

# Mineral scarcity and environmental technologies seen as opportunities

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As mineral resources are dwindling, it is becoming increasingly important to know how even the tiniest amounts of minerals can be recovered from waste - or how minerals can be substituted for other materials in industrial use. The VTT Mineral Economy innovation programme develops new technologies for, for instance, the mining industry.

VTT Technical Research Centre of Finland Ltd has launched an innovation programme for developing new technologies for the recovery of metals and other minerals, and improving the recycling of [raw materials](#) by means of ecological product design. The objective is to turn threats, in other words raw material scarcity and environmental challenges, into new business activity and jobs in Finland and in Europe.

It has been estimated that the amount of important minerals for industrial production will dwindle in about twenty years unless we find new sources of minerals and develop alternative sources of energy very soon. Such sources could include tailings from mining operations and consumer waste. Various methods could be employed to extract the valuable substances contained in these more effectively than can be done today.

Substitution of critical raw materials in, for example, electronics and power tools also offers excellent opportunities for finding solutions for raw material problems. At the same time, attention must also be paid to product design, to ensure that valuable raw materials are easier to

recover in the recycling phase.

Olli Salmi, Research Professor at VTT: "The current recovery methods are too crude, and in the future, they have to be replaced with more refined methods that save the environment." As an example, he mentions the recovery of gold using mushroom mycelium mat filters, a method developed by VTT. One of the ongoing projects includes developing hydrobiometallurgical recovery equipment for minerals to the pilot phase.

In the best possible case, recycled raw materials can be substituted for harmful or critical raw materials used in production.

Provided by VTT Technical Research Centre of Finland

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