Marble Idea 1. Geological and Geophysical Research in Marble Quarries; Underground Mining Equipment

*Identification of quality marble reserves and their underground mining*

1. Short description of the idea

The idea is about using advanced geological and geophysical techniques to identify promising, in terms of quality, marble reserves and to support the industry’s transition to underground marble mining.

2. Contribution of the different partners

- Universities/Research Centres with relevant experience in Geology & Geophysics would provide detailed underground profiles to identify promising quarry sites.
- Municipal governments would speed-up and optimise the licensing process.
- Regional and/or national government would provide financial incentives for the industry to switch to underground extraction of marble.

3. First considerations on framework conditions

- There is significant room for improvement in reducing the complexity, the time needed and the paperwork for acquiring a license to operate a quarry.
- Advanced technical knowledge on geophysics and geology and exploration techniques are not available to regional higher education / research organisations; they should be sourced other regions.
- Financial motives should be considered by the Government to support the industry’s transition from open quarries to underground mining.

4. First financial considerations

- The cost of a fully documented geological/geophysical exploration at a certain site is in the range of 200-300 k€.
- The cost for setting-up an underground marble mine with a capacity of 25 000 m³/yr is in the range of 1.5-2 M€.
- Available research findings suggest that the efficiency of quarries in terms of usable marble volume extracted is in the range of 12-15% for the open type and 15-25% for the underground type; best in world is 30%. Therefore, there is a considerable room for process efficiency improvement that could result in quantifiable financial gains for the industry.

5. Identification of first next steps

1. Local and regional authorities provide exploration and exploitation licenses.
2. Perform geological and geophysical mapping on prospect sites (100 000 m² blocks).
3. Perform feasibility studies to select the most appropriate type of extraction (open quarry vs underground mine).
4. Licensees invest the necessary funds for operating the marble extraction site.