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Granite waste produced in quarries exploitation in northern Sardinia (Italy): recycling chances within the context of Critical Raw Material supply

Antonello Aquilano et al. ▶

The Sardinia region has a longstanding tradition in ornamental granite extraction, reaching its production peak in the 1990s when it became Italy's leading granite producer, accounting for 90% of the national production [1]. However, the industry faced a decline starting from the mid-2000s due to the entry of other competitors into the global market and due to significant infrastructure issues on the island [1]. The 2008 financial crisis further reduced global granite demand and in the subsequent years, compounded by the events of the COVID-19 pandemic, prolonged the crisis in the sector. In Italy, granite production plummeted from over 2 million metric tons in 2011 to just under 200,000 metric tons in 2022 [2].

Granite extraction has a striking impact on the Sardinian landscape, with landfills of granite blocks, visible from kilometers away, contributing to significant landscape degradation. These, in addition, affect plans to develop the unique archaeological sites of the Domus de Janas and contribute to soil depletion.

The European Critical Raw Materials Act to future supply chains is crucial for Europe's green and digital transition, in line with the European Green Deal that identified recycling as part of the supply solution. In this context, recognizing potential opportunities for recycling these waste materials could aid in advancing the objectives of the European Union, enhance the aesthetic quality of the Sardinian landscape, and contribute to revitalize the granite extraction industry in Sardinia.

This study focuses on the circular economy in a granite quarry located in the municipality of Buddusò (province of Sassari, Sardinia). Active for about 40 years, this quarry has accumulated significant amounts of granite waste from which feldspar, quartz and rare earth elements can be extracted. This research presents the results of geochemical, petrographic, and mineralogical analyses conducted on granite waste samples from the quarry under study. In addition, potential recycling solutions for this material in the context of Critical Raw Material supply are discussed.

References:

[1] Careddu, N.; Siotto, G.; Marras, G. The Crisis of Granite and the Success of Marble: Errors and Market Strategies. The Sardinian Case. *Resources Policy* 2017, 52, 273–276. <https://doi.org/10.1016/j.resourpol.2017.03.010>.

[2] Istituto Nazionale di Statistica - Istat. Production in Value and Quantity per Single Product - Granite and Similar Rocks, Rough, without Shape. Accessed 18/12/2023. https://esploradati.istat.it/databrowser/#/it/dw/categories/IT1,Z0600IND,1.0/IND_PRODUCTION/DCSP_PRODCOM/IT1,115_168_DF_DCSP_PRODCOM_2,1.0

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