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THE MELTING IRON CURTAIN

**A Competitive Analysis of the
Northwest Russian Metal Cluster**

ETLA, The Research Institute of the Finnish Economy

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ABSTRACT: This book presents the Northwest Russian metal industries and the most important companies, and examines their competitiveness and future prospects. Metal industry plays an important role in Northwest Russia. Its share in the industrial output is over 20%. The transition from the socialistic economy to the market economy, and privatization have reshaped the industries. In the Soviet period metal industry produced raw material for domestic munitions, machine building and construction. After the collapse of the domestic demand, metal companies were forced to, and managed to enter the export markets. The book analyzes competitiveness employing the so-called cluster analysis approach. Relatively cheap and abundant raw materials, energy, transportation and labor force are the main components of the cost competitiveness of companies. Production technologies are, however, outdated. Productivity is low and production consists of products with low value added. In principle, the Northwest Russian metal cluster has all the necessary elements needed for a competitive metal cluster. Yet, improving competitiveness requires substantial investments, which would also help to solve environmental problems.

Key words: Northwest Russia, metal industry, industrial clusters, competitive advantage, economic growth, industrial policy.

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TIIVISTELMÄ: Kirjassa esitellään Luoteis-Venäjän metallinjalostuksen eri toimialat ja merkittävimmät yritykset sekä tutkitaan niiden kilpailukykyä ja tulevaisuudennäkymiä. Metallinjalostus on erittäin merkittävässä asemassa Luoteis-Venäjällä. Sen osuus teollisuustuotannosta on yli 20 prosenttia. Siirtyminen sosialistisesta taloudesta markkinatalouteen ja yksityistäminen muovasivat voimakkaasti teollisuutta. Neuvostoaikana pääasiakkaita olivat kotimainen sotatarviketuotanto, koneenrakennus ja rakentaminen. Kun kotimainen kysyntä romahti, metallinjalostajat pelastuivat tunkeutumalla vientimarkkinoille. Kirjassa tutkitaan kilpailukykyä ns. klusterianalyysin avulla. Suhteellisen edulliset, runsaasti saatavilla olevat raaka-aineet, energia ja kuljetukset sekä työvoima antavat yrityksille kustannuskilpailukykyä. Tuotantoteknologia on kuitenkin vanhentunutta, tuotavuus huono ja tuotteet jalostusasteeltaan alhaisia. Periaatteessa Luoteis-Venäjällä on olemassa riittävä perusta kilpailukykyisen metallienjalostusklusterin muodostumiseksi. Kilpailukykyyn parantamiseksi tarvitaan kuitenkin merkittäviä investointeja, joilla myös ympäristöongelmia saataisiin pienennettyä.

Avainsanat: Luoteis-Venäjä, metallinjalostus, klusterit, kilpailuetu, taloudellinen kasvu, elinkeinopolitiikka.

Preface

The metal industry has become very valuable to Russia, thanks to strong world demand for its inexpensive products. In fact, the whole metal industry has undergone dramatic changes. It used to be a supporting industry of munitions manufacturing and machine building. Now the branch has become an independent export-oriented industry. The metal industry, alongside the steel industry, also produces aluminum and non-ferrous metals.

Russia's substantial raw material supplies, on an international comparison, give the metal industry an important competitive advantage. Another advantage is relatively cheap energy. Unit labor costs in the industry are also low compared with international competitors. Low productivity, however, weakens this advantage. Compared to western standards, the industrial process requires too many workers.

Experience has shown that when profits come too easily, innovativeness and even efficiency can suffer. When operating conditions change sharply, for example when the price of energy rises considerably or ore mining costs increase, the metal industry can lose some of its competitiveness. This is the golden age of the Russian metal industry. It can make profit and could invest. Greater investment would also help foster improvements in environmental issues.

Domestic demand for metals will strengthen once Russian industrial production recovers and construction activity expands. As a matter of fact, much more than that is needed – flexible suppliers, new business concepts, developed downstream operators, and products that Russia does not produce. From the viewpoint of the Russian economy, it would be advantageous to remove unnecessary import barriers and ease the establishment of foreign companies in Russia. WTO membership would be an important step towards freer competition. Foreign competitors would force the Russian metal companies to develop.

February 2003

Pentti Vartia

Authors' Preface

This study is devoted to the analysis of competitiveness and prospects for development of the metallurgy and metal-working cluster of Northwest Russia. This cluster, being one of the basic industries of the country's economy, has experienced radical changes over the last decade, including the major characteristics of the markets, forms of ownership, structure and volume of output, the nature of state regulation, etc. These transformations require a new look at the present situation in the cluster, as well as the advancement of new approaches to evaluating its potential for further development. The authors do not claim to have provided an exhaustive review of all current issues in all their aspects. This paper is perhaps the initial stage of such a review, aimed at provoking further discussion of many pressing problems with the participation of the many parties concerned. We hope that from this angle the study will attract the attention of many interested readers from various walks of life.

The research was carried out by a consortium of participants, including: *The Centre for Strategic Research*, a leading Russian think tank; *ETLA* – The Research Institute for the Finnish Economy, a leading Finnish economic research institute; and *Solid Invest*, a St. Petersburg research-based consulting company specializing in economic analysis and strategy development.

The authors are very grateful for support from the Association of Finnish Steel and Metal Producers, the Finnish Ministry of Trade and Industry and the leading Finnish metal cluster companies: AvestaPolarit Oyj Abp, Imatra Steel Oy Ab, Metso Minerals Oy, Outokumpu Oyj, Kuusakoski Oy and Rautaruukki Oyj.

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Helsinki, January 2003

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Summary

This paper analyses competitiveness of the Northwest Russian metal cluster in the new economic environment created during the period of liberal reforms. The metal cluster includes metallurgy, metal working and related activities such as mining, technology and equipment manufacturing, transport and logistics, education and R&D services. Northwest Russia is one of the seven, newly created Federal Districts in Russia. It borders on the West with the Baltic countries, Finland and Norway and in the East it is limited by the Urals. There are roughly 15 million inhabitants in the region. Its administrative center is the City of St. Petersburg.

Northwest Russia is a relatively rich area in iron and other metals ore deposits. Substantial ferrous and non-ferrous metal production and processing industries were created here on basis of these raw materials. In the Soviet period the metals production was developed as a supporting activity for the military products manufacturing, heavy machine building and construction that were considered to be strategically important industries. After the Soviet Union dissolved in 1991 the above mentioned customer groups have rapidly lost their importance and have entered into the phase of long and severe decline. The metal producers survived by re-orienting to export markets. At present these industries in Russia have grown into an important and independent area of economic activity that could become also internationally significant under certain scenarios.

The goal of this study is to present information and an analysis of the Northwest Russian metal extraction and production as well as of their supporting industries. In addition, we assess the current competitiveness and development prospects for the Northwest Russia metallurgy and metalworking cluster. For the purpose of analysis we apply the cluster analysis and “diamond” model of competitiveness developed by Michael E. Porter.

This cluster was mainly formed during the Soviet period. It was developed on the basis of the ferrous and non-ferrous metals ore deposits proven at the time. One of the most important years for the Northwest Russian production of ferrous metals was the year 1958 when the first steel was produced by the largest metal producer in the region – Severstal located in the City of Cherepovets of the Vologda region. The key milestone for the non-ferrous metals production was the year of 1932 when the Volkhov Aluminum Plant in the Leningrad region started its

operation. Another important impulse the non-ferrous metals production in Northwest Russia received when after the Second World War the production of nickel and related metals was started based on the deposits in the annexed area of Pechenga in the Murmansk region.

Development of the cluster was facilitated by presence in the region of major consumers of metals, i.e. of the large machine building enterprises located in Leningrad (now St. Petersburg) and in other large cities of the Northwest. It is notable that Severstal, one of the major metallurgy enterprises in Russia, was built in the proximity of its main consumers, and at a rather long distance from deposits located beyond the Polar circle. The cluster structure was formed in the conditions of closed self-sufficient socialist central planning economy, and is presently in a continuous process of restructuring and adaptation to the new economic environment, i.e. to the open market economy.

The metal cluster is the leader in production volumes among all industries of Northwest Russia, and accounts for high shares of regional output of many of its regions. From the industrial production of the Vologda region it represents the substantial 70% of the total, in Murmansk region nearly half of the total and almost 20% in the Republic of Karelia. Since during the last decade over a half of the cluster output has been exported, it is now a significant player in the international markets and gets more and more dependent on the global market trends.

The analysis of Russian import and export of metal products carried out on the basis of trade statistics of OECD countries allows the conclusion that the largest export market share belongs to Russian unwrought metals, intermediary products and scrap metal. It is thanks to these categories of products that Russia now has a strongly positive trade balance. At the same time, a large amount of higher added value products is imported. These are the tubes and pipes, structures and parts of structures of steel or aluminum, shapes, foil etc. This fact definitely points to a certain opportunities to develop the import substituting activities. This in its turn requires substantial investments in upgrading or building the new facilities. At the same time, it would be necessary to start developing competitive advantages of the most optimal locations. There is a need for investment in new facilities or significant upgrading of the existing ones, and for investment in competitive infrastructure, transport and logistics, energy supplies, and qualified labor force. One can find only a few locations in Northwest Russia that meet the criteria for an optimal location. The role of the government as facilitator and provider of the infrastructure is very important. In our analysis one can find many suggestions related to industrial policy, which would make the measures taken by the government more efficient.

Among the good examples of the current opportunities and problems of import substitution one can point to the investment in the manufacturing of the large size pipes. There are no suitable facilities in Northwest to fit for production of large-diameter pipes for mainstream pipelines. Therefore meeting growing domestic demand requires construction of new facilities and therefore substantial investments. In addition to the competitive infrastructure and operating environment investors are willing to secure the market share for their products. As result they are looking for having competitive edge not only on the domestic but also on the global markets. Substantial costs and vulnerability of export infrastructure (transport, custom clearance, etc.) the hesitant and volatile purchasing policy of the main consumers for such pipeline manufacturing that are the state-controlled Gazprom and Transneft these projects are not developed and the pipes are imported from the Ukraine and other countries. Nevertheless there are currently are several investment projects under development in Northwest Russia that are aimed to meet the growing local demand for the higher value added metal products.

The cluster of metallurgy and metalworking in Northwest Russian is characterized by its distinct territorial differentiation. The Kola-and-Karelia agglomeration specializes in extraction and enrichment of ores and in metallurgy of primary non-ferrous metals. The Northwestern agglomeration is characterized by a rather wider range of products, but is based in primary ferrous metallurgy (Severstal), with several enterprises also specializing in primary non-ferrous metallurgy, as well as secondary metallurgy and ferrous and non-ferrous metal-working (the latter are concentrated in St. Petersburg). There are also prospects for development of new non-ferrous metals agglomeration in Republic of Komi based on the major bauxite deposits, development of which has been started in the region in 1997. It is anticipated that, in the future, development of certain areas in these agglomerations will lead to further concentration of activities in the areas with better infrastructure and market opportunities. More service and technology suppliers will emerge in such locations, as they would offer better market opportunities and increasing returns to scale. Thus development of the higher value added activities could be more active in the areas close to the cities of St. Petersburg and Cherepovets, and, probably, Syktyvkar.

Our analysis demonstrates that the Northwest Russia metallurgy and metalworking cluster is still quite fragmented and underdeveloped. The important areas to improve in order to advance the future competitiveness of the cluster are the suppliers and their networks, infrastructure, energy production, logistics and other related activities. In the Soviet period large industrial conglomerates that comprised a wide range of core

and related activities were created. Under conditions of the market economy and private ownership such concentration of various activities in the same company became a heavy burden that undermined competitiveness of the companies substantially. Today specialization and necessity to gain cost advantages by outsourcing non-core activities, concentrating on the main business are the major anticipated needs. Although the need is well realized, changes in this direction will be quite slow. They require large investments, efforts by the regional governments, commitment and high readiness of all the counterparts involved. For many metallurgy and metalworking companies their remote locations, fragmented and uneven development of the necessary infrastructure and poor availability of suppliers are the great obstacles for development and will lead to substantial structural changes in the cluster in the future. The companies located close or inside the larger agglomerations such as the City of St. Petersburg or Cherepovets will benefit from the scale effects of regional concentration and develop better than others.

Other important constituent parts of the cluster are enterprises producing specialized equipment, specialized educational and R&D institutions. Decline in the industry overall had a damaging effect on these activities. Over the last decade these producers and service providers have been experiencing serious problems because of low competitiveness of their offerings, i.e. their high dependency on the old, Soviet period solutions. As a result there was necessity to invest in upgrading and adjustments. That was not always possible owing to the overall situation in the country. Destruction of the previously strong links between education, research and production, scarce financing, and the resulting deterioration of capital assets, loss of qualified personnel, etc. has a substantial adverse effect on the competitiveness. There are also encouraging news that the fittest survived and cooperation between R&D, education and the companies do improve.

As the transport and energy sectors in Russia are still under the state control there is a major role that government could play in improving the competitiveness of the domestic producers by steering in thoughtful and coordinated way the reforms of these sectors. The changes that are about to come with the freeing of the energy markets and privatization of the railroad transport could have a major impact on the companies costs and shall be coordinated in order to provide for a smoother transition to the market-based prices.

The authors of this study demonstrated that the main production factors inherited by the metal cluster from the Soviet period (raw materials base, production facilities, infrastructure, educational and R&D potential) have been heavily exploited during the last decade, but that there

were obviously insufficient investments in their development, which has now led to substantial depletion of possibilities derived from these factors. There is a clear need for substantial investments in the cluster. Improving economic and political situation in the country creates a good basis for attracting more outside investors in this activity. Also the more successful companies such as Severstal generate sufficient own cash flows to invest in modernization. It invests on a regular basis in upgrading and extending of its product offering.

Basic redistribution of ownership in the Northwest Russian metal cluster has evidently been completed, and the companies are now paying much more attention to the issues of development. At the same time, there are certain apparent negative features, such as exceptionally low degree of transparency of business processes, excessive number of unqualified personnel, heavy social costs, and substantial contamination of the environment. It is expected that growing need to attract outside investors will force companies to adjust these practices and improve their business reporting. One can envisage that the Russian stock market could become the major source of investments for the companies of the cluster in the near future. This as well as the need to legalize their earnings will motivate owners to open books and be more transparent to the outside world.

There is yet another set of factors that shaped the current output structure of the Northwest Russian metallurgy and metalworking. These are the currently low labor (approx. 1 USD per hour) and energy costs (several times lower than in Europe and many other countries, i.e. 1.4 US cents per kWh in Russia), possibility to save on the environment protection measures, etc. It is anticipated that on-going energy sector reform, increasing requirements for the quality of labor and growing pressure to pay higher salaries will drive these costs upwards in the near to medium term. This will motivate companies to invest in modern, more efficient technologies and solutions. There is a room for improvement as the labor productivity in Russia is among the lowest in the world (turnover per employee does not exceed 50 000 USD whereas in developed countries it varies from 150 000 to 400 000 USD). Therefore such changes are urgently needed to bring better technologies and reduce pollution that is still very high. Commitment and support of the government bodies in these areas will be of crucial importance for the development of business in this sector. It is evident that existing may be substantially strengthened or weakened depending on the government actions and policy.

The domestic demand is essential for the growth of competitive producers. Today it is only taking off after the sharp decline associated with the transition to the market economy. There is a steady growth registered

already for the number of years. The demand for steel in 2001 exceeded already 20 mln tons. Consumption of the steel and, especially of the non-ferrous metals per capita is very low in Russia (10–30 % below the western level). It is expected to grow as the domestic processing industries gain strength and the purchasing power of the population increases.

Domestic demand for the products of the cluster fell dramatically with the introduction of liberal economic reforms, and in order to survive the companies of the industry had to export most part of their output. However, only Russian products with low added value are competitive in the world market, which led to substantial deterioration of product structure of the cluster. Besides, Russian products are gradually forced out from the markets of developed countries, and this trend will possibly continue in the short to medium term. Another important trend of shifting labor and energy intensive manufacturing away from developed countries associated with growth of domestic demand for the higher quality products will, in medium term, most probably offset and reverse effects of this trend on domestic producers. Today the major markets for the Russian metals are located in the developing countries. Anticipated future growth of these markets that could substantially outpace the growth in developed world will add substantially to the opportunities of the Russian producers as they acquired a good knowledge and positions in many of the important markets.

Another possible source for improving efficiency and gaining advantages in Russia will be achieving higher rate of collection of scrap and domestic processing of the secondary raw materials. So far these are among the most criminalized areas of activities in Russia. Lack of efficient infrastructure, rules and regulations leads to various damages to operating equipment as some are trying to dismantle and sell even the most important items. On the other hand lack and difficulties in operating the collection and processing motivate the unrecorded activity as it is closely to impossible to efficiently comply to all the numerous and contradicting rules and regulations. The domestic manufacturing on the other hand will benefit substantially from the efficient and transparent scrap collection and processing.

Development of competitive capabilities of the metallurgy and metal working cluster in Northwest Russia require substantial improvements in national, regional and industry's investment climate in order to provide major growth of financial inputs in the cluster. Besides, it is crucial to have the larger domestic market (mainly machine building and construction), which is perhaps the only way to provide for a better product structure involving a larger proportion of products with high added value.

As we have seen from the analysis of the case companies in the cluster notwithstanding the difficulties of the transition and associated changes in market demand many companies were able to adjust. Today they are in the process of the gradual improvement of the operations after reforms. There is process of concentration that led to creation of the powerful private conglomerates in this business. We believe that the further logical step will be to invest in more efficient and up-to-date technologies and processes. The regional and federal governments could do a great job by easing and facilitating this improvement by providing coordinated efforts, a better infrastructure and operating environment for the industry.