

# FROM THEORY TO PRACTICAL REALITY

Ernesto Hartikainen and Samuli Laita report on the Finnish story

A large building stands in the yard of a ferrochrome mill in Tornio near the Arctic Circle. Thousands of tonnes of waste slag are converted into quality-certified earth-work products here and sold into the building and road construction industries. Meanwhile, at a nearby school, the children are being taught the basics of a new, more resource-efficient economy. At the town hall, the wise use of natural resources is voted in as a cornerstone of the municipal strategy. In Finland,

every sector of society is turning towards new and necessary ways for sustainable life.

## The circular economy will be critical for combating climate change

The IPCC's recent special report on limiting global warming to 1.5°C has proved the urgent need for quick and effective climate solutions and decisions. We need to reconfigure our economy – the way we produce, consume and recycle materials. ▶



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## Sand pits could help build immune defence

The Nature-based solutions research group at the University of Helsinki, Finland, utilises the circular economy concept to improve human immune defence, writes *Mira Grönroos*.

In recent decades, the incidence of immune-mediated and other non-communicable diseases has been increasing in developed societies. Low microbial diversity and urban lifestyles are important factors explaining the increase.

Regular exposure to diverse microbial communities is needed to train the immune system to distinguish pathogenic microbes from beneficial microbes and the body's own cells. Failure in this task leads to immune-mediated diseases such as allergy and type 1 diabetes.

Our research group, led by Aki Sinkkonen, is exploring solutions to roll back these diseases. The group is developing materials with high microbial diversity for consumer products. In line with the principles of circular economy, inputs such as agricultural and forestry by-products are utilised.

Finding solutions is especially important to support people living in metropolitan areas who have limited access to Nature.

Research is being done to find optimal processing protocols and to identify the most effective means for safe microbial exposure. One product under development is microbiologically diverse playground sand that can be substituted for ordinary playground sands hosting only limited microbial diversity.

*Mira Grönroos is a postdoctoral researcher in the Nature-based solutions research group at Helsinki University.*