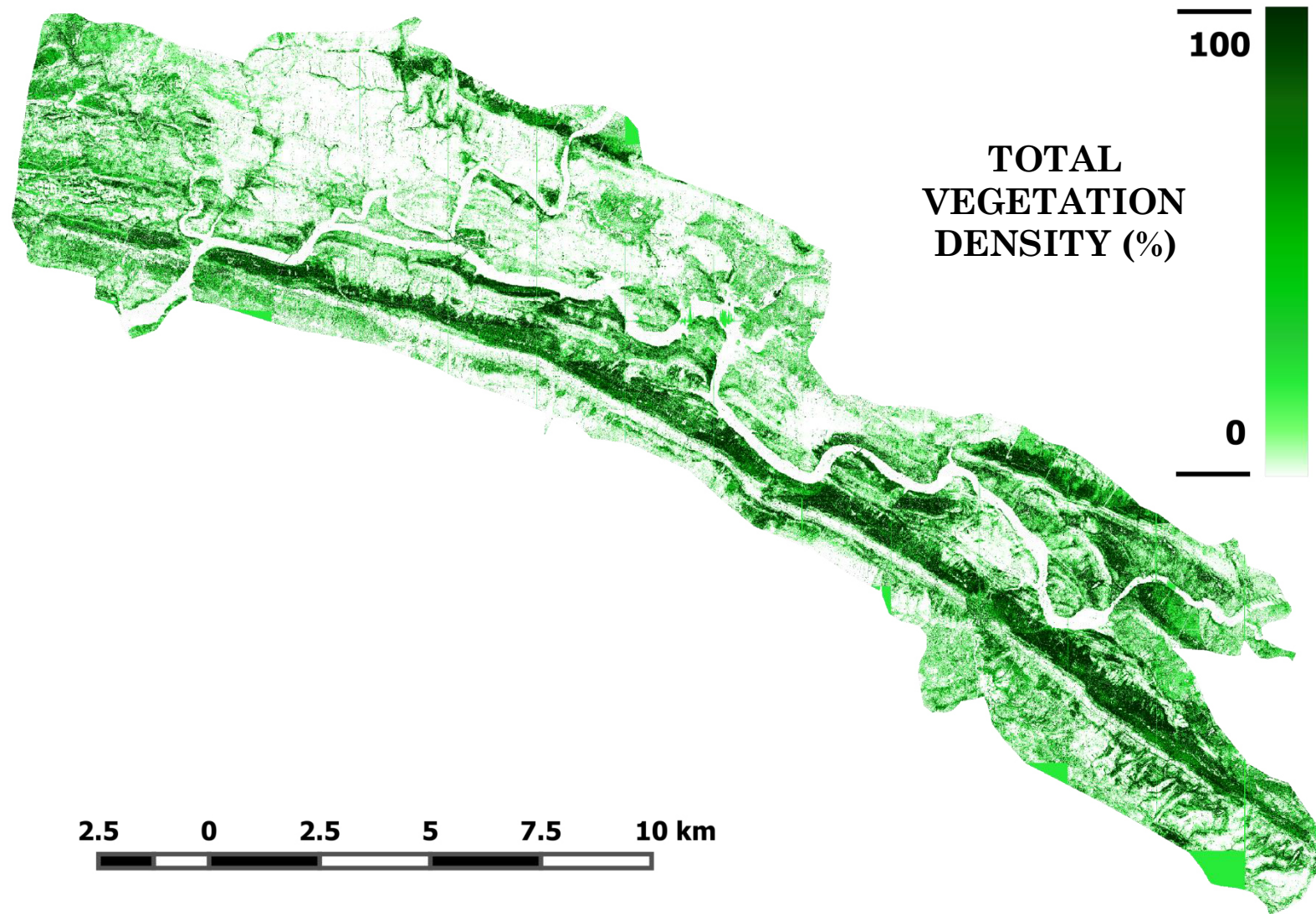
# RISKS ANALYSIS



APPLIED TO MONFRAGÜE NATIONAL PARK



# ENVIRONMENTAL ANALYSIS



APPLIED TO MONFRAGÜE NATIONAL PARK

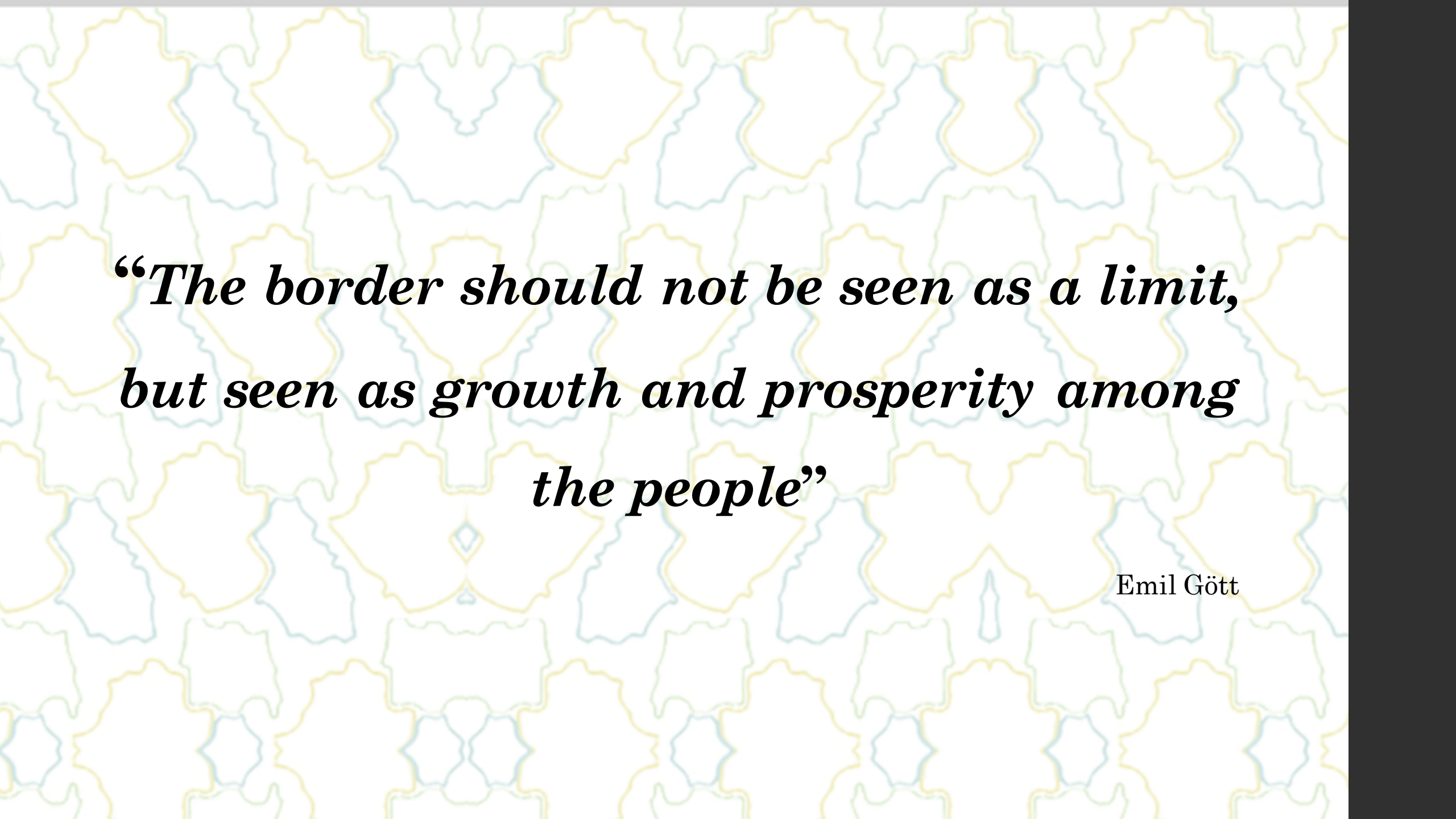


# **FINAL REMARKS**



# FINAL REMARKS

- **SUCCESSFUL EXAMPLE**
- **HELPFUL TOOL FOR PLANNERS**
- **INFORMATION FOR THE CITZENS**
- **BASIS FOR OTHER STUDIES / RESEARCHES**
- **CONSTANT MONITORING OF THE TERRITORY**
- **SUBJECT TO UPDATING AND EVOLUTION**

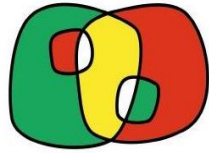


***“The border should not be seen as a limit,  
but seen as growth and prosperity among  
the people”***

Emil Gött



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# THANK YOU FOR YOUR ATTENTION

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