

Finland's battery plans spark environmental fears

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Lines of trucks carrying piles of rock crisscross Finland's rugged

Terrafame mine, which sits 300km (186 miles) below the Arctic Circle and is Europe's largest source of nickel for electric car batteries.

At the immense, 60 square kilometre site, the extracted stone is crushed, heaped into vast mounds and fed with oxygen and water through red hoses, allowing the nickel, along with some cobalt, to gradually leach out.

"Even today more than 50 percent of our turnover is coming from the electric vehicle value chain," Terrafame CEO Joni Lukkaroinen told AFP.

Finland is the only EU country whose bedrock is known to contain all the major battery minerals—including cobalt and lithium—and the Nordic nation is drawing up plans to exploit these resources in order to become a major industry player.

Yet the prospect of increasing mining is controversial in sparsely populated Finland, whose vast forests, diverse wildlife and pristine lakes are prized national assets.

As Europe looks to counter Asia's dominance in the fast-growing sector, Finland is one of the most active member states vying for a share of the lucrative battery business, but competition between EU countries is fierce.

Environmental minefield

Finland's government has promised 300 million euros (\$353 mn) in stimulus for battery industry this year, and seven new excavation sites are among the commercial projects now underway to try and create a "battery cluster".

Mika Nykanen, charged with drawing up the government's "battery strategy", said the Nordic country's approach "will be strongly grounded in sustainability and Finland's climate policy goals."

But campaigners are worried that expanding mining in Finland will destroy sensitive ecosystems.

"You simply cannot produce these minerals in an environmentally friendly way," campaigner Antti Lankinen told AFP, standing in front of a towering pile of waste rock on the perimeter of the Terrafame site in Sotkamo, central Finland.



The process to extract nickel and cobalt involves lots of water which activists worry poses a risk to the environment. It isn't an idle worry as under the previous owner a water spill from the site caused Finland's biggest environmental disaster

Lankinen has worked with the Finnish Association of Nature Conservation to try and force Terrafame to change how it stores the waste rock, which it argues can cause acid runoff into the adjacent landscape if exposed to rainwater.

The mine's previous owners, Talvivaara, were prosecuted after an ecological catastrophe in 2012 when uranium and other toxic metals leaked into local waterways.

However Joni Lukkaroinen, CEO of new owner Terrafame, said there have been no environmental issues since his firm took over the mine five years ago.

"We do have environmental impacts, but those impacts are in line with our permits," Lukkaroinen said.

Elsewhere in Finland, campaigns have sprung up against new extraction in Lapland and in the Saimaa lake district, a tourism hotspot known for its unique wildlife.

"Lake Saimaa is Europe's fourth largest freshwater system and is not a suitable area," campaigner Miisa Mink told AFP, adding that four new prospecting permits have been granted in the area since May.

"If we're not careful, sure we'll have electric cars but we won't have fresh water."

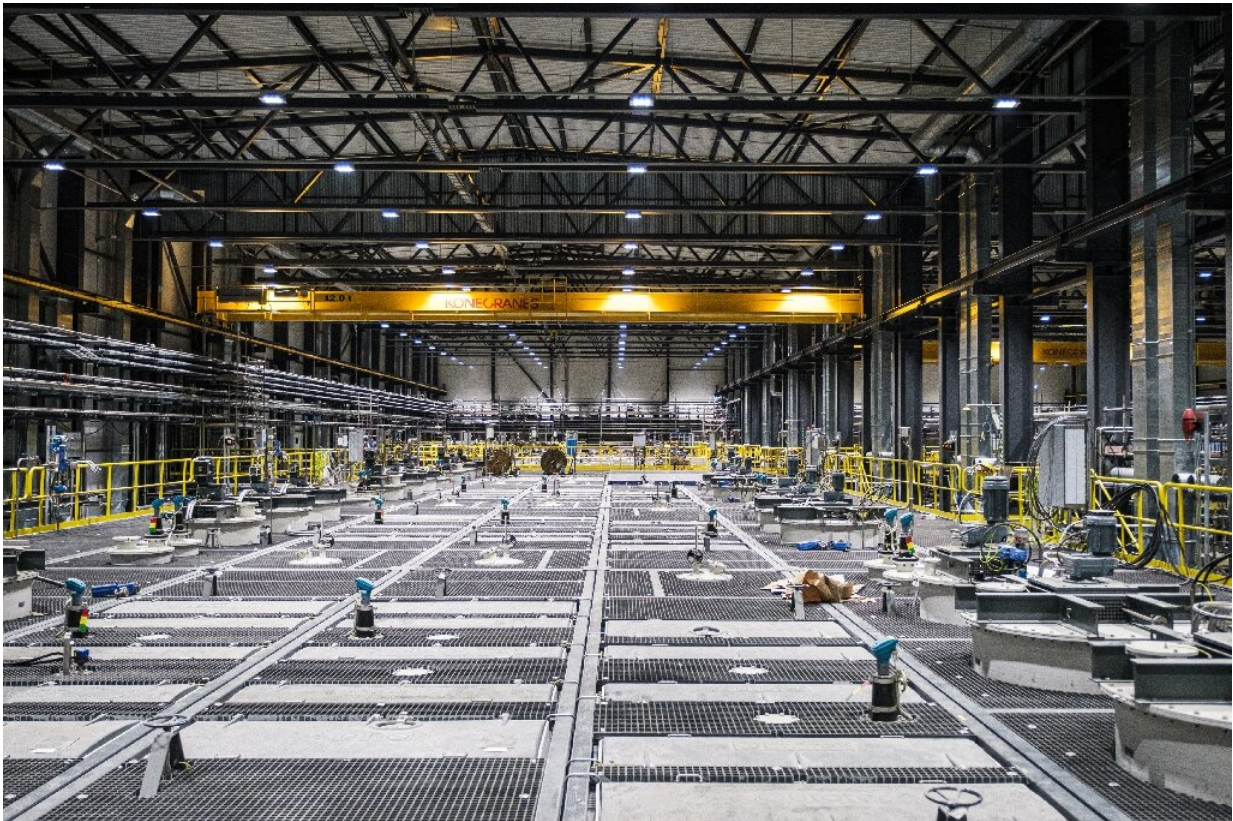
A sustainable advantage

Yet battery industry leaders insist that Finland is a global pioneer in sustainable practices, and believe this will give it an advantage over its

competitors.

Terrafame's mining methods, for instance, create a 60 percent smaller carbon footprint than traditional practices, the firm says.

Meanwhile Finnish mines are bound by much tougher standards than in the Democratic Republic of Congo, where more than half the world's cobalt is produced in conditions rife with [child labour](#) and [human rights abuses](#), according to NGOs.



Terrafame is also planning to refine the nickel and cobalt at its site in Sotkamo

"There is no point buying an electric vehicle produced from [raw materials](#) that aren't sustainable," Finnish Minerals Group CEO Matti Hietanen said.

Despite Finland recently losing out to Sweden to host Northvolt with its \$1bn "gigafactory" that is part-funded by Volkswagen, other foreign firms are choosing to locate to Finland, including Germany's BASF and Belgium's Umicore.

Terrafame will also open a 240-million-euro refinery next year, producing enough nickel sulphate for 1 million [electric vehicles](#), and cobalt sulphate for 300,000.

Going off-highway

Car technology maker Valmet Automotive is one of the few Finnish manufacturers at the top end of the battery chain, and last year opened a plant to expand its production of finished battery packs for use in cars and industrial vehicles around the globe.

On its shiny factory floor, lines of robots controlled by technicians in blue overalls assemble and screw components with intricate precision into large black casings.

"Pretty much every car and every model has a unique battery," Jyrki Nurmi, senior VP for electric vehicle systems, told AFP.

Nurmi believes one area the company can make its mark is in its "off highway" production—batteries for the heavy duty vehicles used in construction, agriculture or logistics.

Some industry watchers say that global supplies of cobalt, the most expensive of the [battery](#) minerals, are already running low and won't

stretch to meet future demand.

"We need materials out of the ground, but in the future I think a lot of our materials will come via recycling," Nurmi said, adding that he is optimistic that his industry will become increasingly sustainable.

"It will take time," he said, but "it will change in the future".

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