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The paradox of raw materials for the built environment in Sub-Saharan Africa

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The African continent is renowned for the richness of its mineral deposits, including metals, REE-minerals and gemstones. So far, most of these raw materials have been exported outside the continent with no added value. In fact, the export of these resources still represents a significant share of the national GDP in many countries of the continent, especially in Sub-Saharan Africa.

Paradoxically, in contrast to this richness of high-value minerals, Sub-Saharan Africa has very limited resources of limestone. Though representing a resource with very limited economic value, limestone is a fundamental raw material because it is the primary constituent of the raw meal used in the production of Portland cement. This represents an issue because the African continent needs to meet the soaring demand of construction materials needed to sustain the high urbanization rate (currently the highest in the world), in a scenario where a significant share of the continental population does not have access to a decent house. The lack of high purity limestone needed for Portland cement production, in most of the continent, hinders the development of a local cement and concrete industry. This generates a negative impact in terms of costs, both economic and environmental, associated with the need to support the urban and infrastructural development by import of cement from other continents.

In this contribution, I will explore possible alternatives to this scenario, where the sustainable exploitation of local resources, such as clay and biomass from agricultural waste, can set the scene for the development of a local construction industry. From this standpoint, by implementing alternative pathways to limestone calcination in cement production, Africa may become a leader in the production of sustainable construction materials that can address the environmental concerns associated with the built environment.