

The sustainability of Norilsk nickel's PGM production

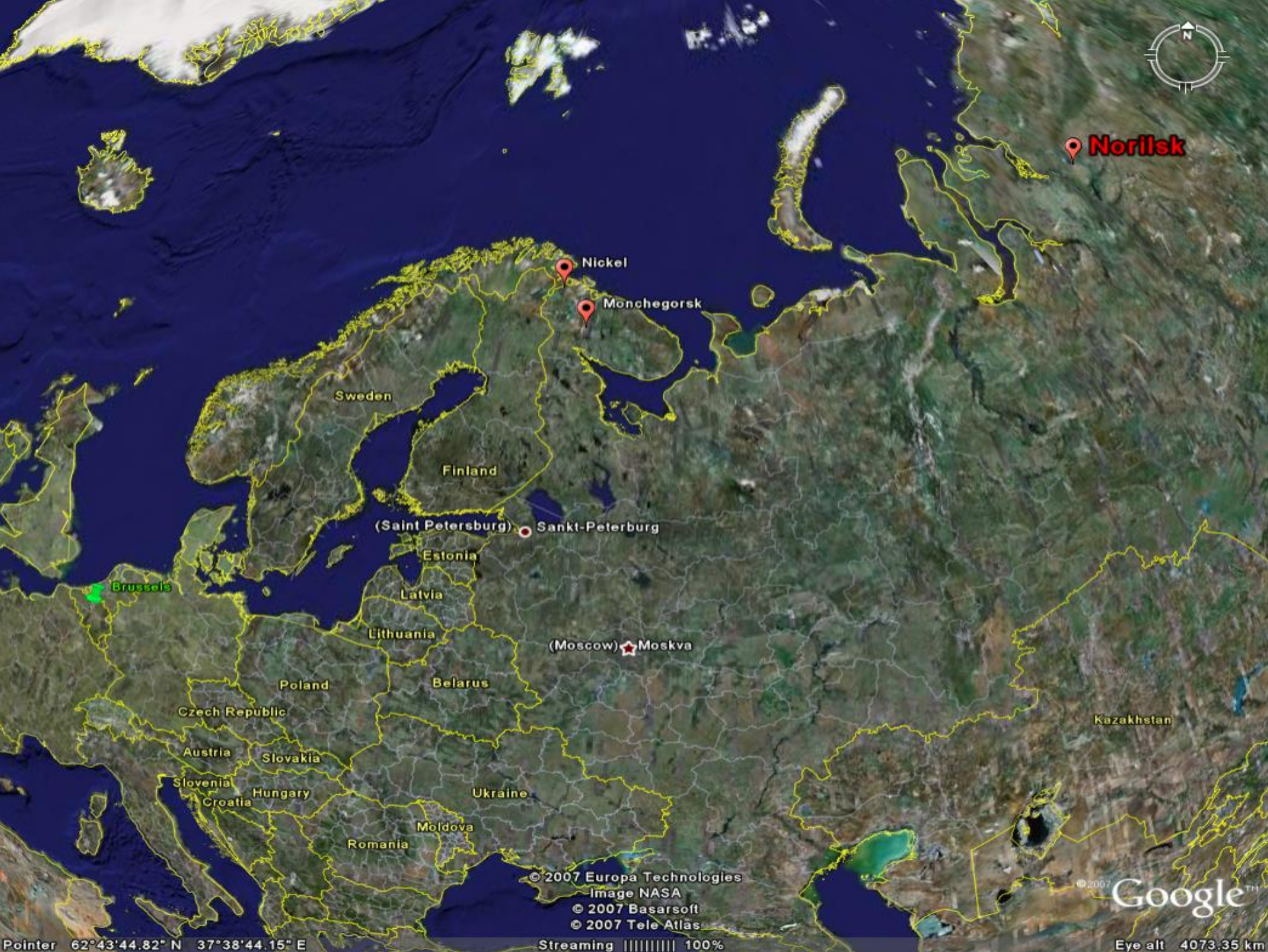
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Norilsk

Nickel

Monchegorsk

(Saint Petersburg) Sankt-Peterburg

Brussels

(Moscow) Moskva

Kazakhstan

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Pointer 62°43'44.82" N 37°38'44.15" E

Streaming 100%

Eye alt 4073.35 km



METALLS PRODUCED BY NORILSK NICKEL

ROUNDTABLE ON
SUSTAINABLE
PLATINUM GROUP
METALS

Nickel – 240-250 thousand tonnes per year
(No. 1 in the World)

Copper – 425-450 thousand tonnes per year (No. 10 in the
World)

Palladium – 3.1-3.2 mln. oz (No. 1 in the World)

Platinum – 0.75 mln. oz (No. 4 in the World)

SO₂ emissions – 2.1-2.2 mln. tonnes per year
(No.1 in the World)

NN versus Anglo Platinum & Vale Inco: is this right?

ROUNDTABLE ON
SUSTAINABLE
PLATINUM GROUP
METALS

	Anglo-platinum	NN	Vale Inco
prod of Pt+Pd million ounce	2,6	4,0	
prod of Nickel 1000 tons		250,0	250,0
thousand tonnes of SO ₂	16,0	2000,0	350,0
kg SO ₂ /ounce PGM	6,2	500,0	
ton SO ₂ /ton Nickel		8,0	1,4

HIGH SULFUR CONTENT IN THE USED ORE

- **Rich ore** contains 2-16% of nickel, 2-25% of copper, 2-100 g platinum group metals per tonne. It also has a very high sulfur content – up to 23%.
- **Cupriferous ore** has 0.5-2.0% of nickel, 1-15% of copper, 5-50 g per t platinum group metals, and middle sulfur content (up to 10%).
- **Disseminated ore** has 0.2-1.0% of nickel, 0.3-2% of copper, 2-10 g per t platinum group metals, and low sulfur content (up to 2-5%).

LOW EFFICIENCY OF PROCESSING

After ore enrichment the sulfur/copper ratio in NN is 1.2 times higher than in similar foreign plants, sulphur/nickel ratio in 1.5-1.8 time higher.

SO₂ emissions

- **Nadezhda combine** – equal to the 420-430 thousand tonnes of elementary sulfur
- **Copper plant** – 340-350 thousand tonnes of sulfur
- **Nickel plant** – 250-260 thousand tonnes of sulfur

LOW EFFICIENCY OF PROCESSING

Nadezhda smelter air treatment system had a capacity of 235 thousand tonnes of sulfur per year.

In 1989, 211 thousands t of elementary sulfur were produced. In the following years, this system was closed down.

The **Copper plant** has an air cleaning system, which can produce 80 thousand tonnes of sulfur per year.

→ most SO_2 is being emitted into the air.

LACK OF ECONOMIC INCENTIVES FOR NN'S SULFUR EMISSIONS TREATMENT

ROUNDTABLE ON
SUSTAINABLE
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METALS

According Agreement with authorities, signed in 2004 recent payments for emission 2 mln. t of SO₂ is 41 mln. \$ per year.

Scenario “pollution as usual” e.g. 2 mln. t of SO₂

2009: 54 mln. US\$ per year

2011: 69 mln. US\$ per year

2015: 197 mln. US\$ per year.

Investments, needed for decreasing SO₂ emissions level to 20-30% of present: 700-900 million US\$ (1-1,5 bln. US\$ - upper limit)

+ Operational cost 70 mln. US\$ per year.

ABSENCE OF EFFICIENT STATE CONTROL

In Russia, SO₂ concentrations are measured by State air monitoring system on 629 stations in 229 cities.

But **not in Norilsk**, where this measurements stopped in 2005.

No substantive reply on open letter to the authorities, signed by 12 000 Norilsk city inhabitants in summer 2007, where the problem of severe air pollution was mentioned.

Reporters do not see the reality, NN invests in PR

Company published Social Reports in compliance with GRI. These reports were audited by Ernst and Young and PriceWaterhouseCoopers. They spend many words on environmental plans – but do not show the real scale of NN’s environmental problems.

NN has been certified on ISO 9001:2000 ISO 14001:2004 by UKAS (UK).

NN is active in Global Compact, which mentions this company as an example of social and environmental responsibility – see UNDP supported report “Russian business and UN Global Compact” 2007.

What to do?

1. There is need to improve the flow of information about NN's serious environmental problems to the general public and main consumers of NN's products.
2. For producers and consumers, operating in nickel, copper and platinum metal group markets – there is need for open debate on this sector's environmental issues, when some producers high profitability achieved on the cost of severe environmental pollution.
3. Financial and investors structures, which have been providing billions of dollars to NN through credits and share purchasing during the last years, do not properly assess the very serious environmental and the still growing associated social problems of this company.
4. There is need for debate, to what extent real environmental problems of NN are reflected in Social reports, ISO certificates, and Global Compact publications, presentations made by NN and some globally leading investment companies.