

# Prospecting and Exploring Anthropogenic Resource Deposits

## The Case Study of Vienna's Subway Network

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Supporting information is available on the JIE Web site

### Summary

Urban mining is seen as a key strategy for the recovery of secondary raw materials from the built environment. Although large material stocks have been reported in infrastructure networks, their actual recoverability over time has received little attention so far. This article presents a case study on the prospection and exploration of the anthropogenic resources deposited in Vienna's subway network. After quantifying the built-in materials in the network, a resource classification was performed, distinguishing between (1) materials that have to be replaced and are thus potentially extractable as secondary raw materials after a considerable time span (<100 years) and (2) materials remaining in the subway and thus are not extractable. Results given in tonnes (t) show that the subway network consists mainly of concrete (12,000,000 t), iron & steel (600,000 t), gravel (300,000 t), bricks (250,000 t), copper (10,000 t), and aluminum (6,000 t). A first evaluation demonstrated that 3% of the built-in materials (mainly copper, aluminum, and gravel) have to be renewed after a considerable time span (<100 years) and, consequently, can be seen as potentially extractable resources. Ninety-seven percent of the built-in materials were classified as not extractable (mainly concrete, iron & steel, and bricks), because they were found in permanent structures and lines that have been declared as cultural heritage monuments. For the materials that were found to be potentially extractable as secondary raw materials, a further investigation that particularly considers their end of life in practice and the existence of a hibernating stock is required.

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