Assessing the Implications of Special Environmental Studies for the Natura 2000 Network on the Sustainable Development of Mineral Raw Materials

A work conducted on behalf of the Centre for Renewable Energy and Savings (CRES)

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1 Why do we need Mineral Raw Materials?

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2 **The EU Framework for Mining in Natura 2000**

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3 **Methodology**

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Presentation Contents

1. Why do we need Mineral Raw Materials?
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1. Mineral Raw Materials in Everyday Life

Display

The rocks

SiO2 | Tin | Gallium | Indium, Germanium

Electronics and Circuitry

Copper | Silver | Si | As | Tantalum | Tungsten

Battery

Lithium | Graphite

The elements we finally extract

Source: USGS, "A World of Minerals in Your Mobile

1. Mineral Raw Materials in Everyday Life

Solar PV
Copper, Aluminium

Wind Farms
Copper, Rare Earths, Zinc

Electric Vehicles
Copper, Cobalt, Nickel, Lithium, Rare Earths, Aluminium

Source: IEA, Mineral Requirements for Clean Energy

2. The EU Framework for Mining in Natura 2000

The Raw Materials Initiative (2008)

meeting our critical needs for growth and jobs in Europe

Fosters sustainable supply of raw materials from **European sources**

Access to Land for the Extractive Industry

Land-use conflicts with Nature Conservation Areas

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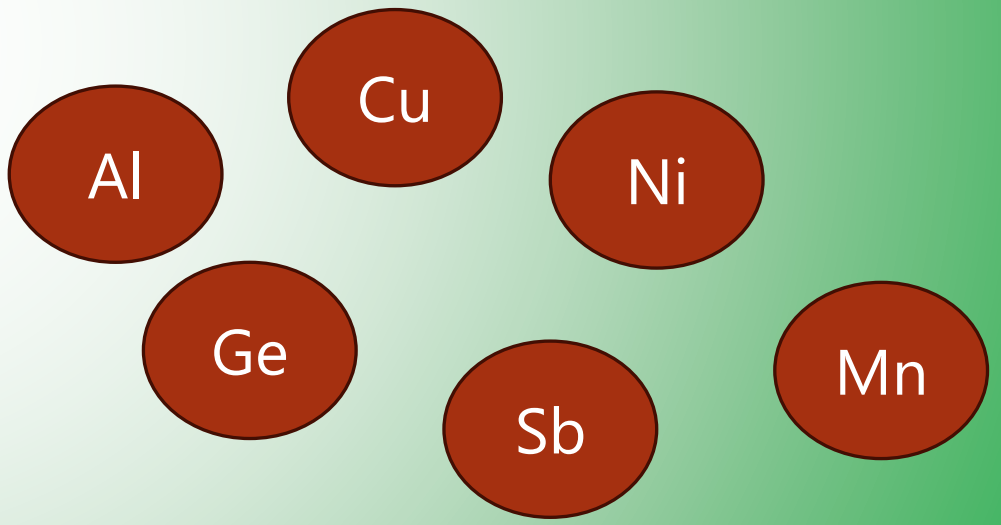
2. The EU Framework for Mining in Natura 2000

Regulation (EU) 2024/1252

*For the supply of **Strategic & Critical Raw Materials** in EU*

A regulation to boost EU's primary production and processing capacity on a list of Strategic and Critical Raw Materials (CRM)

Main CRM of Greece



2. The EU Framework for Mining in Natura 2000

Guidance Document on NEEI in Natura 2000 (2010)

- **Defines the procedure** to follow for Mining in Natura 2000, based the habitat's directive 92/43/EEC
- Highlights the importance of **land use planning & rehabilitation**
- **Supports sustainable co-existence** of Mining and Natura 2000

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2. The EU Framework for Mining in Natura 2000

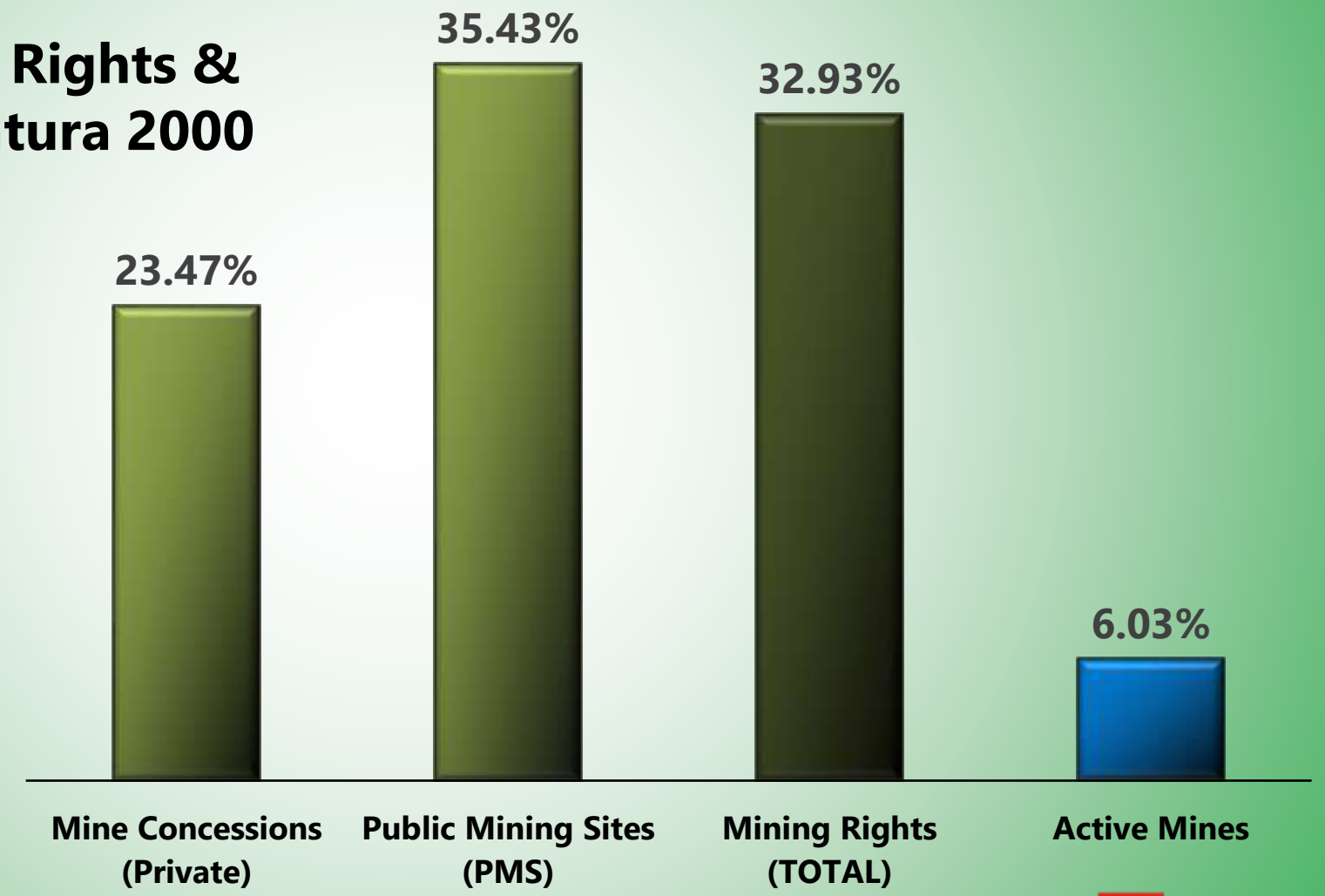
Case Study Booklet (2019)

Good Practices for successful integration

- Partnerships & Collaboration
- Impact Assessment and Mitigation
- Proper Rehabilitation

3. Mining in Natura 2000 – The Case of Greece

Percentage of Mining Rights & Activity within the Natura 2000 Network of Greece



Source: Tzeferis, 2018

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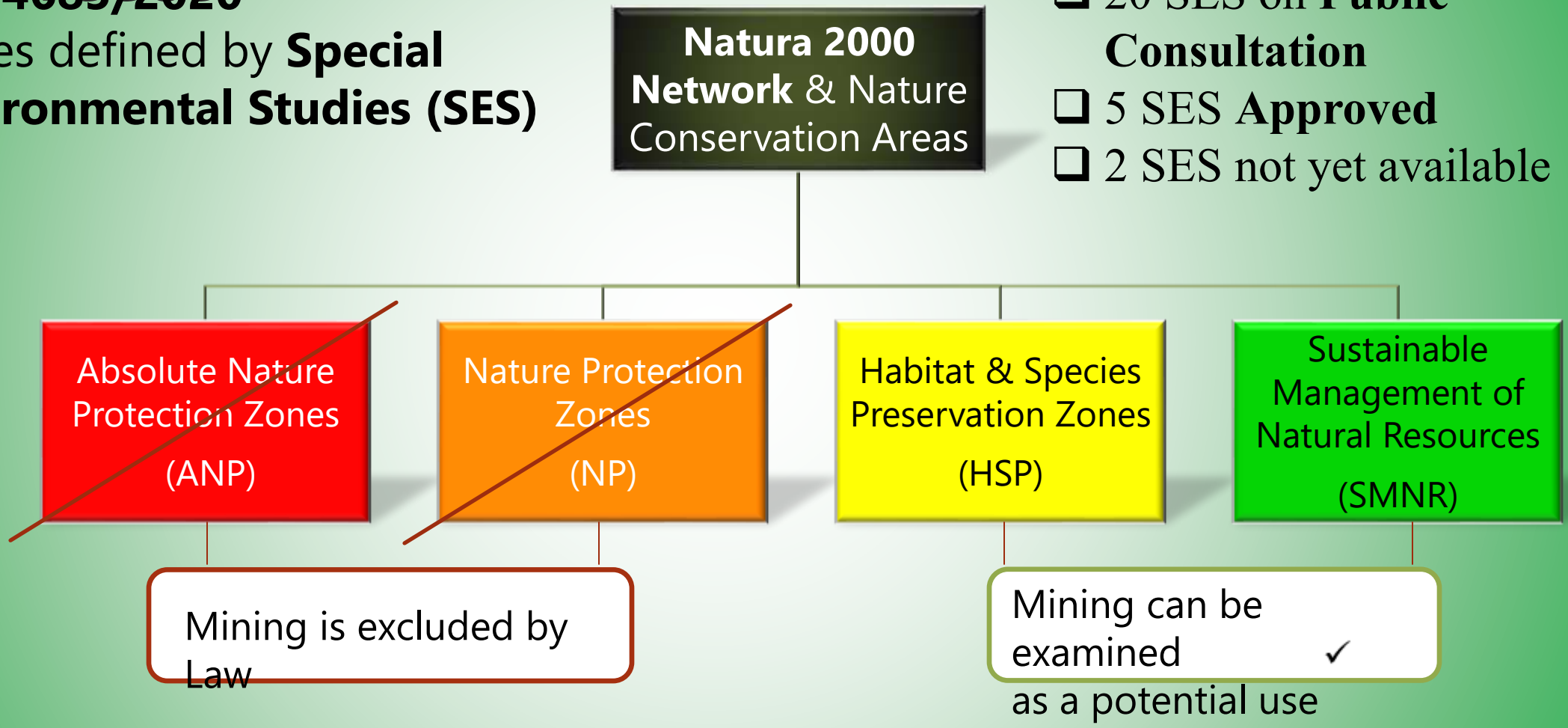
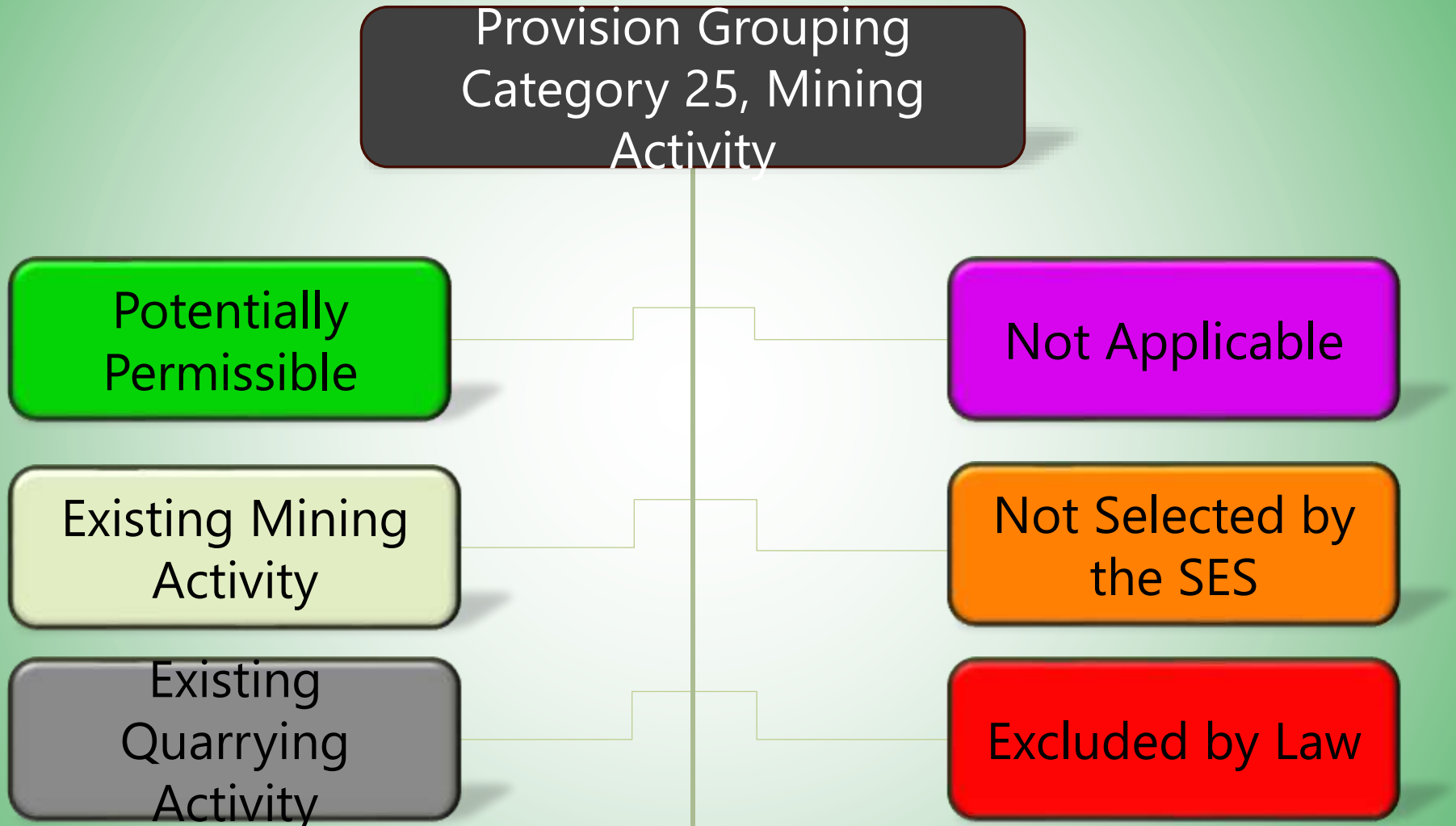
3. Mining in Natura 2000 – The Case of Greece

- Law **4685/2020**
- Zones defined by **Special Environmental Studies (SES)**



- 20 SES on **Public Consultation**
- 5 SES **Approved**
- 2 SES not yet available

3. Methodology



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3. Methodology

Workflow

Data Acquisition

Retrieve datasets
Compile spatial/non-spatial data
Match Zone Codes with Land use categories

Quality Control

Conduct data QA
Harmonizing, formatting field structures
Rectify coding errors (misspellings)
Reassign values placed in incorrect columns
Enrich missing attributes

Data Integration & Statistics

Create a standardized geodatabase for analysis
Exclude non-terrestrial areas
Statistics per Zone, Grouping categories

Spatial Analysis

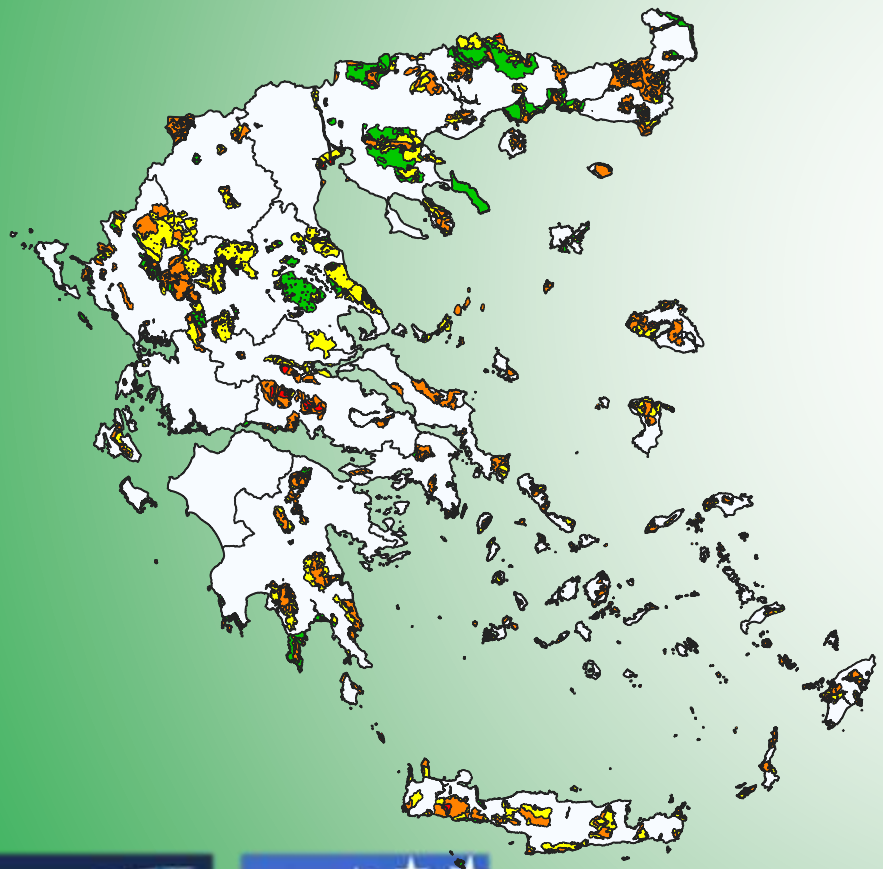
Overlay SES zones with mineral resource areas

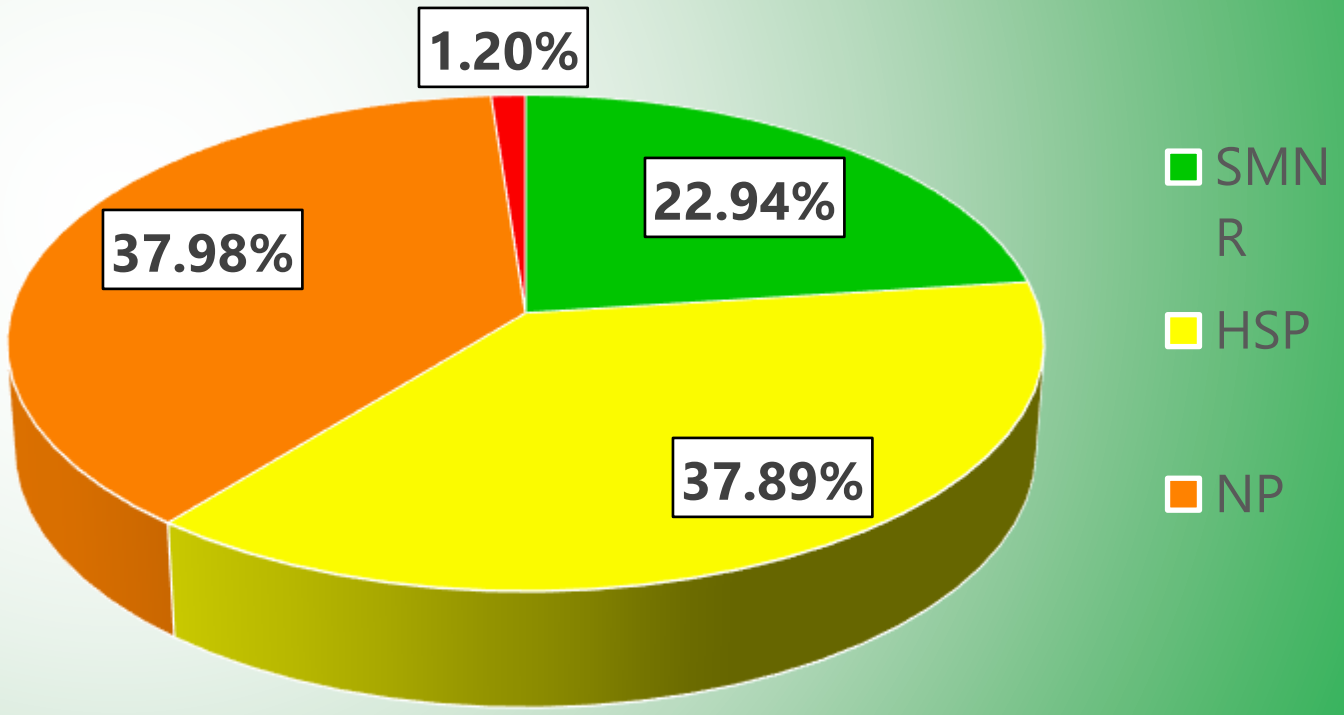
Synthesis & Output

Generate summary tables, maps, charts

4. Results & Visualization

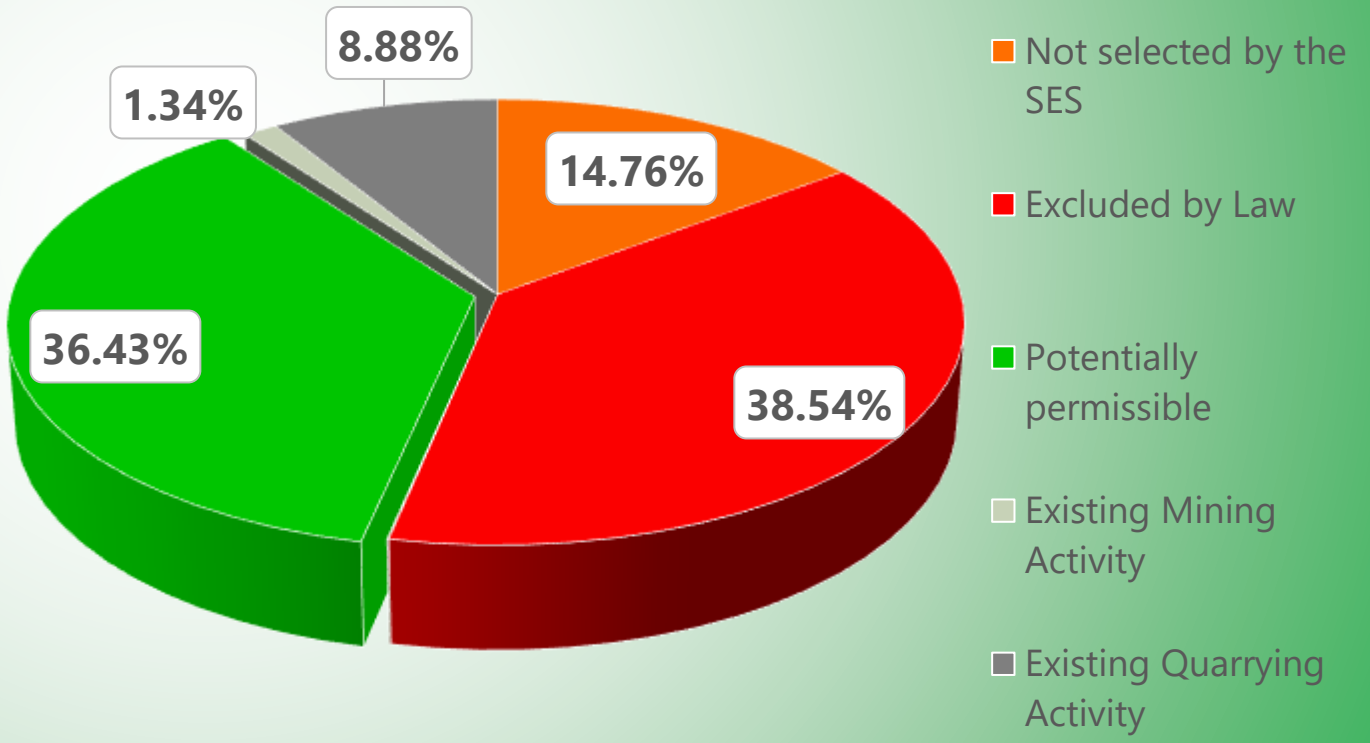
Zone Coverage for the Natura 2000 of Greece (Terrestrial part, SES Available)





4. Results & Visualization

Provisions of SES for the Mining Activity (Terrestrial part, SES Available)



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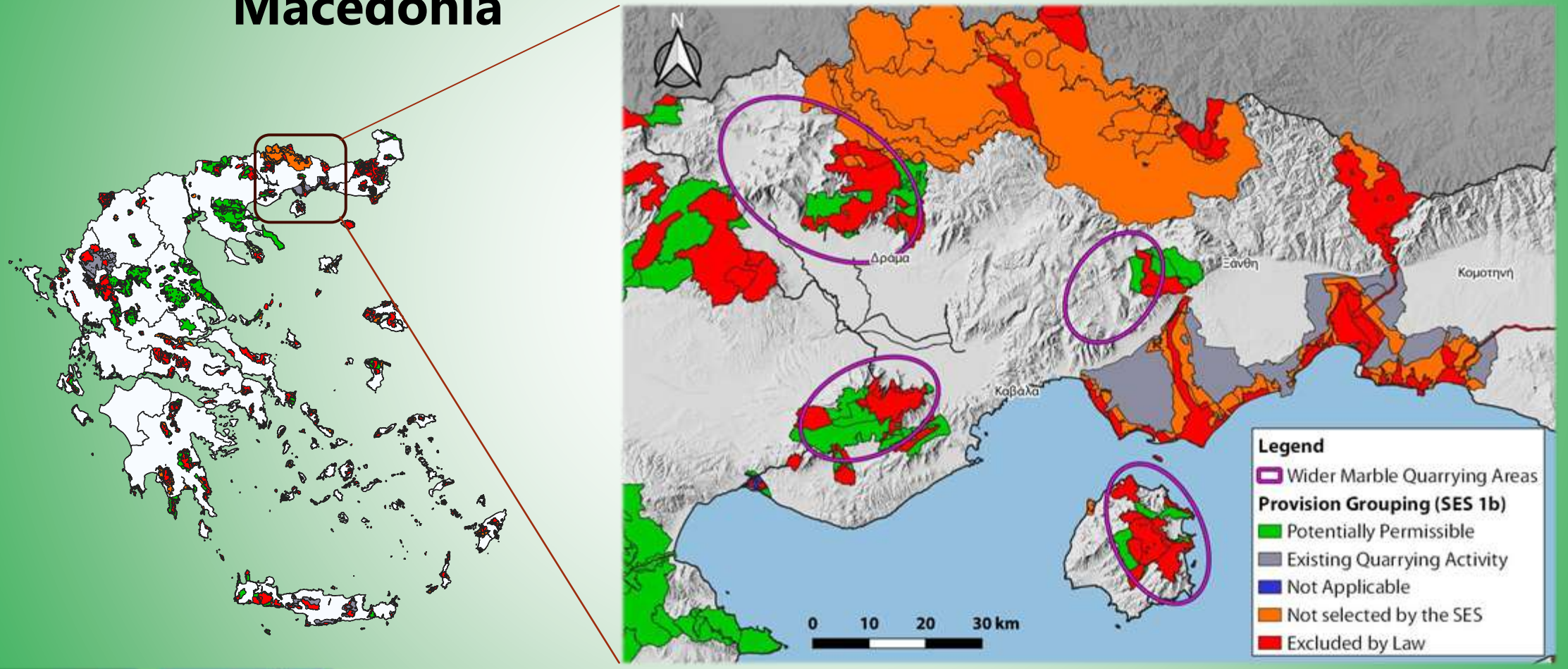
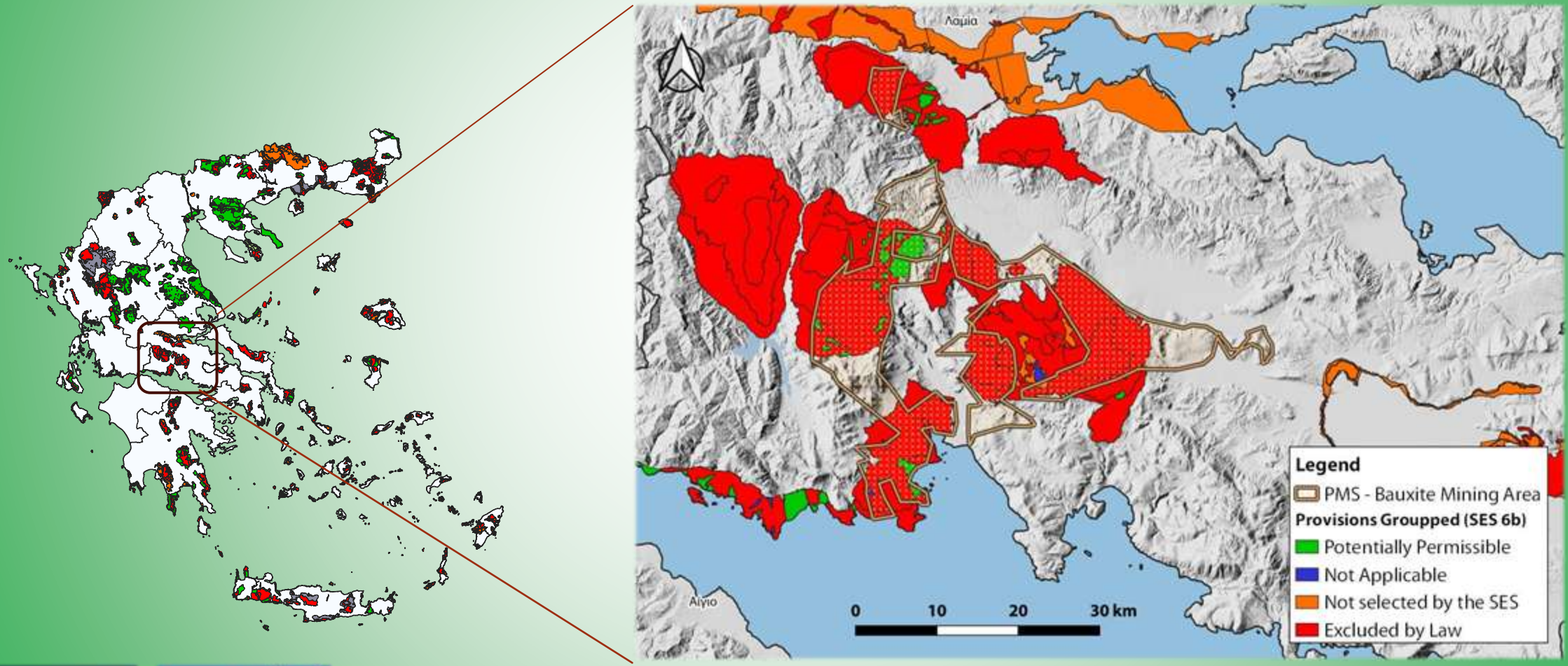
4. Results & Visualization

Case Study – Marble Quarries in Eastern Macedonia



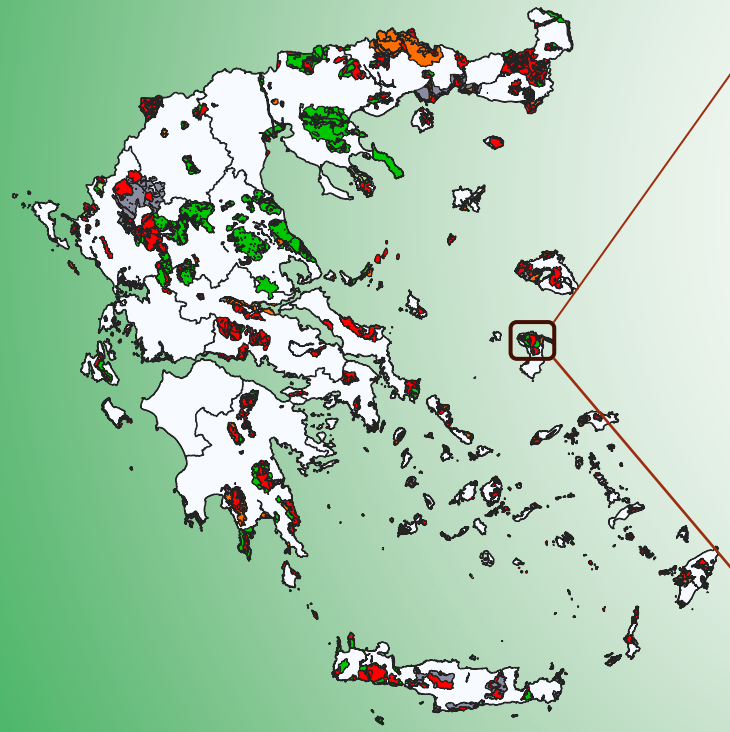
4. Results & Visualization

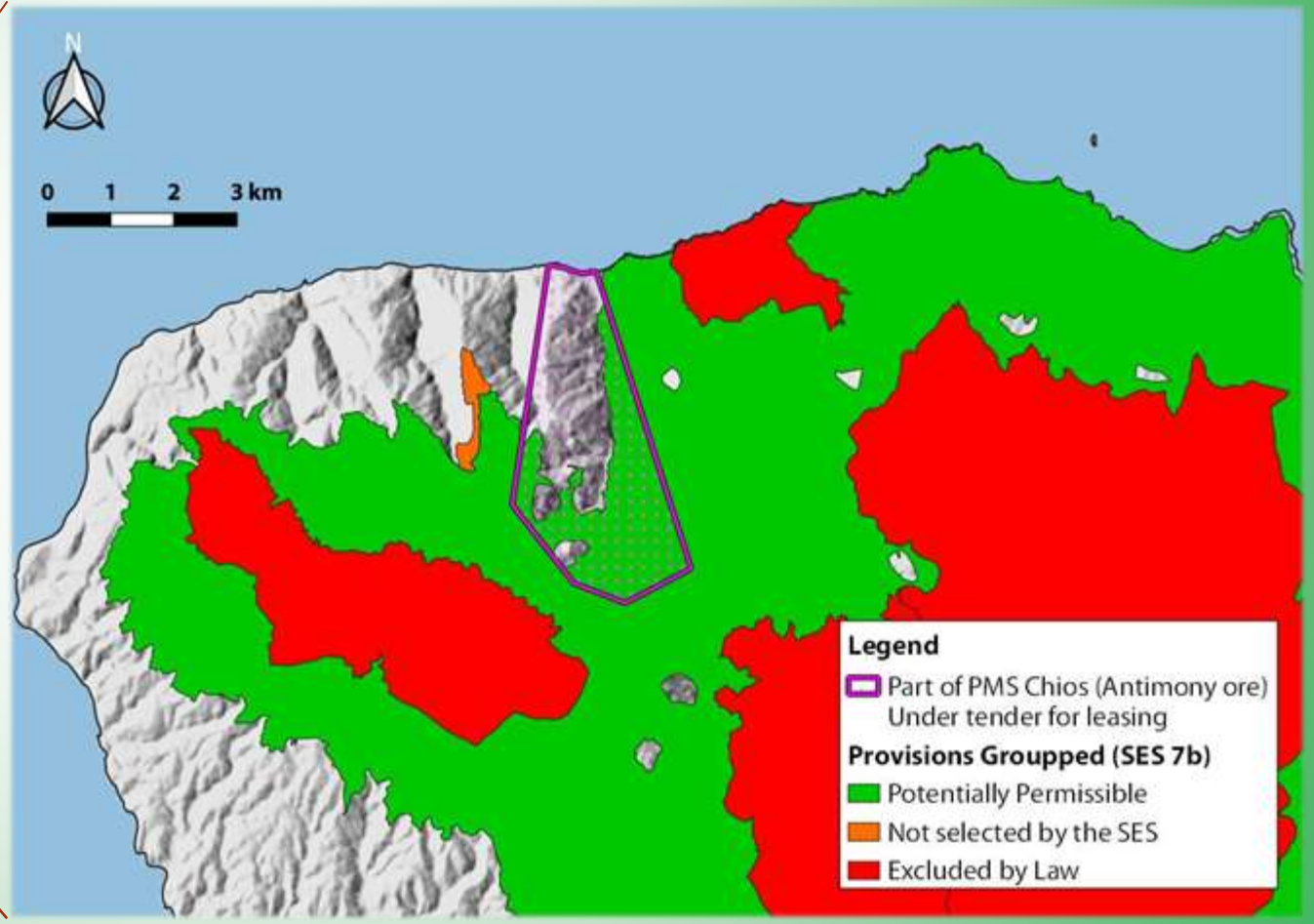
Case Study – Fokida Bauxite Mining Area



4. Results & Visualization

Case Study – Area under tender for leasing, Chios Island





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5. Discussion & Conclusion

- Greece is covered ≈28% by Natura 2000 network* (terrestrial part), which overlaps with areas of mining interest
- Potential new mining development is limited to ≈36% of the zone area, according to the available Special Environmental Studies (SES)
- In Fokida (Bauxite), ≈60% of the PMS is excluded due to NP, ANP zones
- In Chios (Antimony), despite being in potentially permissible area, the requirements for Mining development by the SES can be restrictive
- The marble quarries in Eastern Macedonia may lie within HSP zones, but NP zones may hinder future expansion in neighboring areas of interest

source: Natura 2000 Barometer, 2025

5. Discussion & Conclusion

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Provide a Framework

Identify Conflicts

Support Public Debate

Guide Decision Making

GIS

Spatial Data Management

Workflow Automation

National Scale Insights for the Extractive Industry

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Thank you for your attention

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