



The employment and population impacts of the boom and bust of Talvivaara mine in the context of severe environmental accidents – A CGE evaluation



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ABSTRACT

There had been a mining boom in Finland before the current recession. The most ambitious investment was the Talvivaara nickel and zinc mine in Kainuu. The operation phase began in 2008, and for three years the mine produced nickel and zinc according to expectations. Then everything changed: two accidents occurred in 2012, which had severe environmental consequences. There was a failed attempt at corporate restructuring. The production company of Talvivaara is now in bankruptcy, and the national government is financing the mine. Our aim is to present an evaluation of the impact these events had on the employment and population of Kainuu region. Our results for the period 2009–2014 indicate that the Talvivaara mine still had a positive cumulative effect on the employment of Kainuu, in spite of the environmental accidents. The results for the period 2015–2022 suggest that the full implementation of the rejected corporate restructuring plan would have been a tolerable solution for the employment and population of Kainuu region. Considering the uncertain future of the mine, we suggest follow up studies.

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1. Introduction

There had been a mining boom in Finland prior to the current recession. The prevailing expectations are that a growing mining sector could compensate for some losses in economic growth and employment, whereas the traditional export industries metal, pulp, paper and wood industries have suffered during the recession. The most sparsely populated regions in East and North Finland, which are the target regions of most new mining projects, might yet gain some advantage from mining.

The most ambitious investment was the Talvivaara nickel and zinc mine in Kainuu. The operational phase of the mine began in 2008 and for three years the mine produced nickel and zinc in line with expectations. Then everything changed, two accidents occurred in March and November 2012, which led to severe environmental consequences. This led to increasing environmental protection and rehabilitation costs, losses in production, financial problems, and subsequently the mine applied for corporate restructuring. The restructuring plan required the large downscaling

of the company's huge debt. The creditors, however, did not accept the plan, and the production company in Sotkamo Kainuu went into bankruptcy. The government of Finland is currently financing the mine, trying to rectify the remaining environmental threats, and also find a new owner for the mine.

The purpose of our study is to evaluate the employment and population effects of the Talvivaara mine for the Kainuu region over two time periods. The first period covers the years 2009–2014 for which all economic data are available. The second period is projected for the years 2015–2022. This scenario is based on the full implementation of the plan of corporate restructuring. Our evaluation tool is the dynamic general equilibrium model, CGE RegFinDyn of the Finnish economy. The elements of the various scenarios include the actual or assumed production level, mining and environmental investments, and the debt burden.

First, we present figures that describe the mineral resources of Finland and the mining industry. We also describe the economy of the Kainuu region. Subsequently, we outline some methods that can be used to evaluate such mining projects. The Talvivaara mining project has been detailed, and an account is given of the environmental accidents that occurred at Talvivaara. The plan for the corporate restructuring is also recounted. Then the RegFinDyn model, the assumptions for the scenarios and the employment and population effects for the Kainuu region are presented. The

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conclusions, lessons learned and policy implications are presented at the end of the text.

2. The Finnish mining industry

Finland is rich in minerals (Figs. 1 and 2). There are 13 metal ore mines that are currently operating or are under construction or are in the planning phase. Kittilä, Laiva and Pampalo gold mines and Talvivaara nickel and zinc mine are already operating. Kevitsa nickel and copper mine began production in 2013.

Apart from its diverse mineral potential, Finland provides a good operating environment for exploration and mining activity.

Recent international estimations have even suggested that Finland is one of the most favored countries for targeting mining operations at (Geological Survey of Finland, 2010). Finland has just amended its mining legislation. The new Mining Law (621/2011) not only creates a favorable environment to securing the pre-conditions for mining and ore prospecting, it also covers environmental issues including: citizens' fundamental rights, land-owners' rights and municipalities' opportunities to influence decision-making.

When metal prices were low, Finnish firms sold the mining rights to foreign firms in most cases. The mining boom in Finland preceded the economic downturn. Exploration began to grow, especially after world market prices for metals increased.

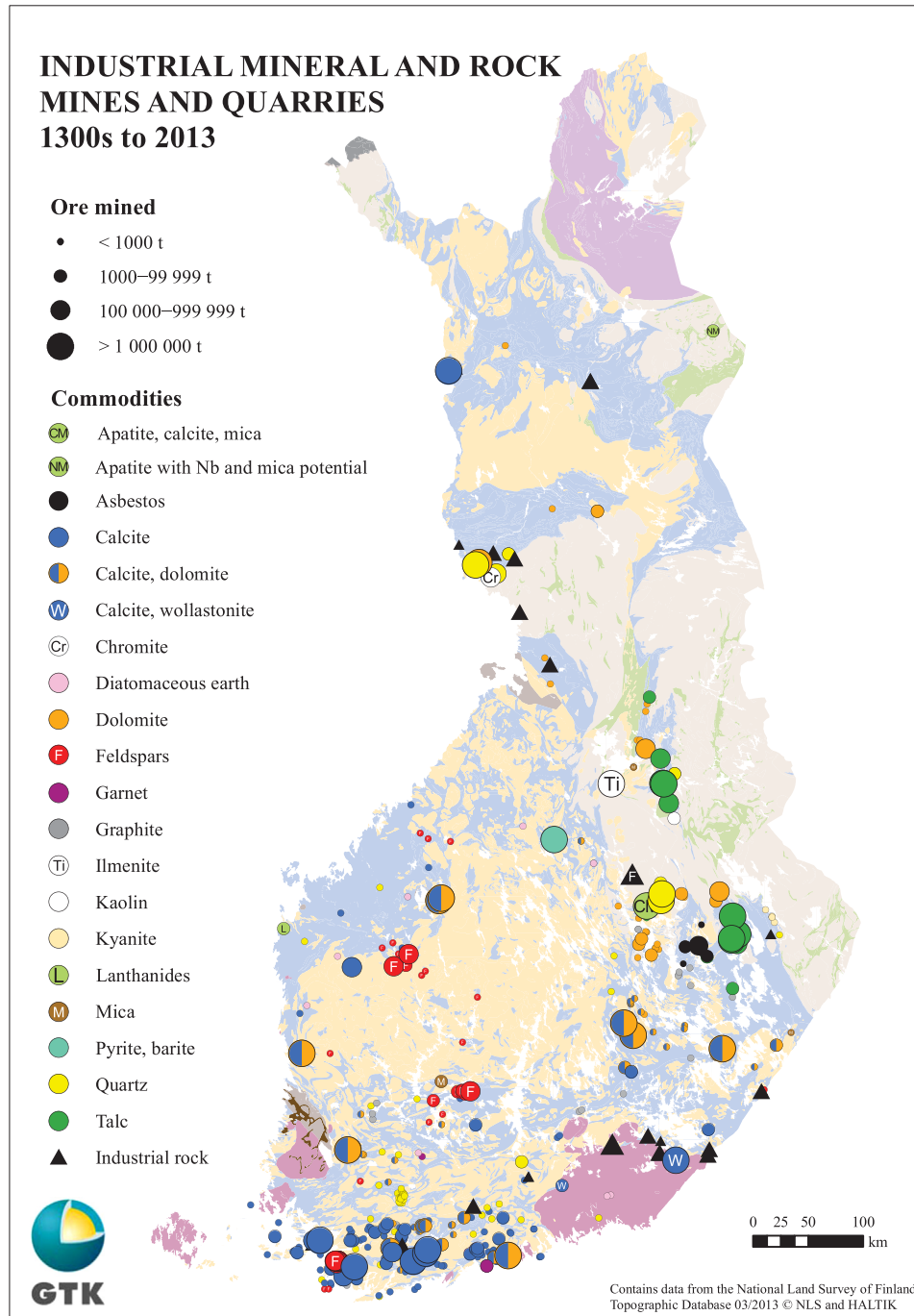


Fig. 1. Industrial mineral and rock mines and quarries of Finland.

Source: Geological Survey of Finland (2009).

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