

Titanor Project in Kokkola Region - Building Europe's Supply of Critical Titanium

Titanium is one of the strategically most important raw materials of our time. Classified by NATO, European Union, USA, and several other countries as a critical and strategic metal, titanium is crucial in industries ranging from aerospace and defense to construction and healthcare. At present, the European Union operates no active titanium mines, leaving the continent heavily dependent on imports from Asia and Africa. This dependency represents not only an economic vulnerability but also a strategic risk, particularly in the light of increasing global competition for secure supply chains.

Titanor Oy, a Finnish company based in Kokkola, is developing one of the most extensively studied and advanced titanium projects in Europe. The ilmenite deposit under Titanor is not a new discovery - it has a history spanning more than five decades.

A Project with Deep Roots

The ilmenite deposit was first discovered in 1971 through regional aerogeophysics. Systematic exploration was carried out by the Geological Survey of Finland (GTK) between 1992 and 1997, followed by project development under Kalvinit from 1997 to 2012. During this period more than 25 kilometers of core drilling were completed, alongside test mining of 23 000 tonnes and pilot-scale processing of ilmenite concentrates.

A scoping study in 2012, prepared by Stantec (former Engenium), confirmed the technical and economic potential of the resource, outlining an open-pit mine producing 1,6 million tonnes of ore per year, with an underground option available. At planned full scale, the mine would produce 250 000 tonnes of ilmenite concentrate annually—equivalent to over 10% of EU demand—and an additional 50 000 tonnes of iron concentrate, with a mine life exceeding 20 years. Today, Titanor has assumed full ownership of the project and is advancing it toward construction.



Titanor board Markus Ekberg (left), Harri Takanen and Mikko Sopenen visit at Titanor project's drill core archive.



Geological Foundation

Titanor's ilmenite project is located in Western Finland, about 75 kilometers from the Kokkola Industrial Park, and within five kilometers of the national highway grid. This infrastructure provides an all-weather connection to the Port of Kokkola, ensuring efficient logistics for future exports.

Geologically, the project sits within the Central Finland granitoid complex, a Paleoproterozoic domain dating back 1,9 billion years. The mineralization occurs within lay-

ered gabbro intrusions that host ilmenite-magnetite ores. Five distinct mineralized intrusions have been delineated so far, each ranging from 0,5 to 1 km in width and 1–3 km in length. The ores occur in both massive and disseminated layers, while post-emplacement faulting and dyke intrusions have shaped the structural geology of the deposits. This robust geological framework underpins Titanor's confidence in the long-term viability of the resource.

Titanium Market Dynamics and Rising Demand

Titanium and its derivatives are in growing demand worldwide. Titanium metal is prized for its strength, light weight and corrosion resistance, making it indispensable for aerospace, defense and medical implants. Even

more significant is titanium dioxide (TiO₂), the pigment used in paints, coatings, plastics and packaging, as well as in sunscreens and industrial coatings.

Global demand is expected to grow at a rate of 4–8% annually through 2035, expanding the market from \$12 billion today to \$21 billion. Drivers include urbanization, construction and the expansion of aerospace and defense industries. For the EU, where consumption is high but domestic production limited, projects like Titanor are essential for securing future supply.

Ilmenite prices reflect this tightening market. Over the past decade, prices have more than doubled, rising steadily from around \$150 per tonne in 2015 to \$330–360 per tonne in 2025. With supply constrained and demand rising, analysts expect further upward pressure.

Ilmenite By-Products Enhance Value

Processing ilmenite yields more than titanium dioxide. Titanor's project also envisions the production of iron concentrate and iron sulfate (FeSO₄). The latter is increasingly used in water treatment and purification, wastewater management and as a soil amendment in agriculture. As demand for sustainable environmental solutions grows, iron sulfate represents a significant value-added by-product of ilmenite.

Titanor is also exploring apatite recovery for fertilizers and use of country rock for construction materials, reducing both the project's footprint and the EU's reliance on imported raw materials.

Titanor Path Forward

Titanor is now entering a new phase of development that will include several key activities. First, an Environmental Impact Assessment (EIA) will be carried out, covering multi-seasonal ecological surveys as well as social and health impact assessments. In parallel, a feasibility study will be undertaken, focusing on updating JORC models, refining the mine design and evaluating projected costs.

The company will also advance development projects, including research on by-product opportunities in apatite and the sustainable use of country rock materials. Titanor will develop its commercial strategy, working with industrial partners and progressing customer offtake agreements.

Strong Leadership and Local Ownership

Behind Titanor is a leadership team with deep expertise in mining and finance. Markus Ekberg, MSc Geology, founder and Chairman of Titanor, brings decades of international mining experience, including senior roles at Outokumpu, Kodal Minerals, En-

domines, and FinnCobalt as well as at Kupukan Grafiitti. Mikko Sopanen, MSc Finance, CEO, has held executive positions at mining companies Endomines and Sotkamo Silver, with a background in corporate finance.

Ownership of Titanor reflects strong local commitment. The company is backed by Jussi Capital Oy, a family office based in Sievi, alongside Harri and Jarkko Takanen. This ownership ensures both local anchoring and professional development, aligning investor interests with regional development.

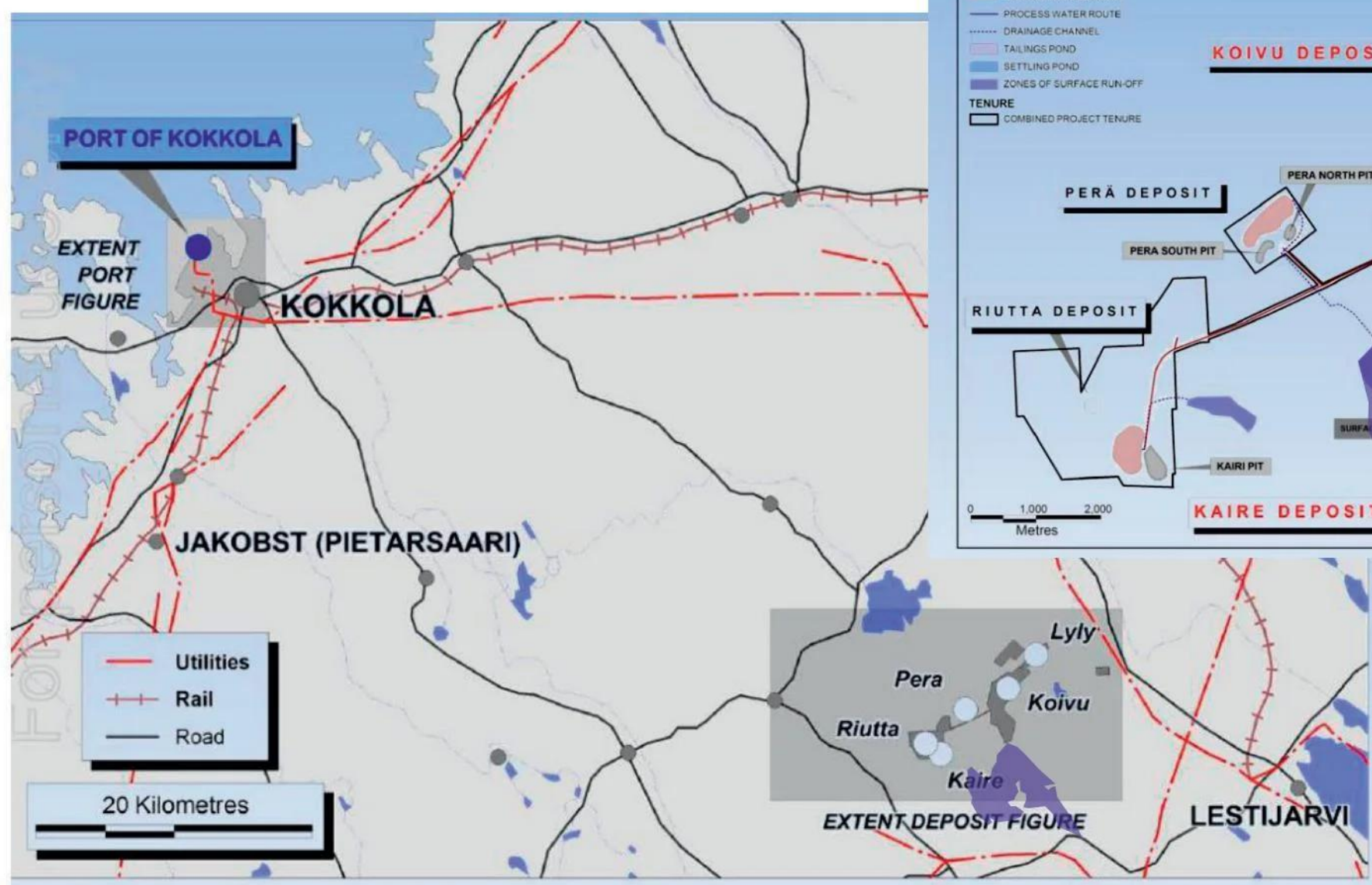
Benefits for Europe and Region

For the Kokkola region, Titanor's project enables jobs, investments, and strengthened industrial activity within a vibrant materials cluster. For Europe as a whole, the project represents a rare opportunity to develop domestic supply of a critical raw material, reducing exposure to geopolitical and supply risks and price volatility.

At a time when Europe is redefining its raw material strategy, Titanor stands out as a concrete, advanced, and realistic project capable of delivering value within the decade. It is not merely a mining venture, but a strategic initiative aligned with the EU's goals of securing sustainable access to critical raw materials. ▲

TEXT: MARKUS EKBERG AND MIKKO SOPANEN

Titanor Location



Titanor's deposits are located in the Kokkola region, about 75 km from the Port of Kokkola.