

RESEARCH THEME

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Title of the doctoral research Urban Mining for circular materials design

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Abstract

In addition to other aspects, the Anthropocene era is characterized by mountains of waste that grow in opposition to raw materials that become increasingly scarce and expensive.

Since the beginning of industrialization, natural resources have been used to create consumer goods for humans' exclusive use. Therefore, the cities where humans live contain vast quantities of raw materials. In this context we can use a wider concept of a "mine", considering it as a large "pot" of resources that could be exploited for the benefit of people, then materials recycling and urban mining become synonyms.

From a Circular Economy perspective, urban and industrial waste represent a real hidden treasure for industries, society and Design for Sustainability. In fact, Urban Mines imply the possibility of obtaining resources from urban waste, which are recovered and reused, becoming raw materials for production chains other than those for which this waste was generated. The Urban Mine concept aligns with the Circular Economy principles because selected urban residues are conveyed within these functional spaces, which do not need to be separated or cleaned.

Moreover, the concept of urban mines is also consistent with that of urban metabolism, for which the city is an ecosystem in which the flows of materials are vital elements.

As the DIY-Materials approach has now become consolidated in the practice of design, it is possible to see these urban mines as an inexhaustible source of sources for the development of new materials. The doctoral research proposed here will investigate the potential theoretical and practical relationships between the concept of urban metabolism, urban mines and the DIY-Materials approach with a view to the transition towards a sustainable and circular society.

Keywords

Circular Materials, Urban Mining, Materials from waste